SUPPLEMENT

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POLYVASCULAR DISEASE INFLUENCES LONG-TERM CARDIOVASCULAR MORBIDITY IN CAROTID ENDARTERECTOMY

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Keywords: *cardiovascular disease, survival analysis, carotid stenosis, peripheral vascular disease, major adverse cardiovascular events, major adverse limb events*

INTRODUCTION /OBJECTIVE

Carotid stenosis (CS) is an important cause of ischemic stroke. Secondary prevention lies in performing a carotid endarterectomy (CEA) procedure, the recommended treatment in most cases. When two or more vascular regions are simultaneously affected by atherosclerosis, mainly the carotid arteries, coronary arteries, or limb arteries, a multivessel disease polyvascular disease (PVD) is present. This study aims to assess the potential role of PVD as a long-term predictor of major adverse cardiovascular events (MACE) and all-cause mortality in patients submitted to CEA.

METHODS

From January 2012 to December 2021, patients submitted to CEA for carotid stenosis in a tertiary care and referral center were eligible from a prospective database. A post hoc survival analysis was performed using the Kaplan-Meier survival curve method. The primary outcome was the incidence of long-term MACE and all-cause mortality. Secondary outcomes included acute myocardial infarction (AMI), major adverse limb events (MALE), stroke, and acute heart failure (AHF).

RESULTS

A total of 207 patients were enrolled, with a median follow-up of 63 months. The mean age was 70.4±8.9, and 163 (78.7%) were male. There were 65 (31.4%) patients that had two arterial vascular territories affected, and 29 (14.0%) patients had PVD in 3 arterial beds. On multivariable analysis, both MACE and all-cause mortality had as independent risk factors age (aHR 1.039, P=0.003; aHR 1.041, P=0.019), chronic kidney disease (aHR 2.524, P=0.003; aHR 3.377, P<0.001) and PVD2 (aHR 3.381, P<0.001; aHR 2.665, P=0.013). PVD1 was only associated with MACE as a statistically significant risk factor (aHR 2.531, 1.439-4.450, P<0.001).

CONCLUSION

PVD in patients with cerebrovascular disease (CVD) was revealed to carry a two-fold increased risk for all-cause mortality and MACE during long-term follow-up. PVD may be a simple yet valuable tool in predicting all-cause mortality, MACE, AMI, and MALE after CEA.

THE CLINICAL UTILITY OF INTRAOPERATIVE CELL-SALVAGE IN CARDIAC REOPERATIONS: A SINGLE-CENTRE RETROSPECTIVE STUDY

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Keywords: *intraoperative autologous transfusion, cell-saver, cardiac reoperation, single- centre retrospective cohort study*

INTRODUCTION /OBJECTIVE

Concerns regarding the imbalance between the high demand and low offer of homologous red blood cell (RBC) units, as well as their inherent risks and costs, led to the creation of alternative techniques, such as intraoperative autologous transfusion. The Cell-Saver device can collect blood from the surgical field, submitting the blood to a centrifugation and washing process. The resulting product is a concentrated autologous RBC unit, which can be transfused to the patient. Furthermore, in the cardiac surgery spectrum, cardiac reoperation patients may translate a higher haemorrhagic surgical risk, so the usage of Cell-Saver may be especially advantageous in these patients, to reduce the exposure of homologous RBC transfusion. This thematic boosted the development of the present study, which is to understand the clinical utility of the use of Cell-Saver, in cardiac reoperation patients.

MATERIALS AND METHODS

A single-centre retrospective cohort study was performed. Seventy-two patients undergoing on-pump redo coronary artery bypass graft and/or valvular surgery, from 1st January of 2020 to 31st December of 2021, in the North Lisbon University Hospital Centre – Santa Maria Hospital were analysed. Patients were divided into two groups: Cell-Saver group (CS, N=39) and Control group (C, N=33). Patient demographics included age, sex, diabetes mellitus, arterial hypertension, dyslipidemia, smoking history, renal insufficiency and type of reoperation. Surgical variables included cardiopulmonary bypass (CPB) and cross-clamp time. Volume of intraoperative homologous and autologous blood transfusion were also recorded. Intraoperative homologous RBC transfusion requirements were indicated when haemoglobin values were below 7-8g/dL, before, during or after CPB. The primary outcome was intraoperative exposure to homologous RBC units.

RESULTS

Concerning the intraoperative RBC unit consumption, the mean total volume of homologous RBC units consumed was 1,54 ± 2,56 units in the CS group, and 1,27 ± 1,44 in the C group, not showing any significant statistical difference between the two groups ($p = 0,599$). When comparing the difference in the consumption of autologous and homologous RBC units in the CS group, an average of 2,53 ± 4,14 autologous RBC units are consumed more than the homologous RBC units, showing that the average number of autologous RBC units is significantly higher than the average number of homologous RBC units consumed intraoperatively, in the CS group ($p \leq 0,01$).

CONCLUSION

This study suggests that the use of cell salvage in cardiac reoperation patients does not reduce the exposure to intraoperative homologous RBC unit transfusions.

COMPARISON OF ENDOVASCULAR VERSUS OPEN RECONSTRUCTION FOR TASC-II D AORTOILIAC OCCLUSIVE DISEASE – A PROPENSITY SCORE ANALYSIS

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Keywords: *aortoiliac disease, atherosclerosis*

BACKGROUND

The aim of the study was to evaluate and compare the safety and efficacy of open surgery with endovascular surgery for the treatment of TASC-II D aortoiliac lesions.

METHODS

From January 2013 to February 2021, the clinical data of 105 patients with symptomatic TASC-II D AIODs was retrospectively collected and analyzed. The patients were divided into two groups: open repair (66 patients) and endovascular treatment (ET) (69 patients). Baseline characteristics, preoperative and postoperative imaging, and operation procedure reports were reviewed and analyzed. Patency after revascularization was assessed by duplex ultrasound or computed tomography angiogram. Kaplan-Meier survival analysis, Log-rank test, multivariate Cox regression and a Propensity Score (PSM) analysis were used to evaluate the relevance between risk factors, surgical technique, and patency.

RESULTS

The median follow-up was 79 months (CI 95% 61.2-96.8). Open repair was associated with a higher technical success rate (95.5% vs. 73.7%, p=0.01). 30-days major adverse cardiovascular (MACE) and limb (MALE) events showed no differences between both groups (7.7% vs 7.7%, p=1 and 11.3 vs 20.5%, p=0.225, respectively).

PSM analysis nullified any significance between groups and any imbalance superior to 20% was found, regarding demographic and comorbidities characteristics. Univariate log-rank survival analysis showed no significant differences in terms of MALE between open and endovascular revascularization at 60 months (hazard ratio, HR 1.30 95% CI 0-56-3.06, p=0.54), even after PSM (HR 1.63 95% CI 0.58-4.55, p=0.35).

CONCLUSION

Using open and endovascular techniques seems to be a safe and effective endovascular treatment for complex AIOD. It is expected a higher technical success rate with open repair, however, there are no significant differences in terms of primary patency, secondary patency, and MALE, between these two techniques.

HEMODYNAMIC PREDICTORS AND CHANGES DURING CAROTID ENDARTERECTOMY UNDER REGIONAL ANESTHESIA

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Keywords: *carotid stenosis, neurologic exam, hemodynamic monitoring, awake test, locoregional anesthesia*

INTRODUCTION /OBJECTIVE

Carotid endarterectomy (CEA) is the standard procedure for treating carotid stenosis, but it can lead to cerebral hypoperfusion and hemodynamic stroke due to vessel cross-clamping. Regional anesthesia and light sedation allow continuous monitoring of neurological function during the procedure. However, the relationship between perioperative hemodynamic management and neurological dysfunction has yet to be thoroughly investigated.

AIM

This study aimed to identify which hemodynamic patterns are most strongly associated with intraoperative cerebral ischemia in patients undergoing CEA under regional anesthesia.

METHODS

The study included patients who underwent CEA at an academic tertiary referral center between January 2012 and December 2019. Cases were defined as individuals who developed neurological deficits (ND) during the procedure. Controls were patients who did not experience focal neurological deficits. Controls were sampled 1:1 from consecutive patients undergoing the same CEA technique at the same department.

RESULTS

A total of 154 patients were included in the study, with 77 (50%) cases. Most of the study population (81.8%) was male, and the mean age was 70.1±9.1 years. Cases were older than the controls (p=0.012). Differences in blood pressure (BP) measurements between groups began after the pre-clamping moment. Baseline systolic BP values were higher in the ND group (154.6±31.8 vs 141.8±41.2 mmHg, p=0.035) as well as pulse pressure (98.1±24.0 vs 87.4±32.5 mmHg, p=0.023). The ND group also had a statistically significant higher mean arterial pressure (MAP) at the 3rd-minute post-clamp (p=0.028) and exhibited a smaller drop in systolic BP (SBP) between the pre-clamp and the 1st and 3rd minutes post-clamp (p=0.021 and p=0.039, respectively). The most significant risk factor for ND was obesity (22.1% vs. 9.3%, p=0.029). Contralateral stenosis was also an important factor (p=0.05), while the degree of ipsilateral stenosis did not differ significantly between the control and ND groups (84.9% vs. 81.4%, p=0.953).

CONCLUSIONS

Focal neurological deficits during CEA showed a characteristic pattern, with a smaller decrease in BP values from pre-clamp to post-clamp of the internal carotid. Hemodynamic management at the pre-clamping stage is crucial for preventing unwanted deficits. Obesity and contralateral stenosis were also identified as predictors of neurological deficits, consistent with previous studies.

CONTRIBUTO DA AUDITORIA DE ENFERMAGEM NA QUALIDADE DOS CUIDADOS PRESTADOS NAS ORGANIZAÇÕES DE SAÚDE

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Keywords: *auditoria de enfermagem; auditoria em saúde; qualidade nos cuidados; infeção associada aos cuidados de saúde.*

A auditoria é um requisito da qualidade que permite perceber como estamos a evoluir, identificar o que influencia os resultados obtidos e promover a mudança, indo de encontro à melhoria contínua da qualidade e garantia da segurança do doente. É um processo sistematico e um recurso no controlo de infeção associado aos cuidados de saúde (IACS), a auditoria contribui para o desenvolvimento das organizações, sendo visível esta preocupação nos órgãos de gestão dos serviços de saúde atualmente.

Não sendo possível gerir ou melhorar o que não se pode medir, é cada vez mais relevante a aplicação das ferramentas de auditoria. Se não conseguimos medir os resultados obtidos, teremos apenas meras opiniões.

A presente pesquisa teve como objetivo analisar e resumir a evidência sobre o impacto da auditoria em enfermagem na melhoria contínua da qualidade dos cuidados prestados nas organizações de saúde bem como no controlo das IACS. A abordagem metodológica utilizada foi uma revisão sistemática da bibliografia. Como critérios de inclusão foram considerados: estudos que incluíam profissionais de enfermagem e auditorias em saúde. Foram obtidos 54 resultados, que reduzi para 30 com texto integral e para 20 com data de publicação entre 2017 e 2023. Pela leitura dos resumos foram tidos em conta 5 artigos para o presente trabalho.

Os resultados da pesquisa mostraram que a auditoria em enfermagem é um instrumento a ser utilizado não apenas na gestão de recursos humanos e financeiros, mas também nos cuidados prestados, uma vez que reflete positivamente os cuidados de enfermagem. A análise dos artigos mostrou também que a efetivação da auditoria de enfermagem facilitará a avaliação da qualidade da assistência prestada ao cliente oferecendo condições para a sua melhoria. Observou-se que os registos de enfermagem representam um dos objetos de investigação na auditoria e que o enfermeiro é o profissional de enfermagem habilitado para a função de auditor. Paralelamente, esta ferramenta revelou-se positiva no controlo das IACS na medida em que possibilita a deteção precoce de áreas que carecem de atenção e o respetivo reforço de formação e/ou otimização da pratica clínica.

Conclui-se que a auditoria é uma ferramenta importante para a avaliação da qualidade dos cuidados prestados, bem como para o controlo das IACS contribuindo assim para a melhoria contínua da qualidade e segurança do doente. Após a realização da auditoria ocorre a análise dos serviços de saúde e a verificação das deficiências, podendo ser tomadas decisões informadas corretivas ou preventivas.

THE SAFETY OF CYANOACRYLATE IN VARICOSE VEIN TREATMENT: A REVIEW OF TYPE IV HYPERSENSITIVITY AND PHLEBITIS-LIKE REACTIONS

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INTRODUCTION

The use of cyanoacrylate for the treatment of varicose veins has become increasingly popular due to its minimally invasive nature and high success rate. However, reports of phlebitis-like reactions to cyanoacrylate have raised concerns about the safety of this treatment method, which has been linked to type IV hypersensitivity. The symptoms include local itching, erythema and swelling which typically resolve within a few days after treatment, yet severe reactions have been reported.

METHODS

This literature review aims to evaluate the incidence and the symptoms of suspected hypersensitivity reactions and their relation with phlebitis-like adverse events following cyanoacrylate varicose vein treatment. A comprehensive search of the literature was conducted using Pubmed with different combinations of the terms "cyanoacrylate", "varicose veins", "hypersensitivity" and "allergy". A total of 17 articles were selected, including 8 observational studies, 7 case reports, 1 randomized study and 1 expert consensus.

RESULTS

A total of 914 patients underwent surgery with cyanoacrylate (1345 treated veins), out of which 190 (20,8%) developed some form of hypersensitivity reaction, the most reported being local symptoms associated with a phlebitis-like reaction (4-25,4% in different studies), which seemed to be more frequent in Asian populations. Risk factors associated with hypersensitivity reactions were varicose veins larger than 8 mm and suprafascial veins less than 1 cm underneath the skin. The reported time to develop adverse reactions ranged from 4 days, up to 6 months after the procedure. Five patients (0,5%) developed generalized body hives, of which 1 required excision of the treated vein. In total 13 veins (1%) were excised due to persistent or recurrent symptoms despite medical therapy (NSAIDs, antihistamines, corticosteroids).

CONCLUSION

Type IV hypersensitivity to cyanoacrylate can cause a phlebitits-like reaction that is not uncommon among patients submitted to these procedures with nearly 25% of patients reporting complications in some studies. This type of phlebitis is described as different from classic thrombophlebitis as patients more frequently report erythema and itching over the affected area rather than swelling and pain. Despite being usually self-limited or requiring only medical therapy, severe reactions arising after the use of cyanoacrylate, namely systemic or persistent symptoms, requiring vein excision have been described. As this type of hypersensitivity reactions can develop as late as 3 to 6 months after the initial procedure one should be aware of these complications when using cyanoacrylate. Personal history of acrylate allergy should be questioned before surgery as literature suggests this constitutes an absolute contraindication for surgery.

TEMPORAL TRENDS IN ACUTE ORGAN ISCHAEMIA

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Keywords: *acute limb ischaemia, acute organ ischaemia*

INTRODUCTION

Arterial thromboembolism causing acute organ ischaemia (AOI) leads to a significant increase in mortality and morbidity. Adverse outcomes in this population remains incredibly high.

Research focusing on the progressive changing management in AOI with the hopes of improving outcomes remains scarce.

An evaluation of the temporal trends in management and clinical outcomes is needed to inform clinicians on opportunities to improved care.

The purpose of this project is to study the changing tendencies in incidence, management, and outcomes of AOI.

METHODS

We identified patients admitted to our center from the 1 January 2013 to 31dezember 2022 with the diagnosis of an acute organ ischaemia (upper limbs, lower limbs, mesenteric, renal, and coeliac/hepatic).

Relevant comorbid status was also collected such as presence of arrhythmias, heart disease (heart failure and coronary artery disease), chronic pulmonary obstructive disease, cerebrovascular disease, hypertension, dyslipidaemia, diabetes, peripheral artery disease, smoking habits, and end-stage chronic kidney disease.

Previous anticoagulation and antiaggregation status were also recorded.

RESULTS

Within the selected time frame, there were 533 patients admitted to our hospital with AOI diagnosis and adequate comorbid information for analysis.

Patients admitted presented with a high burden of known risk factors for embolism and atherosclerotic risk factors.

There were a total 438 lower limb ischaemia events (82.2%), 67 upper limb ischaemia events (12.6%), 23 mesenteric ischaemia events (4,3%), and 2 patients (0,4%) had renal and hepatic artery occlusion.

A statistically significant descending trend in the relative proportion of embolic AOI was observed throughout the years. The number of untreated patients with known atrial fibrillation also decreased, being accompanied by an increased number of patients treated with direct-acting oral anticoagulants. The type of treatment given to these patients also showed a tendency shifting from conventional open surgery to endovascular techniques.

CONCLUSION

Between 2013 to 2022, a decreasing number of patients hospitalized for embolic AOI has been decreasing throughout the years and an increasing percentage of patients treated with endovascular techniques.

These results may be, in part, due to a possible increase in the number of patients with known atrial fibrillation who are under anticoagulant drugs.

TRANSARTERIAL EMBOLIZATION OF A SYMPTOMATIC TYPE 2 ENDOLEAK AFTER EVAR DUE TO SYMPTOMATIC AORTIC ANEURYSM

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Keywords: *aortic aneurysm*

INTRODUCTION

Type 2 endoleaks are notoriously benign. Although a frequent finding (up to 50%), their natural history results frequently in spontaneous resolution or in little clinical impact. Counterwise, over the years, it has become clearer that the risk of rupture owing to an isolated type 2 endoleak is exceptionally low. The authors report the case of a symptomatic type 2 endoleak treated by endovascular means.

METHODS

Retrospective review of clinical charts and imaging exams.

RESULTS/CASE REPORT

An 81-year-old male patient with a known medical history of coronary artery disease with myocardial infarction, COPD, hypertension, hyperlipidemia and previous smoking habits was admitted due to a symptomatic (lumbar pain) infrarrenal aortic aneurysm. CT angiography depicted a infrarrenal aorto-iliac aneurysm (79mm largest diameter) with periaortic stranding. We underwent urgent percutaneous endovascular repair with a bifurcated graft (Medtronic Endurant IIs). The left hypogastric was plug embolized and distal seal was obtained in the left external iliac. No intra-operative complications occurred, namely endoleak. Post-operative course was uneventful and abdominal pain remitted. The patient was discharged 3 days after to other facility to complete a urinary infection treatment. A week after the primary procedure, abdominal pain recurred. After exclusion of other etiologies, a CT angiography was performed, and a high-flow type 2 endoleak through the inferior mesenteric artery with aneurysm sac enlargement (7mm) was noted (Figure 1A). The patient was referred for urgent endovascular embolization of the IMA, through a trans-arterial approach. First, a multiplanar pigtail angiography performed via femoral access revealed the high-flow type 2 leak and excluded type 1 or 3 leak. Aftwards, through a left brachial access and a 5F, 90cm-long sheath in the visceral aorta, the SMA was selectively catheterized (Ber catheter) and the 5F sheath advanced through its ostium. Then, after marking SMA branches, the middle colic artery was selectively catheterized with a ProgeatTM Catheter and advanced though the Riolan arch up to the IMA ostium (Figure 2B-D). Ultimately, the IMA was embolized with 8mm Microcoils (Figure 2E-F). The procedure was uneventful and abdominal pain subsided. A control CT angiography revelead exclusion of the endoleak and aneurysm sac stability. The patient is now under standard follow-up.

CONCLUSION

Symptomatic type 2 endoleaks are rare. Prompt recognition significant type II leak complications can avoid unfavourable outcomes. Endovascular repair seems safe and associated with reduced morbidity.

ENDOVASCULAR EXCLUSION OF AN INNOMINATE VEIN SACCULAR ANEURYSM WITH A STENT-GRAFT AFTER EXTRACORPORAL INVERSION

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Keywords: *venous aneurysm*

INTRODUCTION

Brachiocephalic vein aneurysms are rare and limited literature reports are available. They usually present incidentally during imaging studies for other pathologies. Most have been treated by open surgical repair and there are anecdotal reports of endovascular repair with self-expandanble Wallstents. We report a patient treated by endovascular means with the off-label use of an aortic stent-graft.

METHODS

Retrospective review of clinical charts and imaging exams.

RESULTS/CASE REPORT

A 78-year-old male patient with a known medical history of cholelithiasis and hypertension was referred due to a left subclavian vein aneurysm. Etiologic study was unremarkable, and the most likely cause was considered the repeated low-grade thoracic trauma resulting from his previous professional activity. CT angiography revealed a 5cm saccular innominate vein aneurysm, with adecquate proximal (17mm diameter) and distal (13mm diameter) landing zones without other local complications (Figure 1). After extensive discussion of therapeutic approaches, the patient chose to undergo endovascular repair with a stent-graft. Owing to the diameter mismatch between the proximal and distal landing zone, a bell-bottom extension (16x24mm Endurant IIs limb) was chosen. To accurately control proper proximal placement of the graft, without entering the superior vena cava, deployment through the left axillary artery was decided. First, extracorporal inversion and re-sheath of the Endurant IIs limb was performed. After angiographic marking of the aneurysm and venous side branches, the graft was successfully deployed, covering the aneurysm neck without entering the SVC or covering the left internal jugular. Ultimately, gentle post-dillation with a molding compliant balloon was performed. Post-operative course was uneventful, and the patient was discharged under long-term anticoagulation. One month CT angiography shows patent graft, aneurysm exclusion and absence of migration or kink.

CONCLUSION

Endovascular repair of innominate vein aneurysms with stent-grafts seems feasible, without significant complications and favourable short-term. Notwithstanding, it may require a more intense follow-up, compared to open repair.

A MODIFIED ROMS - CASE REPORT

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Keywords: *acute mesenteric ischemia, superior mesenteric artery stenting*

INTRODUCTION

Acute mesenteric ischemia is an impending visceral and life-threatening condition. The revascularization is mandatory and the surgical modality should be individualized in each case.

OBJECTIVES

To describe a clinical case of acute thrombotic mesenteric ischemia.

METHODS

Based in clinic report.

RESULTS/CASE REPORT

AA female, 65-year-old patient, with medical background of hypertension and former smoker presented at the emergency room with anorexia, post prandial abdominal pain and diarrhea with 6 days of evolution. Two months before she underwent a c-shaped right common iliac artery to superior mesenteric bypass (6mm heparin-bonded PTFE graft Propaten®), ileocecal resection and cholecystectomy due to acute thrombotic mesenteric ischemia. At clinical examination on admission, the patient presented asthenic and emaciated (BMI=16 Kg/m2). Abdominal examination showed diffuse abdominal pain on palpation with no signs of peritoneal irritation. Laboratory results showed anemia (Hb 9 g/dL), leukocytosis (15750/UI), AST 91 U/L, ALT 181 U/L, GGT 63 U/L, d-dimer 1626 ug/L, lactate 0,6 mmol/L and an anion gap 11,6 mmol/L. Computed tomography angiography (CTA) showed superior mesenteric artery (SMA) origin and ilio-mesenteric bypass occlusion. Celiac trunk ostial high-grade stenosis was present. It was noticed no signs of categoric bowel injury. The patient underwent retrograde endovascular superior mesenteric artery stenting after percutaneous ultrasound-guided right femoral retrograde puncture, catheterization of the occluded ilio-mesenteric bypass at iliac anastomosis and subsequent superior mesenteric artery catheterization (Image 1). The proximal SMA occlusion was predilated using a 5x32-mm balloon followed by deployment of a 6x32 mm balloon-expandable covered stent (Advanta®) and post-dilation with a 7x20-mm balloon. Completion angiogram showed a patent SMA without residual stenosis nor angioplasty associated complication. Favorable post-operative recovery was noticed with discharge 5 days after the surgical procedure. Dual antiplatelet therapy with clopidogrel and aspirin was used for six months, after which aspirin was used indefinitely. On follow-up mesenteric duplex ultrasound was performed 1 month, 6 month and 12 month after surgery without flow-limiting stent stenosis and without symptom recurrence.

CONCLUSION

In this case a recent abdominal surgery and the lack of bowel unviability suspicion concurred for the choice of a pure endovascular approach with less morbidity associated. The retrograde mesenteric stenting through the prior mesenteric bypass showed to be an easy and effective technical option for endovascular mesenteric recanalization that otherwise could be highly challenging by an anterograde approach.

BEST MEDICAL THERAPY AFTER LIMB REVASCULARIZATION IN PERIPHERAL ARTERIAL DISEASE CAN IMPROVE SURVIVAL - A SINGLE-CENTER STUDY

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Keywords: *acute mesenteric ischemia, superior mesenteric artery stenting*

INTRODUCTION

Best medical therapy for peripheral arterial disease (PAD) includes statins and antiplatelets. Prior studies suggest suboptimal pharmacological management in the real-world practice.

OBJECTIVES

To determine the prescription rate of antiplatelet and statin in symptomatic PAD population and related impact after limb revascularization.

METHODS

We present a retrospective, single-center study comprising all patients with symptomatic PAD who underwent for the first time a lower limb revascularization in a tertiary hospital, between january 2017 and december 2018. Statins and antiplatelets prescription data were collected preoperatively, at discharge and at 6-month post-discharge and the prescription rates were measured. Differences in gender, cardiovascular comorbidities, indication and vascular procedure modality (open, endovascular or hybrid procedure) were evaluated. Endpoints for optimal therapy users (antiplatelets plus statins) vs nonusers were estimated. Primary endpoint was overall survival and secondary endpoint was major amputation.

RESULTS

A total of 380 patients (mean age 68.5 years, 76% men, 80% presenting with chronic limb threatening ischemia) were included in this study. At admission patients with previous cerebrovascular disease had higher statins and antiplatelets prescription ($p<0.001$, $p=0.024$) and those with previous coronary disease had higher antiplatelet prescription ($p<0.001$). Patients with worst infra-popliteal disease staging (GLASS) and presenting with chronic limb-threatening ischemia had statins and antiplatelets lower prescription when compared with patients presenting with intermittent claudication (53% vs 80% $p<0.001$ and 60% vs 88% $p<0.001$ respectively). Overall, the prescription rate of statins and antiplatelets augmented after revascularization regardless of the vascular procedure (respectively 58%/65% at admission vs 88%/97% at discharge) (Image 1). At discharge, the dual antiplatelet prescription was higher after endovascular and hybrid procedures ($p<0.001$), women had lower antiplatelets prescription when compared with men (92% vs 98% $p=0.005$) and we found that 80% of the patients without antiplatelets prescription at discharge were on anticoagulation therapy ($p<0.001$). Optimal prescription at discharge was associated with higher 1-year overall survival (87% vs. 69%, $p<0.001$) and the benefit was higher for those who kept it at 6 month pos-discharge (90% vs. 64%, $p<0.001$). (Image 2) There was a trend towards lower major amputation rate at 1-year among patients on optimal therapy at discharge (13% vs 21% $p=0.064$).

CONCLUSION

Statins and antiplatelets prescription was associated with higher overall survival which can be attributable to a reduction in the overall cardiovascular burden that affects the PAD population. Increased prescription rate was observed after revascularization. Nevertheless, a considerable proportion of patients keeps with suboptimal management.

DOES TEACHING IMPACT OUTCOMES? ANALYSIS OF A PROPENSITY- SCORE MATCHED COHORT OF RUPTURED ABDOMINAL AORTIC ANEURYSMS

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Keywords: *abdominal aortic aneurysm, residency*

OBJECTIVES

Portuguese nationwide estimates point that 20% of abdominal aortic aneurysms (AAA) are treated in a ruptured setting and most are treated in teaching hospitals. The evidence regarding on the impact of trainee-performed procedures is scarce. The authors aim to investigate the training impact during emergent repair of ruptured AAA on 30-day death and major complications.

METHODS

A retrospective, single-center comparative study was designed. From 2011-April 2023, all consecutive ruptured AAA (EVAR and OSR) were considered. Primary outcome is 30-day survival. Secondary outcomes are 30-day major adverse events (composite of all-cause mortality, myocardial infarction, respiratory failure requiring prolonged ventilation or reintubation, renal function decline >50% or requiring new-onset dialysis, bowel ischemia requiring surgical resection, major stroke or paraplegia), intraoperative complications, surgery duration and blood loss. Using propensity score matching (PSM) each trainee group patient was matched with one consultant group patient in a 1:1 ratio. When PSM patients, variables depicting demographic data, presenting clinical condition, aneurysm extent, repair technique and planned adjunctive procedures were included.

RESULTS

The study included 250 patients. After PSM, 186 patients were analyzed (93 per group). Before PSM, patients in the consultant group were more frequently male (94.0% vs. 86.2%, P=.036), had increased prevalence of cerebrovascular disease (20.1% vs. 11.2%, P=.046), larger aneurysms (maximum diameter 82mm vs. 78mm, P=.044), juxtarenal aneurysm extension (30.6% vs. 18.9%, P=.044) and underwent more frequently open repair (56.7% vs 34.5%, P<.001). After PSM, no significant differences between groups were noted.

After PSM, 30-day mortality rate was 24.3% (n=45). No significant differences in 30-day survival were noted between groups (76.3% trainee vs. 75.0% consultant, P=.92; trainee performed procedure OR 1.08, 95% CI 0.55-2.11 for 30-day death). Most deaths (66.7%, n=30) occurred in the first 72 post-operative hours, and no significant differences between groups were observed (14 deaths in trainee group vs. 16 deaths in consultant group, Figure 1). Trainee performed procedures were associated with a non-significant increase in intraoperative complications (29% trainee vs. 18.5% consultant, P=.092), intraoperative blood loss (1184±1106mL trainee vs. 1080±1224mL consultant, P=.57) and surgery duration (177±90min trainee vs. 154±71min consultant P=.044). No significant differences on the rate of major-adverse events were observed (50.5% trainee vs 50% Consultant, P=.94).

CONCLUSION

In this cohort of matched rAAA, trainee performed repair associated to a significant increase in operative time. Nevertheless, training during rAAA surgery revealed to be acceptable since it appears to not affect death and major adverse events up to 30-days.

MULTIDISCIPLINARY APPROACH IN VASCULAR TRAUMA: A CASE REPORT

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Keywords: *vascular trauma, multidisciplinary team*

Vascular injuries account for 3% of all traumatic injuries and are a major cause of morbi-mortality in trauma patients. Patients with hard signs of arterial injury should be surgically explored as soon as possible to maximize the chances of limb salvage. Large segment vascular lesions should be replaced with vein grafts or prosthetic grafts when venous conduit is scarce.

A 40-year-old male was admitted to emergency department 8 hours after a motorcycle accident. He presented hemodynamically unstable, with coldness, pallor and absence of all pulses in the right upper limb. CT angiography showed sectioning and stretching of the subclavian artery after its origin, with active bleeding and extensive hematoma. It also revealed a subarachnoid hemorrhage (SAH) and zygomatic and clavicle fractures that didn't require immediate surgery. Therefore, an urgent vascular reconstruction was planned.

Due to the necessity of intra-thoracic proximal control, the cardiac surgery team performed the approach of the brachio-cephalic trunk, right common carotid artery and origin of the right subclavian artery through a mini-sternotomy, while the vascular surgery team exposed the right brachial artery. Brachial distal thrombectomy and interposition of a ringed Dacron prosthesis in the right subclavian-brachial position were performed. Plastic and reconstructive surgery team proceeded with fasciotomies of the right arm and forearm. Right brachial, ulnar and radial pulses were present after revascularization.

Given the presence of SAH, neither antiplatelet nor anticoagulant therapy was initiated. The interposition thrombosed on day 1, so he was taken to the operation room (OR) for thrombectomy of the interposition and recovered the previous pulses. In the absence of SAH worsening, therapeutic-dose anticoagulation was initiated.

The patient was extubated on day 11 in the intensive care unit, where he commenced physiotherapy, and was transferred to the ward on day 20. Hemodialysis was required for 26 days due to acute kidney injury, with complete recovery of renal function. He returned to the OR for hematoma drainage on day 12, fasciotomy closure with skin grafting on day 40 and osteosynthesis of the clavicula on day 80. He was discharged on day 108 with indication for antiplatelet therapy and physiotherapy.

Currently, at the 6 months follow-up, the patient's right upper limb is warm, well perfused, with all pulses palpable, but with hypoesthesia and paresis below the elbow.

Peripheral vascular trauma, even in a polytraumatized patient, is a surgical emergency; prompt diagnosis and treatment and multidisciplinary management are the key elements for optimizing outcomes.

GUIDELINES ARE NOT GODLINES

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Keywords: *chemo-immunotherapy*

Lung cancer is still the leading cause of death for neoplasia worldwide. In the last decade, there have been many advances in treatment of patients with advanced-stage lung cancer namely target therapies and immunotherapy (IO). More recently, these same therapies showed good results at earlier stages as neoadjuvant and adjuvant settings.

We present a case of a 68 years-old women, former smoker (36 packs-year), with a hypothiroidism, hypertension and arrhythmia.

She complained of right posterior thoracic pain for one month with a gradual escalation.

Her thoracic-CT scan revealed two contiguous masses in the RUL with chest wall invasion at the level of the posterior arch of the 4th rib.

Fdg-PET-CT-scan showed a most likely metabolic stage IIIB (hypermetbolism of both masses and ipsilateral hilar and inferior para-tracheal adenophaties).

Brain-MRI showed no secundary lesions.

It was performed both radial and TBNA-EBUS for diagnosis and invasive mediastinal staging and pathology was consistent with lung adenocarcinoma but negative cytology at 11R, 4R and 11L stations. PD-L1 was 90% and ALK translocations and EGFR mutations were excluded by NGS.

At the multidisciplinar meeting, as stage IIIB was not pathologically proven, it was decided not to undergo subsequent mediastinoscopy, and eventually reserving it for nodal restaging after neoadjuvant therapy with chemotherapy and IO.

She completed three cycles every three weeks (cisplatin, pemetrexed and nivolumab) with relative good tolerance. Fdg-PET-CT scan reassessment exibited very favorable metabolic response to therapy with a significant morpho-metabolic reduction of pulmonary lesion in the RUL and metabolic resolution at 4R level.

Patient was submmited to a RUL lobectomy with en-bloc ressection of the 4th and 5th posterior arch ribs and systematic lymphadenectomy trought a Shaw-Paulson thoracotomy. Wall defect was corrected with a mesh. She had an uneventfull postoperative. Final pathology was ypT1bN0 (stage IA2) with a major pathological response.

At one year follow-up, patient is well and disease free.

This case is an example that most recent chemo-IO neoadjvant treatments must be strongly considered in the surgical strategy of lung cancer. It particularly reflects a reconsideration for locally advanced lung cancer, namely T3 N1-N2 tumors (IIIB 8th ed), that are excluded from surgical treatment, which is not the same staging version taken into account in the clinical trials that support these new neoadjuvant treatments.

SURGICAL RESECTION OF THE STERNUM AND RECONSTRUCTION OF THE ANTERIOR THORACIC WALL: A TREATMENT OPTION FOR SOLITARY STERNAL METASTASES FROM BREAST CANCER

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Keywords: *sternal metastasis, breast cancer, surgery, thoracic wall reconstruction*

BACKGROUND

Solitary sternal metastases from breast cancer are uncommon and its treatment is controversial and not standardized. Surgical resection of the sternum might provide good long term local control in selected patients.

CASE PRESENTATION

We report a case of a 59-year-old woman that had undergone bilateral mastectomy, chemotherapy and radiotherapy for breast cancer 11 years earlier. The patient complained about persistent thoracic pain and a CT scan of the chest was performed. A suspicious lesion was detected in the sternum with invasion of the third and fourth left costochondral cartilages. CT guided biopsy identified a malignant lesion compatible with a metastasis from breast cancer. No other metastases were found. Multidisciplinary discussion found surgery as the most probable curative treatment and the patient underwent surgical resection. A subtotal sternectomy (with preservation of the manubrium) and removal from third to fifth costochondral cartilages bilaterally was performed. Titanium prostheses were fixed to the cut ends of the manubrium and the costochondral cartilages to fill the defect. A latissimus dorsi musculocutaneous flap was then performed to complete the anterior thoracic wall reconstruction. Surgical margins of the sternal stump and costochondral cartilages were negative for malignant disease. Follow-up two years after the surgery showed a restrictive respiratory syndrome and no signs of recurrence of the disease.

CONCLUSION

Surgical resection of the sternum with subsequent reconstruction of the anterior thoracic wall with a prosthesis and a myocutaneous flap was performed safely and allowed a surgery with curative intent. Surgical resection could provide a good long term outcome and local control in selected patients with solitary sternal metastases from breast cancer.

DIAPHRAGMATIC PACING AS A TREATMENT IN BILATERAL DIAPHRAGM PARALYSIS AFTER CERVICAL SPINE TRAUMA

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Keywords: *cervical trauma, diaphragmatic paralysis, surgery, diaphragmatic pacemaker, VATS*

BACKGROUND

High cervical spinal cord injury after cervical spine trauma is the most common cause of bilateral diaphragm paralysis after motor neuron disease and myopathies. The acute onset of the paralysis causes the need for ventilatory support in most cases. Diaphragmatic pacing can be used in selected patients in order to allow the weaning of ventilatory support.

CASE PRESENTATION

We report a case of a 51-year-old man who suffered a traumatic event at 14 years old with spinal cord injury at C2 level resulting in tetraplegia and the need for ventilatory support. After 10 years ventilated and many attempts to wean the ventilator without success, a diaphragmatic pacemaker was placed by bilateral thoracotomy. Weaning of the ventilation after surgery was possible and his only ventilatory support was the diaphragm pacing. 17 years later, he started to have an increased need of non-invasive ventilation (NIV). Fluoroscopy of the diaphragm was performed and it showed that NIV was the main responsible for the breathing of the patient, since diaphragmatic pacing was dysfunctional. The patient underwent surgery to replace the diaphragmatic pacemaker. Bilateral uniportal VATS (Video-assisted Thoracic Surgery) was performed and phrenic nerve function was tested and confirmed intra-operatively. An electrode was placed and attached to each phrenic nerve. A subcutaneous pouch was created to place the stimulus receptor. The diaphragm pacemaker was tested intra-operatively and good diaphragm contraction was visualized. The surgery underwent without any complications and reduction of the use of NIV was possible.

CONCLUSION

Surgical placement of a diaphragmatic pacemaker via uniportal VATS was performed safely and allowed a reduction of the use of the ventilator. Diaphragmatic pacing can be used in selected patients with bilateral diaphragm paralysis to allow a successful weaning of the ventilator.

RARE CAUSE OF LARGE INTRATHORACIC MASS

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Keywords: *intrathoracic mass, giant mediastinal tumor, lipoma*

BACKGROUND

The mediastinum is a site where a wide range of neoplasms may occur, hence imposing both diagnostic and therapeutic challenges. A giant mediastinal tumor (GMT), defined as occupying half of the hemithorax or having a diameter >10 cm, is extremely rare. In the literature, most studies of GMT are published as case reports with often rare histology meaning evidence is not always available to guide the utilization of neoadjuvant therapy, therefore upfront surgical resection, whenever possible, is the selected approach.

CASE REPORT

This case report presents a case of a 71-year-old male patient with a GMT who presented shortness of breath associated with chest pain. Imaging studies revealed a large heterogeneous mass (18x15x11cm) with areas of soft-tissue density in the anterior mediastinum causing extrinsic compression on the left lung. CT-guided biopsy was inconclusive, and the patient underwent surgical resection through a sternotomy to allow complete access to both pleural cavities and the mediastinum. The gross appearance of the tumor was yellow, soft with a cystic component and had some adhesion to chest wall and visceral pleura of the lung. By blunt dissection and manipulation, the tumor was completely separated and removed. The tumor had approximately 19x18x11 cm in size and 1.30 kg in weight. The patient had a rapid postoperative recovery and was discharged on the fifth day post-operation. The definitive histological examination revealed the presence of a spindle cell lipoma.

DISCUSSION

Tumors of mesenchymal origin and their malignant counterparts may occur in any of the mediastinal compartments. Though lipoma is a common entity, intrathoracic lipoma is not found frequently and represent <2% of all mediastinal tumors. Spindle cell lipoma is a slow-growing and rare variant of benign lipomatous tumor, accounting for approximately 1.5% of adipocytic neoplasms. The prevalence of this condition is highest among male individuals within the age range of 45 to 70 years. Due to similar radiographic characteristics, preoperatively differentiating these lipomas from other soft tissue tumors could be difficult in many cases. A lipoma with a spindle cell subtype may provide a diagnostic difficulty to radiologists, pathologists and surgeons since it is often presented as a lesion with little or no macroscopic or microscopic fat. This report highlights not only the importance of taking into consideration intrathoracic lipoma as a differential diagnosis when a large mass is identified in the thoracic cavity but also the diagnostic challenge of correctly identifying an extremely rare histology entity.

IATROGENIC ARTERIOVENOUS FISTULA FOLLOWING TRANSRADIAL CORONARY ANGIOGRAPHY: A CASE REPORT

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Keywords: *arteriovenous fistula, radial artery access, coronary angiography*

INTRODUCTION

Arteriovenous fistulas (AVFs) are abnormal connections between an artery and a vein.

They can be divided into two groups: acquired or congenital. Acquired fistulas can be subdivided into surgically created, as in for hemodialysis, or secondary to trauma, whether accidental or iatrogenic, such as those associated with venous and arterial puncture.

Recently, there has been an increase of percutaneous catheterization including coronary angiography (CAG) and percutaneous coronary intervention (PCI). Percutaneous access through the radial artery has gained popularity due to its favorable safety profile and reduced access site complications compared to femoral artery access.

We present a case of an AVF following radial artery access CAG, highlighting the clinical presentation, diagnostic evaluation, and subsequent management.

CASE REPORT

A 56-year-old male presented to the Emergency Department three months after undergoing CAG by percutaneous right radial access. The patient reported a painful warmth and bruit in the right forearm.

On examination, the patient's right-hand exhibited adequate perfusion, with a palpable radial and ulnar pulse. A thrill was palpable along the forearm.

An ultrasound Doppler examination revealed a 0.8mm AVF at the distal portion of the right forearm, connecting the radial artery and the radial (medial) vein, with high end-diastolic velocities in the proximal radial artery.

The patient was referred to the outpatient Vascular Surgery consultation. Due to no spontaneous resolution, elective surgical intervention was proposed for closure of the AVF.

Intraoperatively, in addition with radial AVF, multiple fistulous tracts were observed between radial artery and small venules and radial cephalic vein. Ligation of these AVFs was performed, eliminating the bruit.

The patient had an uneventful postoperative course and was discharged one day after the procedure.

DISCUSSION /CONCLUSION

AVF following radial artery access for CAG is a rare complication. Prompt diagnosis and intervention are crucial to prevent potential complications such as limb ischemia, steal syndrome or infection. In this case, successful closure of the fistula was achieved.

This case report emphasizes the importance of vigilance for potential complications following radial artery access CAG. Early recognition and appropriate management, such as surgical closure, can lead to favorable outcomes and prevent long-term complications.

SPONTANEOUS SPLENIC RUPTURE IN VASCULAR EHLERS-DANLOS SYNDROME: A CASE REPORT MANAGED BY COIL EMBOLIZATION OF THE SPLENIC ARTERY

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Keywords: *ehlers-danlos syndrome, splenic rupture, percutaneous vascular intervention*

INTRODUCTION

The Ehlers.Danlos Syndrome (EDS) is a group of rare inherited conditions that affect connective tissue. Among the different forms of EDS, type IV is the rarest and more deadly form and is also known as vascular EDS (VEDS) due to its association with spontaneous vascular rupture, especially the middle-sized arteries.

Managing such cases requires complex endovascular and surgical techniques.

We present a case of a patient with VEDS who suffered a spontaneous splenic rupture, creating a challenge in determining the most suitable treatment strategy.

CASE REPORT

A 34-year-old man, with VEDS, was admitted to the Emergency Department with sudden intense abdominal pain.

Although hemodynamically stable on admission, his condition deteriorated into shock within two hours.

Intravenous fluid resuscitation, massive transfusion and peripheral vasopressors were initiated. An EcoFAST examination showed moderate perisplenic and pelvic hemoperitoneum.

After stabilization, a contrast-enhanced CT scan was performed, revealing moderate-volume hemoperitoneum and active bleeding originating from the distal portion of the splenic artery, near the splenic hilum.

Following a multidisciplinary discussion involving General and Vascular Surgery, Interventional Radiology, and Intensive Care Medicine, it was decided, considering the patient's medical history, to proceed with an angiographic approach.

The patient underwent splenic artery embolization using pushable 0.018" and 0.035" coils. Subsequently, he was admitted to the Intensive Care Unit for close monitoring.

The patient experienced a gradual but consistent recovery. Control CT scans revealed a significant splenic infarction, with contrast agent uptake detected in a small portion of residual parenchyma in the lower pole of the spleen, measuring 35 x 34 mm, and no active bleeding.

The patient was discharged on the 27th day after completing the appropriate post-splenectomy immunization protocol.

DISCUSSION /CONCLUSION

Organ and arterial rupture are responsible for the majority of deaths in patients with VEDS.

Splenic rupture has been reported rarely in the literature, but it should be considered in the differential diagnosis of chest and abdominal pain in these patients.

Due to extreme vascular fragility, surgical outcomes in this patient group can be poor. Percutaneous interventions carry the advantage of minimal tissue trauma and can be life-saving in a clinical emergency. Nevertheless, the procedure is not without its complications, including splenic infarction, abscess, pancreatitis, paradoxal embolization and vascular access complications.

In this case we emphasize the importance of thorough assessment, considering each patient's unique condition and the treatment options offered by each hospital to determine the optimal treatment choice.

THE EFFECT OF SEX IS NOT CONSTANT OVER TIME AFTER CORONARY ARTERY BYPASS GRAFTING IN ELDERLY PATIENTS: 19-YEARS OF FOLLOW-UP

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Keywords: *CABG, sex, age, women, long-term survival, short-term outcomes*

INTRODUCTION

Patient´s sex has been found as a key element in the prognosis after CABG revealing conflicting results within the first 5-years of follow-up.

AIM

To evaluate the impact of sex on long-term survival after CABG, according to age subgroups and compare immediate post-operative outcomes.

METHODS

Longitudinal, retrospective, single-center study including consecutive patients who underwent primary isolated CABG between 2004-2014. Exclusion criteria: emergent or salvage surgeries or use of on-pump beating-heart. Included patients were divided according to age at surgery: ≤60, 60-70 and ≥70 years old. The primary outcome was all-cause mortality (February 2023) Median follow-up was 11 years, maximum of 19 years. We examined time-to-event outcomes using Kaplan-Meier curves, the log-rank test, multivariable Cox regression, and time-split analysis to assess the reliability and stability of the survival curves over time.

RESULTS

Among 3978 patients who underwent primary isolated CABG the percentage of women (W) in each age subgroup ranged from 13% to 27%. W were older (mean age 66.8±9.4 vs 63.0±9.9 years, p<0.001), had higher prevalence of arterial hypertension, diabetes mellitus, obesity and severe chronic kidney disease than men (M). M had more often peripheral artery disease, smoking habits and chronic obstructive pulmonary disease. Although the prevalence of 3-vessels disease was similar among both sexes (p=0.11), the median number of grafts was higher in M (2.8±0.9 vs W 2.5±0.9, p<0.001), probably at the expense of more bilateral internal mammary artery utilization (36% vs 24% p<0.001). Of note, completeness of revascularization was similar between sexes (55% vs 55%, p=0.97). At 5-, 10- and 15- years of follow-up, cumulative survival for M vs W were 89% vs 88%, 73% vs 68%, 57% vs 46%, respectively, Log Rank test p<0.001. Differences between sexes were not evident in the Log-Rank test, after stratifying by age (<60: p=0.24; 60-70: p=0.51; >70: p=0.62). Multivariable adjustment showed that patient's sex was not associated with long-term survival, irrespective of age subgroup (age ≤60: HR 1.27 [95%CI 0.84-1.93], p=0.3; age 60-70: 1.12 [0.88-1.41], p=0.4; age ≥70:0.97 [0.79-1.18], p=0.7). However, due to non-proportional hazards of sex in the subgroup ≥70 years, a time-split analysis was performed and showed that M had a lower risk after 10 years of follow-up (HR: 0.69 [0.49-0.97], p=0.034).

CONCLUSION

In this study, men older than 70 years who underwent isolated CABG had better survival than women of the same age during the longest follow-up period, i.e. only 10-years after surgery.

ACESSO FEMORAL PERCUTÂNEO PARA DISPOSITIVOS >12F - RESULTADOS DOS ÚLTIMOS 5 ANOS

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Keywords: *acesso; femoral; eco-guiado; percutâneo*

INTRODUCTION

O acesso femoral totalmente percutâneo na reparação endovascular da doença aneurismática da aorta tem vindo a ser progressivamente difundido e adoptado em todo o mundo, sobretudo depois da publicação da técnica "Preclose" descrita usando o dispositivo Perclose™ Proglide™/Prostyle™. Este estudo pretende reportar a experiência do Serviço com esta técnica nos últimos 5 anos.

MATERIALS AND METHODS

Entre Janeiro de 2017 e Dezembro de 2022 foram realizados 128 procedimentos aórticos endovasculares. O acesso totalmente percutâneo foi utilizado para a introdução de dispositivos com calibre de 12F a 22F. A técnica consistiu na punção eco-guiada da parede anterior da artéria femoral comum e colocação de 2 dispositivos Proglide™ ou Prostyle™ em cada acesso femoral antes da introdução das bainhas/endopróteses, e encerramento no final do procedimento. Os dados foram registados numa base de dados prospectiva e analisados retrospectivamente.

RESULTS

Foram utilizados 261 dispositivos para encerrar 129 acessos femorais, com uma taxa de sucesso técnico de 96,5%. Registaram-se 9 falências na técnica por vários motivos: calcificação arterial severa, obesidade, falência na progressão/introdução completa do dispositivo, hemorragia persistente após encerramento e compressão, e estenose pré-oclusiva pós-encerramento.

Uma sub-análise consoante o tipo de acesso femoral (exposição cirúrgica vs percutâneo), apenas em doentes com aneurismas da aorta abdominal infra-renal ou aorto-ilíacos tratados eletivamente por via endovascular, mostrou redução do tempo médio de internamento de 4,7 vs 3,1 dias.

CONCLUSION

O acesso femoral percutâneo eco-guiado para dispositivos de grande calibre, usando a técnica "Preclose", é seguro e reprodutível, com uma curta curva de aprendizagem, resultando em maior conforto para os doentes, redução dos tempos do procedimento e de internamento, e reduz os riscos de complicações associadas à exposição cirúrgica femoral como infecção, linforragia ou deiscência.

COARCTATION OF THE AORTA (COA): AN UNEXPECTED DIAGNOSIS

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CoA is one of the most common congenital heart defects (3 cases per 10,000 births). It can be divided into critical, the most frequent type with symptoms in the first months of life, and asymptomatic, which is characterized by the late onset of hypertension associated with the reduction of pulses in lower limbs, headache and claudication.

This case is about a 63-years-old woman with long term hypertension and fatigue for minor exertion. She was initially evaluated in a cardiology consultation for suspected heart failure. During this assessment, she underwent several tests, including a cardiac catheterization via the right radial artery, all of which yielded normal results without any alterations. When suspected of having pulmonary thromboembolism, she underwent a chest CT scan, which unexpectedly diagnosed coarctation of the descending aorta. After she was referred to the Vascular Surgery consultation, where observation revealed the absence of pulses in the lower limbs.

A few weeks later, she was admitted to undergo endovascular repair. She underwent the procedure through femoral percutaneous access (12 Fr) with preclose technique, with pre-dilatation of the stenosis and implantation of a Bentley® BeGraft Aortic 14x35mm stent-graft. At the end of the procedure, normal femoral pulse was restored bilaterally. At 4 months follow-up, the patient had an improvement of tiredness and was with a lower dosis of antihypertension medication.

Despite of the low incidence of CoA in adults, we must maintain a high suspicion. The untreated CoA can lead to a higher risk of saccular aneurysms and heart failure.

REENTRY DEVICES: A BAILOUT SOLUTION

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The increasingly complex nature of the chronic total occlusions CTO has driven the development of several baylout endovascular techniques. In most cases, the difficulty is rarely linked to crossing the length of disease, but rather to the safe re-entry into the target lumen distally.

This case is about a 89-year-old man with a history of thrombocytosis (JAK2+), chronically anticoagulated. Admitted on April/23 with critical limb-threatning (CLTI) ischemia of the right lower limb with wet gangrene of the hallux.

The baseline angiography showed an occlusion of the SFA from the middle 1/3 of the thigh, with rehabilitation at PopA P1 and run off through the peroneal. After multiple unsuccessful intra-luminal and subintimal attempts to cross the lesion antegradely, it was decided to end the procedure. Subsequently, US was performed, which demonstrated a distal APop dissection image.

He underwent angiography again, where another antegrade recanalization of the SFA via intraluminal and subintimal routes was attempted without success. An ultrasound-guided retrograde access at P1 was achived, but the retrograde recanalization failed. It was decided to use the REPOB technique (Re-Entry by Puncture of the Outback into the Balloon), with Cordis Outback through a 6F contra-lateral femoral access which punctured a Biotronik Passeo-18 4x100 balloon inserted sheathless from the retrograde P1 access, achieving reentry into the true lumen distally. Subsequently, hemostasis of the retrograde acess was made with an Abbott Armada 18 5x100 balloon for 5 minutes, with no hemorrhage on the control angio. Afterwards, angioplasty and stenting of the SFA and APOP were performed using a Biotronik Pulsar 18 stent. In the end, a favorable angiographic outcome was achieved, with both SFA and PopA patent, with run-off through the peroneal A and without dissection image of the APOP.

During hospitalization, he had a palpable popliteal pulse and underwent amputation of the hallux, with successful healing.

This case highlights the importance of different endovascular bailout techniques, including re-entry catheters, as they facilitate the successful endovascular treatment of CTOs that would otherwise necessitate open bypass surgery.

GOING CRITICAL IN AORTIC DISSECTION: A MUTUAL CLINICAL CASE BETWEEN CARDIAC AND VASCULAR SURGERY

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Keywords: *aortic dissection, rupture, false lumen, TEVAR, petticoat*

INTRODUCTION

Aortic dissection is a life-threatening vascular emergency, with high in-hospital and follow-up morbidity and mortality rates. Earlier studies have identified long-term predictors of morbidity and mortality in Acute Aortic dissection (AAD) (including old age, female sex, atherosclerosis and impaired renal function), all of which may be more representative of a patient's high-risk clinical background than the severity and nature of the AAD itself. Several reports have indicated that the status of the false lumen is associated with risk of poor outcomes. Residual patency of the false lumen in AAD has been associated with aortic expansion and death, whereas patients with complete thrombosis of the false lumen have shown improved outcomes. Residual patent false lumen is independently associated with poor long-term survival in AAD.

CLINICAL CASE

A 42 years-old female patient, with a past medical history of AAD type A (to the infrarenal abdominal aorta) in the puerperium treated with a supra coronary aortic repair technique three months earlier, presented herself in the energency departament with a thorax subcutaneous tumefaction. The CT scan showed a aortic arch pseudoaneurysm with starting point in rupture of the residual false lumen of the dissection. With the patient on table, the false lumen rupture was proximally to the distal anastomosis in the previous prostheses do the ascending aorta. The patient underwent a frozen elephant trunk (FET) procedure with an hybrid E-vita Open prostheses and also a bovine pericardial patch repair.

The immediate postoperative coursed with hemorrhagic shock with múltiple red blood cell transfusion, fluid resuscitation, vasopressors and inotropes.

An urgent CT scan was performed and the team of Vascular Surgery was approached to exclude the rupture of the residual false lumen and the patient was submitted to a TEVAR with Petticoat tecnhique (deployment of Zenith Alpha thoracic endovascular graft proximal component ZTA-P-36-161 and Zenith Dissection endovascular system ZDES-46-185) with immediate hemodynamic stabilization. The patient was discharged within 35 days due to mediastinitis with isolation of a Methicillin-resistant Staphylococcus aureus (MRSA) and treated with linezolid.

CONCLUSION

Awareness and timely diagnosis of rupture of residual patent false lumen in AD is necessary to ensure prompt intervention to prevent life loss. The false lumen status influences outcomes in AAD. Residual patent false lumen is independently associated with poor survival in AAD. A multidisciplinary approach and teamwork between Cardiac and Vascular Surgery improve performance and surgical outcomes.

BILATERAL VERSUS SINGLE INTERNAL MAMMARY ARTERY IN WOMEN: LONG-TERM SURVIVAL AFTER CORONARY ARTERY BYPASS GRAFTING

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Keywords: *CABG, women, bilateral internal mammary artery, single internal mammary artery, long-term survival, short-term outcomes*

INTRODUCTION

In spite of the neutral results from the ART randomized controlled trial, observational studies have reported better survival after bilateral internal mammary artery (BIMA) vs single internal mammary artery (SIMA) coronary artery bypass grafting (CABG). However, for some specific subgroups, like women patients, more doubts remain about BIMA benefits.

AIM

To compare long-term survival and early results in women after SIMAvsBIMA.

CONCLUSION

Longitudinal, retrospective, single-center study including consecutive women with at least 2 left-coronary system (LCS) vessel disease who underwent primary isolated CABG with at least 1 internal mammary artery (IMA) conduit and a minimum of 2 conduits targeting the LCS, between 2004-2014. Emergent or salvage surgeries, on-pump beating-heart, BIMA in which 1 IMA targeted the right coronary artery territory were excluded. The primary outcome was all-causes mortality (checked on February 2023). Time-to-event outcomes were studied using Kaplan-Meier Curves, Log-Rank test and multivariable Cox Regression. Median follow-up was 11 years, maximum of 19 years.

RESULTS

From 539 women selected for this study, BIMA CABG was performed in 30%. SIMA patient's were older (mean age 68.95±8.39vs62.75±9.82 years, p<0.001), but the prevalence of cardiovascular risk factors were similar between groups (arterial hypertension, p=0.693; dyslipidemia, p=0.111; diabetes mellitus, p=0.462 and obesity, p=0.109). Peripheral artery disease (p=0.707), left ventricular dysfunction (p=0.727), cerebrovascular disease (p=0.730), active smoking habits (p=0.05) and chronic obstrutive pulmonary disease (p=0.537) were also similar. Severe chronic kidney disease (27%vs14%, p<0.001) and Canadian Coronary Society - grade IV (74%vs63%, p=0.011) were more frequent in SIMA group. In the univariable survival analysis, SIMA had worse survival results than BIMA (Log Rank test p<0.01). At 5-,10- and 15- years of follow-up, cumulative survival for SIMAvsBIMA were 88%vs90%, 68%vs75%, 42%vs58%, respectively. However, after adjusting for clinical covariates, BIMA was not associated with long-term survival (HR[95%CI]:1.09 [0.75-1.59], p=0.6). Most post-operative outcomes were similar between groups, with the exception of atrial fibrillation (25%vs16%, p=0.031) and time to discharge (median days[min-max]: 7[4-128] vs 7[4-59]) which were higher in SIMA. No differences were found in immediate reexploration of thorax (sternal infection: 0.3% SIMA vs 1.2% BIMA, p=0.219; bleeding: 1.6% SIMA vs 0.6% BIMA, p=0.681). Redo CABG occurred in 1 SIMA and 1 BIMA women, at 41 and 84 months of follow-up, respectively.

CONCLUSION

In this study, revascularization with BIMA seems to be safe in women and provides similar short- and long-term results compared to SIMA. More studies are needed to establish the best approach for women.

A PHYSICIAN-MODIFIED ENDOVASCULAR GRAFT IN AN URGENT HIGH-RISK PATIENT

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Keywords: *thoracoabdominal aneurysm, physician-modified endovascular graft*

INTRODUCTION

Emergency treatment of thoracoabdominal aortic aneurism is challenging and open repair is not a good solution on a high-risk patient. Custom-made stent graft requires 6-8 weeks to be manufacturing so a physician-modified endovascular graft can be reasonable in some cases.

AIM

We report a case of an endovascular repair of a thoracoabdominal aortic aneurysm by a physician-modified endovascular graft (PMEG) with four fenestrations in an urgent, high-risk patient unfit for open surgery.

MATERIALS AND METHODS

A patient of 92 years old male with hypertension, atrial fibrillation, and bilateral hip prosthesis. This patient had low back pain and asthenia with 3 months of evolution and a CT scan that showed a thoracoabdominal aneurysm with posterior wall destruction. Additionally had median arcuate syndrome and ostial renal diseased arteries. Due to the urgency of treatment we decided to use a PMEG with 4 fenestrations and parallel stents for visceral vessels. The operative time was 240 min including the device modification time.

RESULTS

No complications occurred in the early postoperative period. With a follow-up period of 5 months the patient is alive and with a minor type III endoleak.

CONCLUSION

In high risk patiens with complex aortic aneurysms PMED can be a reasonable treatment.

SURGICAL MANAGEMENT OF CONGENITAL THORACIC DISORDERS: A 15-YEAR CENTER EXPERIENCE

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Keywords: *congenital, thoracic malformation, bronchogenic cyst, congenital pulmonary airway malformation, pulmonary sequestration, congenital lobar emphysema*

INTRODUCTION AND OBJECTIVES

Congenital thoracic disorders represent a spectrum of embryonic lung bud development abnormalities which may impact breathing capacity and quality of life. We aim to evaluate the impact of surgery in the treatment of 4 major congenital conditions.

METHODS AND RESULTS

We performed a retrospective cohort analysis of patients who underwent surgical treatment for congenital respiratory malformation pathologies, from 2007 to 2022.

RESULTS

Over the 15-year period, 33 patients were treated, evidencing a male predominance of 55%. 22 patients (67%) were asymptomatic. The recurrence of respiratory infections was the most common clinical presentation (18%, n=6). In 13 patients (39%), diagnosis was made through fetal ultrasonography.

This study encompassed 13 patients with pulmonary sequestration (39%), 11 patients with bronchogenic cysts (33%), 7 patients with congenital pulmonary airway malformation (CPAM) (21%) and 2 patients with congenital lobar emphysema (6%).

Considering solely lung malformation conditions (pulmonary sequestration, CPAM and lobar emphysema), we account for 22 patients with a median age of 3 [1-67] years. Surgery comprised bilobectomy (9%), lobectomy (77%), lobectomy with wedge resection (5%), segmentectomy (5%) and wedge resection (5%). In 55% of patients, surgery was performed on the left lung.

In terms of bronchogenic cysts, 11 patients considered with a median age of 19 [14-66] years. There were 1 hilar, 1 intrapulmonary and 9 mediastinal, of which 4 were paraesophageal, 4 were subcarinal and 1 was miscellaneous (transdiaphragmatic). In all patients, complete resection was achieved (the intrapulmonary cyst requiring middle lobe lobectomy).

The median time between the pathological diagnosis and surgical treatment was 20,0 months [1-84 months]. Surgery was conducted by thoracotomy in 61% of patients, VATS in 33% and RATS in 6%. The conversion rate to open surgery was 6% (n=2).

The median drainage time was 3 [1-40] days and median hospital stay was 4 [1-41] days. Major postoperative complication rate was 9% (Clavien Dindo III-V) and included replacement of pleural drainage, surgical hemostasis and pneumostasis.

The median follow-up time by Thoracic Surgery was 12 [1-66] months. There were no cases of mortality. Ensuing, 94% of patients experienced clinical improvement after surgery.

CONCLUSION

Early diagnosis of congenital thoracic malformations increased considerably with the improvement in imaging technology, especially in prenatal screening. Treatment may include expectant conservative treatment. However, in selected cases, surgery may play an important role in symptomatic control and prevention of disease progression.

ROBOTIC-ASSISTED LUNG SEGMENTECTOMY: A VIDEO SURGICAL OVERVIEW

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Keywords: *lung cancer, lung segmentectomy, robotic-assisted thoracic surgery*

INTRODUCTION

The role of segmentectomy in the surgical treatment of lung cancer has always been controversial. Recently, new controlled trials have demonstrated the efficacy and non-inferiority of segmentectomy in patients with non-small cell lung carcinoma stage IA (peripheral lesions with diameter $\leq$ 2 cm and consolidation-to-tumor ratio $>$ 0,5). Therefore, segmentectomy is now considered the standard surgical treatment in this subset of patients, preserving a higher lung function and comparable overall survival to lobectomy. The robotic-assisted approach allows for a better technical accuracy and facilitates surgical dissection as well as allowing for the application of imaging techniques like the use of indocyanine green for an improved definition of the lung segments.

OBJECTIVES

The aim of this work is to exhibit a video overview of a robotic-assisted right apical segmentectomy (S1) performed in our institution.

METHODS AND RESULTS

We present the case of a 78-year-old female with known history of dyslipidemia and ocular glaucoma and no previous smoking habits. The patient kept a regular follow-up with radiologic evaluation since the identification of two pulmonary lesions in 2018. The most recent CT scan in 2022 revealed the growth of a ground-glass opacity located in the upper right lobe, from 0,5 to 1,2 cm. The patient remained asymptomatic and with no abnormalities on physical examination. PET and CT scans did not showcase any distant metastasis. Pulmonary function tests confirmed an adequate respiratory capacity, with FEV1 of 129% and DLCO of 78%. Echocardiogram showed preserved systolic heart function. The clinical case was discussed in a multidisciplinary meeting and biopsy of the lesion was determined to be inaccessible by endobronchial or transthoracic methods. Final clinical staging was T1bN0M0. The patient underwent a robotic-assisted right apical segmentectomy and lymphadenectomy. The procedure had a duration of 2 hours and 15 minutes and elapsed without complications and minimal blood loss (50 mL). Pleural drainage removal and hospital discharge took place on the first post-operative day. Pathology examination disclosed fibrosis and parenchymal inflammation but no evidence of malignant tissue. Three months after surgery, the patient is asymptomatic and displays no irregularities on the CT scan.

CONCLUSION

This case highlights the prominent dual role that surgery may acquire in the diagnosis of suspected pulmonary lesions as well as in the primary treatment of confirmed cases of early-stage lung carcer. RATS is a minimal invasive technique with established advantages in terms of surgical accuracy, improved technique, and low morbidity rate.

ROBOTIC-ASSISTED THORACIC SURGERY (RATS) PROGRAM: 1-YEAR CENTER EXPERIENCE

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Keywords: *lung cancer, mediastinal tumor, diaphragmatic hernia, minimally invasive surgery, robotic-assisted thoracic surgery*

INTRODUCTION AND OBJECTIVES

Robotic-Assisted Thoracic Surgery (RATS) has expanded the field of minimally invasive surgery. Considered an effective surgical approach, RATS allows for improved dissection precision and technical accuracy, a low morbimortality rate and short hospitalizations. The primary endpoint of this study is to report our experience in robotic-assisted thoracic surgery.

METHODS

We retrospectively analyzed all cases of RATS in our institution since the introduction of the surgical program in March of 2022 until July of 2023..

RESULTS

We accounted 53 patients, with female predominance (68%) and mean age of 59,1 (±17,7) years. There were 33 (62%) procedures for mediastinal lesions, 19 (36%) lung surgeries and 1 (3%) case of a diaphragmatic hernia correction.

Considering solely the mediastinal pathologies, 27 lesions were located in the anterior mediastinum and 6 in the posterior mediastinum. Pathology revealed 8 were malignant thymomas (24%), detailing 3 tumors in stage I, 3 in stage IIa and 2 in stage IIb (Masaoka-Koga classification). There were, additionally reported, 10 cases of thymic hyperplasia and 3 cases of ectopic parathyroid adenomas, among other pathologies. 7 patients diagnosed with Myasthenia Gravis underwent thymectomy. In turn, in the posterior mediastinum, 3 schwannomas, 2 bronchogenic cysts and 1 myelolipoma were removed. Merely 61% of these patients required a pleural thoracic drain after surgery.

Regarding suspected oncologic lung disease, all tumors were classified preoperatively as stage I (8th TNM classification), of which 84% were stage IA. 11 patients (58%) underwent lobectomy and 8 had segmentectomy. Complete resection was accomplished in 95% of cases. Pathology examination showed 15 cases (79%) of non-small cell lung carcinomas and 1 case of breast cancer metastasis while, in 3 patients, no malignant tissue was evidenced. As such, final staging detailed 9 tumors in stage IA, 2 in stage IB, 3 in stage IIB and 1 tumor in stage IIIA (pT1aN2R0). Upstaging was registered in 4 patients (21%).

The procedures showcased a mean duration of 135 (±64,5) minutes and median intraoperative blood loss of 20mL. The median drainage time was 1 [1-5] day and median hospital stay was 1 [1-7] day. The conversion rate to open surgery was 2%. No major complications (Clavien Dindo III-V) or mortality was evidenced.

CONCLUSION

The 1-year review of our RATS program, the first available in the public health system, showcases promising results. RATS is established as a safe and effective surgical approach.

THE ASSOCIATION BETWEEN PREOPERATIVE ANEMIA, BLOOD TRANSFUSION NEED, AND POSTOPERATIVE INFECTION IN ADULT CARDIAC SURGERY - A SINGLE CENTER EXPERIENCE

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Keywords: *anemia, blood transfusion, postoperative infection*

INTRODUCTION

Blood transfusion is considered to be one solution for anemia and blood loss during cardiac surgery, though it can influence patient outcome.

OBJECTIVES

Our aim was to identify the prevalence of preoperative anemia and transfusion rates in patients undergoing cardiac surgery and to evaluate the effect of blood transfusion on post-operative infection in cardiac surgery patients.

METHODS

This was a single center, retrospective, cohort study, performed in a university hospital. We evaluated every patient undergoing cardiac surgery for the presence of preoperative anemia and the number of packed red cells transfused in the perioperative period, between October and December 2022. The main variables included patient characteristics, operative characteristics and 30-day postoperative infection (pneumonia, urinary tract, sepsis, wound infection).

RESULTS

A total of 178 patients were included. Preoperative anemia was present in 55 (30.9%) patients. Total transfusion rate of packed red blood cells was 10.1% in the intraoperative period and 20.8% in the postoperative period. Transfused patients had a significantly higher infection rate at 22.2% compared to 6.3% in non-transfused patients [$x2(1,178)=5.7$, $p=0.039$] in the intraoperative period, and a significantly higher infection rate at 21.6.% compared to 4.3% in non-transfused patients [$x2(1,178)=12.1$ $p=0.002$] in the postoperative period.

CONCLUSION

Based on our single center study, preoperative transfusion significantly increases the likelihood of patients undergoing cardiac surgery being transfused, which is associated with a higher risk of infection. Optimal utilization of blood products is an important quality indicator and identification of patients at higher risk of transfusion prior to cardiac surgery can help in implementing perioperative strategies to minimize the need for transfusion.

THE INCIDENCE OF EUGLYCEMIC DIABETIC KETOACIDOSIS ASSOCIATED WITH SODIUM-GLUCOSE COTRANSPORTER-2 INHIBITORS AFTER CARDIAC SURGERY - A SINGLE CENTER STUDY

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Keywords: *euglycemic diabetic ketoacidosis, sodium-glucose cotransporter-2 inhibitors, cardiac surgery*

INTRODUCTION

One of the newer classes of therapies for type 2 diabetes mellitus are sodium-glucose cotransporter-2 inhibitors (SGLT2i). They offer renal and cardiovascular protection and there is growing evidence to support their use for the management of heart failure. Numerous side effects of SGLT2i have been reported, one of the most serious of which is euglycemic diabetic ketoacidosis (eDKA).

OBJECTIVES

We aim to investigate the frequency of both SGLT2i use and eDKA development among patients who underwent elective cardiac surgery. Second, sternal wound infection rates are presented.

METHODS

This was a single center, retrospective, transverse study, performed in a university hospital. We evaluated electronic data to identify all patients between May 1st and July 31st, 2023, who underwent elective cardiac surgery and had been prescribed a SGLT2i before these procedures. Clinical documentation and laboratory data were reviewed to determine the patients with eDKA.

RESULTS

Among 228 patients, 37 (16.2%) had been prescribed with SGLT2i. A total of 12 (32.4%) cases were noted for increased serum ketone bodies. eDKA occured in 5 patients (13.5%). Of these, 11 patients stopped their SGLT2i one day before the procedure. Just one patient stopped his medication at least 48 hours before the procedure. The average ICU length of stay was 3,8±1,9 days. Wound infection presented in 3 patients.

CONCLUSION

Postoperative eDKA occurred in 13.5% of patients on an SGLT2i prior to cardiac surgery. A reduction in SGLT2i-associated eDKA can be mitigated by the appropriate preoperative discontinuation of the medication, clinical awareness, and early investigation to diagnose the condition, with emphasis on serum ketones. Future quality improvement initiatives are needed to assist in reducing eDKA in patients taking SGLT2 inhibitors in the perioperative surgical setting.

ENDOVASCULAR REPAIR OF SPLENIC ARTERY ANEURYSM: A COMPELLING CASE REPORT

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Keywords: *Splenic artery aneurysm, Endovascular treatment*

Splenic artery aneurysms (SAA), though rare, represent a critical and potentially life-threatening medical condition. It is the third most prevalent type of abdominal aneurysm, following aortic and iliac artery aneurysms. SAA can manifest as true aneurysms or pseudoaneurysms, with their subtle and insidious nature often making diagnosis challenging. Frequently, identification relies on the observation of circular calcified shadows on x-rays. While some SAAs remain asymptomatic, others may cause symptoms such as upper left quadrant abdominal pain, the presence of a pulsating mass in the same region or, in more severe cases, hypotensive shock resulting from aneurysm rupture. Timely intervention becomes for rapidly enlarging SAAs, those associated with symptoms or cases of rupture. Treatment modalities include open or laparoscopic surgery or endovascular procedures.

The aim of this work is to present a clinical case of a patient diagnosed with a SAA exhibiting mild symptoms and undergoing endovascular treatment.

A 42-year-old male patient complained of pain in the upper left quadrant. On physical examination, no abnormalities were noted. The complaints prompted a CT scan, which revealed a splenic artery aneurysm in the middle third of the vessel measuring 38x32 mm, without evidence of complications. In this context, with an aneurysm measuring over 2 cm, endovascular treatment was proposed. The patient underwent splenic aneurysm embolization with coils via brachial approach under local anesthesia. Angiography at the end of the procedure showed a successful outcome. The procedure and the postoperative period proceeded uneventfully, and the patient was discharged on the first

postoperative day. A CT scan was performed one month after the procedure, revealing a spleen with preserved dimensions and homogeneous density and the coils from the procedure in situ. The coils created an artifact that hinders the assessment of the splenic artery. An ultrasound doppler showed no signs of reperfusion of the aneurysm sac, with the sac occluded by coil and thrombus and good preservation of the lumen and distal circulation of the splenic artery.

During the follow-up appointment, the patient remained asymptomatic with complete resolution of the abdominal pain.

This endovascular technique using coils allowed for the resolution of the patient's clinical condition, prevented aneurysm growth and potential complications, and preserved spleen function without evidence of associated splenic infarction.

THORACIC OUTLET SYNDROME: A COMPREHENSIVE CLINICAL CASE STUDY

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Keywords: *Thoracic outlet syndrome, vein thrombosis, surgical approach*

Thoracic outlet syndrome (TOS) encompasses a spectrum of symptoms arising from the compression of the neurovascular bundle located behind the clavicle. TOS can be categorized into three distinct subtypes based on the primarily affected structure: neurogenic (nTOS), venous (vTOS) and arterial (aTOS), caused by compression of brachial plexus, subclavian vein and subclavian artery, respectively. nTOS represents the predominant subtype accounting for 95% of cases, while vTOS accounts for approximately 3%.

The aim of this work is to present a clinical case of a patient diagnosed with vTOS submitted to surgical treatment.

A 25-year-old male patient presented to the emergency department with progressive left upper limb pain and swelling, without history of trauma. On physical examination, he exhibited extensive edema of the limb with signs of collateral venous circulation. A CT scan was performed revealing a partially occlusive 10x9 mm thrombus in the proximal third of the left subclavian vein. Additionally, a Doppler ultrasound demonstrated intraluminal hypoechoic material adherent to the vessel wall, causing incomplete compressibility and attenuated spontaneous flow in the subclavian and axillary veins. Contralateral provocative maneuvers to induce compression of the thoracic outlet resulted in flow turbulence and increased velocities within the contralateral subclavian vein, indicative of extrinsic compression by adjacent structures. The patient was medicated with low molecular weight heparin. Subsequently, he underwent catheter-directed thrombolysis of the subclavian and axillary veins. Thrombolysis was performed via catheter for 23 hours, and interrupted due to an episode of hematuria. This was self-resolved after suspension of thrombolysis. Venography revealed apparent stenosis localized to the costo-clavicular compression site with residual thrombus. Patient was discharged from hospital with oral anticoagulation and a Doppler control was performed thirty days after with complete repermeabilization of the previously thrombosed segment. Surgical treatment was recommended and the patient was submitted to anterior scalenectomy and partial excision of the first rib through a supraclavicular approach. The patient was discharged on the fourth postoperative day and the anticoagulation therapy was permanently stopped . The postoperative period was complicated by self-limited lymphorrhagia and late wound infection, which resolved with antibiotic therapy and wound care. At the follow-up appointment, the patient remained asymptomatic. With this surgery, we enable the patient to achieve complete resolution of symptoms and a potential return to normal life, allowing for a quicker cessation of anticoagulation since the thrombosis-causing factor has been eliminated. Therefore, in suitable patients with low surgical risk, surgical correction of vTOS should be considered.

THIRD-DEGREE ATRIOVENTRICULAR BLOCK AND ASYSTOLE AFTER LUNG RESECTION: A RARE COMPLICATION

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Keywords: *Lung resection, atrioventricular block, postoperative complications*

INTRODUCTION

Lung cancer remains the leading cause of malignancy-related deaths worldwide. Nowadays, surgical resection is the optimal therapeutic option for early-stage operable NSCLC. Despite significant advances in recent years related to anesthetic and surgical techniques and the prevention and management of complications related to the procedure, cardiopulmonary complications remain major causes for postoperative mortality and morbidity.

CASE REPORT

We present a case of a 45 year-old female, never-smoker, diagnosed with lung atypical adenomatous hyperplasia proposed for right middle lobectomy. She had a preceding general anesthesia for saphenectomy without complications and a history of drug allergy to penicillin. Patient had no history of cardiac disease and preoperative exams were all normal, including a resting 12-lead electrocardiogram (ECG) with normal sinus rhythm. The patient underwent surgery via right video-assisted thorascoscopy. The procedure was uneventful and performed in 45 minutes. On the first post-operative day patient developed a third-degree atrioventricular block followed by 6 seconds pause. Pharmacological treatment was instituted and patient was proposed for implementation of a permanent pacemaker in AAIR< >DDDR mode. Implantation occurred on the third post-operative day, without complications. The remaining postoperative course was uneventful and the patient was discharged home on the sixth post-operative day.

CONCLUSION

It is the objective of the authors to report and highlight this rare and potencial fatal complication of lung resection. Patients in the postoperative period of major thoracic surgery require intensive cardiorespiratory monitoring, especially within the first twenty four hours after surgery.

AXILLOFEMORAL BYPASS GRAFT INFECTION – A DIFFICULT ENTITY TO MANAGE: A REPORT OF TWO DIFFERENT APPROACHES

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Keywords: *axillofemoral bypass, vascular graft infection*

INTRODUCTION

The axillo(bi)femoral bypass (AFB) is an extra-anatomical surgical alternative to direct arterial reconstruction in patients with aortoiliac arterial occlusive disease considered high risk for direct aortic repair, aortic graft or native aorta infections or patients with a hostile abdomen. AFB graft infection is a rare complication with difficult management due to paucity of subsequent options for revascularisation.

AIMS AND METHODS

We aimed to describe different revascularisation strategies for two cases of AFB infection, that included an obturator bypass and a femorofemoral crossover bypass with autologous femoral vein.

RESULTS

A 52-year-old male with previous history of left axillobifemoral bypass due to acute aortic thrombosis was admitted with a third episode of AFB graft thrombosis. The patient presented with acute bilateral limb ischemia (Rutherford grade IIb on the right limb and grade III on the left) and underwent urgent surgical graft thrombectomy and left transfemoral amputation. Post-operative period was complicated with left inguinal wound dehiscence with graft exposure, for which the patient underwent ligation and left AFB limb explantation. Following 2 weeks of directed antibiotherapy, the patient underwent total AFB graft explantation, aorto-right superficial femoral artery bypass with tunneling through the obturator foramen and superficial-deep right femoral artery interposition with great saphenous vein (figure 1). Graft cultures were positive for Methicilin-resistent S. epidermidis and Candida albicans for which directed antibiotherapy was followed. A left transfemoral amputation wound dehiscence required surgical debridement and vacuum assisted closure.

An 82-year-old male with previous history of EVAR+IBD and right-left femorofemoral crossover bypass due to left limb EVAR branch thrombosis was admitted with crossover bypass graft infection with right inguinal graft exposure. He was submitted to crossover graft excision, left axillounifemoral superficial bypass and right common femoral artery plasty with bovine pericardium patch. Two months later, the patient was readmitted for left inguinal abscess with AFB graft infection. The patient then underwent AFB explantation and new right-left femorofemoral crossover bypass with composite conduit consisting of inverted superficial femoral vein and a small segment of bovine pericardium tube. Intra-operative cultures were negative. The patient was kept on empiric broad spectrum antibiotics during hospital stay and resolution of the infection was achieved.

CONCLUSIONS

AFB graft infection is a difficult clinical condition to manage and requires graft excision, antibiotherapy and revascularisation preferably through another anatomical location. The described cases show different surgical approaches in its management, adapted to clinical presentation and previous surgical and medical history of the patients.

INTRAPULMONARY GALLSTONES MIMICKING A LUNG NEOPLASIA

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Keywords: *Intrapulmonary gallstone, Gallstone ectopia, Laparoscopic cholecystectomy, Hemoptysis, Thoracic actinomycosis*

INTRODUCTION

Intrapulmonary gallstones are rare and frequently misdiagnosed. Lost gallstones is a possible complication of laparoscopic cholecystectomy. Its sequelae are mainly abdominal but, although rare, thoracic complications do exist. Most arise from a subphrenic abscess that erodes though the diaphragm. From there, the gallstones can cause empyema, lung abscess, hemoptysis, cholelithoptysis, broncolithiasis, among other entities, and there can even be suspicion of a lung neoplasia.

CASE DESCRIPTION

A 61-year-old female presented with fever and hemoptysis. There was a history of a complicated laparoscopic cholecystectomy five years prior, followed by multiple endoscopic retrograde cholangiopancreatographies and placement of a biliary prosthesis. Three years after the cholecystectomy a laparoscopic biliodigestive anastomosis was performed, that was complicated with a hepatic abscess and a right pleural empyema.

A CT scan showed an irregular and microlobulated lesion in the right upper lobe (RUL), raising suspicion for primary lung neoplasm. There was also an area of thickening of the parietal pleura near the right lower lobe (RLL). On a PET-CT the RUL lesion had moderate 18-FDG avidity. The transthoracic pulmonary biopsy showed fibrosis and inflammatory infiltration.

The patient was submitted to VATS surgical biopsy of the RUL lesion. During the wedge resection, there was a stapler malfunction, leaving an area of unstapled lung parenchyma and a foreign body lying in the parenchyma. There was a pleural node near the RLL. Pathology of the RUL lesion showed a nodular area with signs of organizing pneumonia and two gallstones in the bronchial tree. The pleural node had extensive fibrosis, signs of an abscess and biliary pigment. Actinomyces spp was present in both specimens.

CONCLUSION

Gallstones are almost always found in the right lower lobe, although there are two cases reported of gallstones in the middle lobe. The case we present is notable for the location of the gallstone, as to the best of our knowledge this is the only case reported where the gallstone is in the RUL.

It is important to make sure that no gallstones are lost during cholecystectomy. In a patient with hemoptysis, empyema or a lung abscess or mass and a history of cholelithiasis, lost gallstones should be considered as a possible etiology.

RESULTS OF 7 YEARS OF ROBOTIC THORACIC SURGERY

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Keywords: *Thoracic Surgery, Robotic Surgery*

INTRODUCTION

Minimally invasive thoracic surgery has progressed in the last decades. Video-assisted thoracic surgery (VATS) offered important benefits over thoracotomy in terms of less postoperative pain, decreased incidence of postoperative complications combined with a quicker return to work. The introduction of Robotic Surgical System has helped overcome certain limitations of VATS. Three-dimensional (3D) vision and intuitive movement using articulated instruments allowing thoracic surgeons to perform minimally invasive thoracic procedures more efficiently.

OBJECTIVES

The objective of this study is to analyze the results of the first seven years of Robotic thoracic surgery in our hospital.

METHODS

We retrospectively analyzed all cases of Robotic Thoracic Surgery in our institution since the introduction of the surgical program in June of 2026 until August of 2023.

RESULTS

In this period, we started 160 surgeries with a robotic approach. There was a conversion ratio of 1,2% (n=2).

The mean age of our patients was 63±10,9 years old [21-85].

Of the 158 completed surgeries the vast majority, 84,8 % (n=134), were lung surgery. The remaining 15,2 % (n=24) include surgery of the anterior mediastinum (Thymectomy for thymoma and/or miastenia gravis) (n= 18) and other procedures (n=6) such as excision of lesions of the posterior mediastinum, excision of esophageal diverticulum, removal of pleural lesions and dissection of intercostal nerves for re-innervation of the brachial plexus.

For the non-pulmonary surgery, the mean drainage time was 2±0,7 days and the length of stay 3,2± 0,8 days.

Among the 134 lung surgeries, 50% (n=67) were segmentectomies, 47 % (n=63) lobectomies and finally 3 % (n=4) wedge resections, all of them with lymph node dissection. The mean drainage time for these surgeries was 3±1,9 days [1-15] and the length of stay 4± 2,7 days [3-25].

As expected, 83,6% (n=112) were surgeries for primary lung cancer and mostly for adenocarcinoma of the lung (n=88), but there were also surgeries for benign disease (11,9%; n=16) such as hamartoma, and surgery for metastasis (4,5%; n=6)

No unit of blood was used intraoperatively. The 30-day mortality rate was 0%.

In conclusion, robotic thoracic surgery is safe and can be adopted routinely in the regular practice of thoracic surgery.

IATROGENIC INJURY OF THE THORACIC AORTA – WHEN A SCREW GOES TOO FAR

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Keywords: *TEVAR, Thoracic aorta, Iatrogenic injury*

INTRODUCTION

Aortic injury is a rare but potentially life-threatening complication of spinal surgery, ranging from aortic impingement detected in follow-up exams to acute perforation.

Most of these injuries are not immediate and occur after chronic microtrauma of the pulsating aorta against a metallic implant, eventually leading to aortic wall thinning and erosion.

Although the need for urgent aortic repair is undisputed in cases of perforation, uncertainty remains regarding the cases of aortic impingement with no perforation.

We present a case of thoracic aortic stent-graft placement for safe removal of a malpositioned pedicle screw in a patient with history of traumatic vertebral fracture.

OBJECTIVES

A 39-year-old female patient presented to our emergency department due to thoracic spine trauma caused by a traffic accident. She complained of severe dorsal pain and right lower limb plegia. A cervicothoracolumbar CT scan showed a vertebral fracture in D4-D5 level. She was submitted to an urgent open reduction of the fracture and spine stabilization through a posterior approach by transpedicular fixation using 5.5mm and 6.5mm screws (from D2 to D7).

Seven months after surgery, follow-up CT images showed a malpositioned screw, exiting the lateral pedicle cortex and abutting the posteromedial aspect of the descending thoracic aorta (Ishimaru's zone 4), causing an impingement of approximately 3mm.

A team of vascular and orthopedic surgeons decided to perform a two-step surgery. At first, the patient was submitted to a percutaneous TEVAR through right femoral access with deployment of a Medtronic Captivia stent-graft (22*22*105mm), covering the potentially injured segment of the aorta. Subsequently, at the same day, the pedicle screws were all removed. The patient had an uneventful postoperative course and was discharged within 48 hours with aspirin.

A control CT scan showed correct positioning of the stent-graft without blood leakage around the aortic injury.

CONCLUSION

Endovascular repair is a valid option for iatrogenic thoracic aortic injuries as it allows a safe removal of fixation material with a lower rate of major complications, decreased use of systemic anticoagulation and less blood loss.

A co-management between vascular and orthopedic surgeons is essential to choose the best approach to manage this kind of complications for each patient.

A RARE COMPLICATION OF ILIAC ARTERY ANEURYSMS – CASE REPORT

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Keywords: *Iliac Artery Aneurysm, Acute kidney injury, Endovascular*

INTRODUCTION

Internal iliac artery aneurysms (IIAAs) are quite rare, accounting for 0.04% of all aortoiliac aneurysms. Aneurysms of these vessels are defined as 1.5 times the normal vessel diameter (>1.85cm in males or 1.5 cm in females).

Usually, IIAAs are associated with other vessels aneurysms, more commonly abdominal aortic aneurysms (AAAs). Treatment of IIAAs is recommended in symptomatic aneurysms or greater than 3.5 cm in diameter. Also, they are a rare etiology of obstructive acute kidney injury.

METHODS

We report a case of an eighty-year-old Caucasian male patient, admitted at the Emergency Department for acute kidney injury. Previous medical history was relevant for hypertension, managed with two anti-hypertensive drugs, dyslipidaemia, thoracic aortic aneurysm, peripheral arterial disease and stage 3 chronic kidney disease. A CT scan showed bilateral Reber type III internal iliac artery aneurysms (71mm on the right and 66 mm on the left), causing bilateral hydronephrosis with reduction in the size of both kidneys. These IAAs were associated with an infrarrenal AAA with 3.4cm of diameter.

Bilateral percutaneous nephrostomies were placed, which resulted in a progressive reduction in creatinine levels during hospitalization, with a stabilization at around 2.49 mg/dL. Angio CT was then performed, and aneurysm repair was planned.

RESULTS

First, we decided to embolize both terminal branches of right internal iliac artery with Concerto coils, through a left femoral.

Three weeks later, a bifurcated EVAR with JOTEC endoprosthesis, with iliac extensions landing distally on both external iliac arteries, was performed with concomitant embolization of the terminal branches of left internal iliac artery with Concerto coils. Final angiography showed late perfusion on both IIAAs.

CONCLUSION

One-month Angio CT showed a small endoleak from inferior mesenteric and no increase nor reduction in aneurysmal size.

A 60-day follow-up showed no complications from the procedure, namely symptoms of pelvic ischemia.

90-days follow-up blood work routines showed stable serum creatinine levels around 2.4 mg/dL while maintaining bilateral percutaneous nephrostomies.

SIMULTANEOUSLY ILIAC OCCLUSIVE AND ANEURYSMAL DISEASE: IS ENDOVASCULAR TREATMENT POSSIBLE?

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Keywords: *Aneurysm, EVAR, Percutaneous Atherectomy*

In patients with isolated iliac artery aneurysm (IAA), endovascular repair may be considered as first line therapy, as open repair can be technically challenging with an increased risk of iatrogenic injuries of veins, ureter or nerve, associated with an increased risk for perioperative morbidity and mortality. However concomitant aortoiliac occlusive disease is a relative contraindication for endovascular aneurysm repair, owing to an association with high stent graft-related complications.

The aim of this work is to present a clinical case of a patient with iliac occlusive and aneurysmal disease submitted to endovascular treatment.

We report a case of a 70-year-old male patient with a history of hypertension, diabetes, obesity and smoking history presenting with an asymptomatic 35mm aneurysm of the right common iliac artery (CIA) diagnosed by ultrasound. A CT scan was performed revealing a near-occlusive calcified atherosclerotic plaque at the origin of the right CIA. Given the patient and procedure risk factors to open repair, we proceeded to undergo endovascular aneurysm exclusion with simultaneous treatment of the CIA near-occlusion.

Both common femoral arteries were accessed percutaneously, and a wire could be advanced through the right CIA near-occlusion. The main body (Cook ZenithÒ) was placed on the left, and the right limb successful cannulated. We advanced an intravascular ultrasound (IVUS) catheter to provide an accurate visualization of plaque morphology and then performed multiple passages with an atherectomy system (Diamondback 360Ò Peripheral Orbital), followed by IVUS control. After CIA stenosis resolution an iliac side branch (Cook ZenithÒBranch Endovascular Graft – Iliac Bifurcation) was inserted through the right femoral access and both right external and internal iliac arteries were preserved.

Both procedure and postoperative period were uneventful. The patient was discharged from hospital on the second postoperative day. Surveillance with angioCT imaging was performed at one month and revealed endoprosthesis patency with no right iliac limb stenosis, aneurysm exclusion and no endoleaks.

Concomitant iliac occlusive and aneurysmal disease often dictates open surgery, which is associated with poorer outcomes in the treatment of isolated iliac aneurysms. Here we report a case of patient of CIA aneurysm and ipsilateral severe occlusive disease successfully treated with iliac percutaneous atherectomy recanalization at the time of aneurysm endovascular repair.

AN UNCOMMON CAUSE OF LIMB ISCHEMIA: COMMON FEMORAL ARTERY ANEURYSM THROMBOSIS

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INTRODUCTION

Acute limb ischemia is among the most commonly treated conditions in a vascular emergency setting. Although most frequently resulting from either cardiac embolization or peripheral artery thrombosis, rare causes should be taken into consideration. We present a case of acute limb ischemia in the setting of common femoral artery thrombosis.

CASE REPORT

A 57 year old male with history of hypertension, dyslipidemia and polycythemia presented at the emergency department with complaints of pain, swelling, coldness and paleness in the left lower limb, accompanied by numbness of the foot. These symptoms had started 5 days prior and had progressively worsened. The physical examination revealed absent pulses in the left lower limb, with signs of acute limb ischemia, as well as a large non-pulsatile mass in the groin. Distal pulses were present in the opposite limb. Computed tomography angiography revealed thrombosis of a true left common femoral artery aneurysm measuring 30 x 31 mm. The patient was taken to the operating room and underwent proximal and distal thrombectomy, followed by aneurysm excision and inverted great saphenous vein graft interposition from the external iliac artery to the femoral bifurcation. Postoperatively, the patient showed complete symptomatic improvement, recovering distal pulses in the affected limb.

CONCLUSION

Common femoral artery aneurysms are uncommon, with true aneurysms being even rarer findings. These aneurysms can be challenging to detect due to their often asymptomatic nature, but they carry the potential for serious complications such as thrombosis, embolism, or rupture. This case report underscores the importance of considering common femoral artery aneurysms in the differential diagnosis of lower limb ischemia, as well as its timely treatment.

SUCCESSFUL RADICAL RESECTION OF SQUAMOUS CELL THYMIC CARCINOMA INVADING SUPERIOR VENA CAVA AND RIGHT ATRIUM – WHERE THORACIC AND CARDIAC SURGERY MEET

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Keywords: *invasive thymic squamous cell carcinoma, intraauricular mass, Gore-Tex conduit, cardiopulmonary bypass support, radical surgical resection, superior vena cava infiltration, superior vena cava resection*

INTRODUCTION

Thymic neoplasms are rare, accounting for approximately 1% of all oncologic cases. The largest subgroup within thymic neoplasms consists of thymic epithelial neoplasms, including thymoma and thymic carcinoma, with low-grade squamous cell carcinoma being the most common, comprising 80% of all thymic carcinomas.

CLINICAL CASE

We report a case of a 74-year-old female patient, who was referenced by the Emergency Department because of the accidental discovery of a retrosternal mass. Chest CT described a solid mass, located in the anterior mediastinum about 68 x 42 mm in the axial plane and about 60 mm in the craniocaudal plane, inseparable from the superior vena cava and extending into de inferior cava, up to the right auricle, suggestive of probable thymus neoplasm. Noteworthy was also a subcutaneous collateral circulation in the anterior abdominal wall. The preliminary stage classification was Masaoka IV as the superior vena cava, inferior vena cava, and right auricle seemed to be involved.The patient was submitted on 30/06/2023 to a surgical procedure with joint teams of cardiac and thoracic surgeons. Resection of invasive thymic squamous cell carcinoma, with atypical resection of the LSE and LSL, resection of the right intraauricular mass, and interposition of a Gore-Tex conduit in the SVC was effectuated. In a final histopathological description of the resected mass, the diagnosis of squamous cell carcinoma favoring primary origin in the thymus was made. TNM Staging (AJCC 8th Edition), pT3 N0 R0, Masaoka Stage III.Currently, 2 months after the surgery, the patient's condition is good, and she has been under surveillance in the Outpatient Clinic. At the time of this article submission, the decision of adjuvant chemotherapy had been made.

DISCUSSION

There is a consensus that complete radical resection is crucial for successful treatment and is the most significant prognostic factor, particularly in Masaoka stage I and II where it is typically feasible. Stage III and IV can pose more challenges, especially when the great vessels or the heart are involved, while pulmonary or pericardium resections are usually less technically demanding. These cases often fall into the category of marginal respectability.

CONCLUSION

Thymic squamous carcinomas are indeed rare, and there is a lack of comprehensive data and published studies on them. Based on current medical knowledge, the recommended treatment approach for these cases is radial resection. In situations where the tumors have advanced to Masaoka III or IV, it is advisable to consider neoadjuvant treatment.

HIGH AND INTERMEDIATE-HIGH RISK PULMONARY EMBOLISM MANAGEMENT: A 5-YEAR INTENSIVE CARE UNIT CASUISTIC REVIEW

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Keywords: *Pulmonary Embolism; Critical Care, VA-ECMO*

INTRODUCTION

High-risk Pulmonary Embolism (PE) management is controversial especially in refractory shock and cardiac arrest; experienced centers are suggesting new approaches, different from the guidelines, namely the use of veno-arterial Extracorporeal Membrane Oxygenation (VA-ECMO) plus anticoagulation as a stand-alone therapy. Intermediate-high risk PE management is also controversial, remaining the question of which patients will benefit from a more advance therapy. The aim of this study is to evaluate the short and long-term clinical outcomes of different approaches for high-risk and intermediate-high risk PE in an ICU, namely the use of VA-ECMO as a stand-alone therapy in high-risk PE.

METHODS

We retrospectively studied patients with high and intermediate-high risk PE who were admitted in an ICU (January 2018-July 2023). The therapeutic approach and clinical outcomes were evaluated: ICU and 28-days survival, ICU and hospital days, major complications and chronic pulmonary hypertension (CPHT). Demographic, comorbid state and severity at admission data were also collected (sex, age, Charlson Comorbidity and APACHE II scores).

RESULTS

55 patients were included: 28 high-risk PE (14 in cardiac arrest) [Groups 1-3]; and 27 intermediate-high-risk PE [group 4]. Group 1: High risk PE treated with systemic thrombolysis (ST) (n=14; 4 in cardiac arrest); Group 2: High risk PE treated with VA-ECMO alone (n=6, 5 in context of extracorporeal-CPR); Group 3: High risk PE treated with VA-ECMO plus ST (n=6; 5 in E-CPR). There was only one high-risk PE treated with VA-ECMO plus catheter-based thrombectomy (CBT), and one with heparin only.

Group 1 had an ICU and 28-day survival of 85,70%. Group 2 and 3 had an equal ICU and 28-day survival-rate of 66,67%. From the available data, none of the high-risk PE survivals had CPHT at follow-up. There were eight major bleeding complications (n=4 Group 1, n=3 Group 2 and one in the patient with VA-ECMO and CBT). There were three relevant ECMO-related vascular complications (one requiring surgical repair).

In Group 4, heparin alone was used in 85%, 2 patients received ST (one as rescue-therapy); 2 patients had CBT (one as rescue therapy). ICU and 28-day survival was 96%. Of the available data, three patients presented CPHT at follow-up (heparin treated).

CONCLUSION

in high-risk PE, VA-ECMO in a reference center, appears to be safe; none of the high-risk PE developed CPTH. Fourteen percent of the intermediate-high risk PE treated with heparin-alone developed CPTH; more research is needed to identify which subgroup benefit from a more advanced treatment.

IS THE PARSIMONIOUS EUROLUNG RISK MODEL A GOOD PREDICTOR FOR A PORTUGUESE POPULATION?

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Keywords: *Risk Model, Eurolung, Lung Resection, NSCLC*

INTRODUCTION

Whilst the Eurolung risk models' validity in European patients has been reported, no studies have confirmed their applicability in populations with different backgrounds.

OBJECTIVES

To assess the Eurolung risk models applicability in a Portuguese centre.

METHODS

This was a retrospective analysis of patients with non-small cell lung cancer (NSCLC) submitted to resection surgery in a Centre in Northern Portugal.

A total of 410 patients, from January 1st, 2018, to December 31st, 2021, were analysed.

The Eurolung1 and Eurolung2 models were used to predict morbidity and 30-day mortality rates. Observed and risk-adjusted outcomes were compared.

Finally, a logistic regression was performed using the centre's database.

RESULTS

During this period 23 pneumonectomies, 320 lobectomies, 24 segmentectomies and 43 wedge resections were performed.

Mean Eurolung1 score was 13.49% (SD 6.84) and mean Eurolung2 score was 2.17% (SD 2.13)

Pneumonectomies had the highest Eurolung1 and Eurolung2, significantly higher than other types ($p<0.001$) with wedge resection having the lowest Eurolung1 and segmentectomies the lowest Eurolung2.

78 patients suffered significant morbidity, with pneumonectomies being more morbid than other resections ($p<0.001$).

4 patients died, all lobectomies, though not statistically significant. ($p=0.773$)

When comparing Eurolung scores with observed data, a significant difference in mean Eurolung1 was observed in patients with morbidity ($p<0.001$), but this was not seen for Eurolung2 in patients with 30-day mortality. ($p=0.306$)

To further assess Eurolung scores, a Receiver Operating Characteristic (ROC) analysis was performed.

For Eurolung1 and Observed morbidity the Area Under Curve (AUC) was 0.659, showing good quality.

For Eurolung2 and Observed 30-day mortality the AUC was 0.42, worse than a random prediction.

Finally, for Eurolung2 and Observed long term mortality, the AUC was 0.665.

Performing a logistic regression for mortality, showed that VATS approach, Pneumonectomy, Lobectomy and ECOG score were significant variables, with an AUC of 0.719, whilst for morbidity, VATS approach and peripheral arterial disease (PAD) were significant, with an AUC of 6.04.

CONCLUSIONS

Being an oncological Centre in the periphery of Europe may create a similar bias to a population outside Europe.

Further, mortality is a rare event, and thus all risk models can have problems when applied to individual units. The author's low mortality may have caused this, with an AUC worse than random prediction.

Thus, Eurolung2 score did not provide a good estimate for 30-day mortality but was useful in estimating long term survival.

Finally, Eurolung1 score provided a better estimate for morbidity than the author's model.

TRANSAORTIC EXTENDED MYECTOMY FOR HYPERTROPHIC OBSTRUCTIVE CARDIOMYOPATHY IN A TERTIARY CENTRE – AGES 8-80

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Keywords: *Transaortic, Extended myectomy, Hypertrophic Obstructive Cardiomyopathy*

INTRODUCTION

Hypertrophic obstructive cardiomyopathy (HOCM) may be symptomatic despite optimal medical treatment, and the next step is invasive muscular resection, namely extended myectomy.

This is an observational retrospective single centre study of surgically treated patients with HOCM from 2016 to 2023, with the objective of determining clinical and cardiac characteristics before and after surgery.

METHODS

Scanning Cardiobase®, we gathered information from patients subjected to extended myectomy for HOCM in the aforementioned interval.

Patients with moderate or severe aortic valve stenosis were excluded.

Postoperative data was collected at discharge or at first appointment post-discharge.

RESULTS

Patient characteristics

15 patients were subjected to transaortic extended myectomy for HOCM (N=15).

The median age at operation was 66 years (8-78), including two children, aged 8 and 10.

6 patients (40%) were female.

Preoperative characteristics

8 patients (53%) were New York Heart Association (NYHA) class III/IV, 4 patients (26%) class II/IV, and 3 patients (20%) class I/IV.

The mean gradient was 90±30 mmHg, measured in strain in 9 patients (60%).

The mean septal thickness was 24±4 mm,

10 patients had magnetic resonance (MRI), and late gadolinium enhancement was >15% in 2 patients (20%).

There was systolic anterior motion (SAM) and some degree of mitral regurgitation in every patient, moderate in 6 patients (32%), mild in 6 patients (32%) and severe in 4 patients (25%). 3 patients (19%) had concomitant organic mitral valve disease.

Postoperative characteristics

7 patients (44%) were NYHA class I/IV and 8 patients (66%) II/IV. No patient had a worsening NYHA class.

The mean gradient was 23 mmHG, and 6 patients (40%) had no measurable gradient even during strain.

The mean septal thickness was 16±4 mm.

There was no relevant SAM and no patient had more than mild regurgitation, however, 4 patients (25%) required mitral valve replacement, 3 of which had organic valve affection.

1 patient (6%) required urgent reoperation for tamponade.

No patient required postoperative pacemaker implantation and there were no deaths.

DISCUSSION

This data suggests that extended myectomy reduces intraventricular gradient, mitral regurgitation and NYHA class, even in quite young or elderly patients.

Surgical mortality and morbidity are low.

It is, however, a rare procedure, even in an otherwise high volume centre.

CONCLUSIONS

Extended resection appears to be a safe and effective procedure for HOCM, but due to a small study population, a more thorough, nationwide data retrieval would provide more conclusive results.

TEMPO DE ACELERAÇÃO PLANTAR NO DIAGNÓSTICO DE DOENÇA ARTERIAL PERIFÉRICA

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Keywords: *Tempo de Aceleração Plantar*

INTRODUCTION

A Doença arterial obstrutiva periférica (DAOP) é caracterizada pela diminuição da circulação e respetiva perfusão das zonas arteriais que, devido a processos ateroscleróticos, condiciona o aparecimento de estenoses e oclusões nas artérias dos membros inferiores.

A sua prevalência aumentou nos últimos anos, sendo considerada uma das principais causas de morte, devido ao alto risco de morbimortalidade cardiovascular associado.

Um dos exames mais básicos é a medição do Índice Tornozelo-Braço (ITB), útil no diagnóstico e na avaliação da severidade da doença, no entanto a sua aplicação apresenta limitações em certos grupos de doentes, inviabilizando a medição de pressões nos mesmos (diabéticos e insuficientes renais onde a DAOP é significativa).

Neste contexto, alternativas diagnósticas têm vindo a surgir, sendo o cálculo do tempo de aceleração plantar (TAP) uma nova ferramenta na avaliação da DAOP, com recurso ao Ecodoppler.

OBJECTIVES

O estudo realizado visou estabelecer na nossa amostra a correlação entre o ITB e o TAP, determinando se este último poderá ser considerado um método fiável e uma alternativa diagnóstica de DAOP.

METHODS

Foi realizado um estudo observacional conduzido durante 1 ano no Serviço de Angiologia e Cirurgia Vascular do Centro Hospitalar e Universitário de Coimbra, procedendo-se à colheita do ITB e do TAP em doentes da consulta externa com DAOP sintomática e assintomática e sem DAOP, sem história de cirurgia de revascularização.

RESULTS

Numa análise preliminar foram avaliados 59 doentes (100 membros), 78% do sexo masculino, com uma média de idades de 69 anos. No que diz respeito aos fatores de risco e co morbilidades temos uma população na sua maioria hipertensa (78%), fumador ou ex-fumador (61%), diabética (34%) e com doença coronária (22%).

Verificou-se um coeficiente de correlação de Pearson de -0,77, com significância estatística ($p<0,001$) entre o ITB e o TAP, relacionado com o estadio da DAOP, sendo estes inversamente proporcionais.

CONCLUSIONS

Os resultados preliminares da nossa série apoiam a evidência de que existe de facto uma relação inversa entre o ITB e o TAP. Este estudo pode representar o próximo passo na avaliação da gravidade de DAOP, sendo particularmente útil em patologias em que o ITB não é mensurável.

A continuação deste estudo, permitirá apoiar com maior segurança os achados descritos, bem como estabelecer a relação entre cada estadio clínico de Fontaine com um valor médio do TAP e colocar esta como mais uma técnica de apoio para estratificação de DAOP e avaliação de prognóstico cardiovascular.

WHAT DOES IT MEAN TO HAVE A TEXTBOOK OUTCOME IN THORACIC SURGERY?

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Keywords: *Textbook Outcomes, Lung Resection, Healthcare Quality*

INTRODUCTION

Textbook Outcomes (TO) represent the proportion of patients for whom all short-term outcomes of care are realized.

They have excellent sensitivity, and as morbidity and mortality in lung cancer surgery are low, can be a good measure.

OBJECTIVES

To determine the relevance of a Textbook Outcome and its individual variables on overall survival.

METHODS

This was a retrospective study of patients with non-small cell lung cancer (NSCLC) submitted to resection surgery in a Centre in Northern Portugal.

A total of 410 patients, from January 1st, 2018, to December 31st, 2021, were included.

An analysis of TO by year and by type of procedure was performed.

Survival analysis was performed to determine the relevance of individual variables present in TO.

RESULTS

During this period 23 pneumonectomies, 320 lobectomies, 24 segmentectomies and 43 wedge resections were performed.

In 2018 29.3% of patients achieved a TO, while in 2021, the number was 15.5%. While overall there was a significant difference (p:0.048), post-hoc showed no difference between years.

There was a significant difference in the type of surgery in 2021, with more wedge resections than previous years ($p<0.001$), less hilar and mediastinal lymphadenectomy. ($p<0.001$)

No significant difference in overall mortality or major complications between years was found, but there was a difference in minor complications ($p=0.008$).

Concerning the type of resection, there was a significant difference, as wedge resections, don't have a TO.

Further analysis showed that Pneumonectomies had more major complications, ($p<0.001$) with more readmissions to the ICU. ($p=0.027$) Still, there was no difference in 30-day mortality. ($p=0.773$)

For minor complications there was a significant difference between Pneumonectomies and Wedge resections, but not with other types of resections. ($p=0.036$)

Whilst there was a trend towards a better survival there was significant difference between patients who had achieved TO or not. ($p=0.269$)

Patients who had no major complications and no readmissions to the ICU had a better survival. ($p<0.001$)

All other variables were not significant.

CONCLUSIONS

Not all variables were found equal.

Type of resection should be individualized, as significant differences were seen between procedures.

Too much importance is given to minor complications, which, though important, contribute little to the outcome and overall survival and have a contagion effect on variables like need for extra procedures or prolonged hospitalization.

TO can be used to evaluate individual thoracic surgeons and hospitals, by providing a comprehensive overview of surgical performance, still further refinement is required

INFRAPOPLITEAL BYPASS IN PATIENTS UNDER CONTINUOUS RENAL REPLACEMENT THERAPY: PATENCY AND SURVIVAL

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Keywords: *Chronic Limb-Threatening Ischemia, Open revascularization, End-stage Renal Disease, Renal Replacement Therapy*

INTRODUCTION

Portugal has one of the highest prevalence of patients under continuous renal replacement therapy (CRRT), reaching 1906 patients per million population (pmp), compared with 985 pmp across Europe.[1]

Patients with end-stage renal disease (ESRD) have a higher incidence of peripheral artery disease.[2] ESRD patients often face increased morbidity and reduced survival rates following surgical procedures, including vascular surgery interventions.[3,4]

Our goal was to compare perioperative and 3-year outcomes after infrapopliteal bypass for chronic limb threatening ischemia (CLTI) in patients under CRRT versus non-CRRT patients.

METHODS

A retrospective single-center study of infrapopliteal bypass for CLTI was performed between 2012 and 2022. Patients were divided in two groups based on CRRT status. Group 1 included all patients under CRRT. Primary end point was 1-year freedom from CLTI. Secondary end points were freedom from major index limb amputation, survival and primary (PP) and secondary patency (SP) rates at 3 years of follow-up.

RESULTS

A total of 352 infrapopliteal bypasses were performed in 310 patients with CLTI, 14% (48/352) under CRRT (group 1). Median age was 73 years (interquartile range 15) and 74%(259/352) were male. Median follow-up was 26 months (interquartile range 42). Overall, 92% (325/352) had tissue loss and 44% (154/352) had some degree of infection.

The majority of revascularization procedures was performed with vein grafts (61%, 214/352) and the remaining 39%(138/352) with heparin-bonded expanded polytetrafluoroethylene (HePTFE) grafts. The usage of HePTFE grafts was not significantly different among groups (44% in group 1 and 39% in group 2, p=0.526).

The 30-day overall mortality was 4% (11/310). Group 1 and group 2 had a 30-day mortality of 5%(n=2/37) vs. 3%(n=9/273), p = 0.627). Kaplan-Meier analysis showed no difference between groups for 1-year freedom from CLTI (76% vs. 79%; HR 0.96, CI 0.65 – 1.44, p=0.857), 3-year freedom from major index limb amputation (70% vs. 82%; HR 1.40, CI 0.71 – 2.78, p=0.327) and 3-year survival (62% vs. 64%; HR 1.08, CI 0.60 – 1.94, p=0.799). Three-year PP rates were 39% in group 1 and 64% in group 2 (HR 1.71, CI 1.05 – 2.79, p=0.030). SP rates were not different between groups 1 and 2 (57% and 78%; HR 1.79, CI 0.92 – 3.47, p=0.082).

CONCLUSIONS

Patients with CLTI and under CRRT exhibited lower 3-year PP rates following infrapopliteal bypass. However, no differences were observed in 3-year SP, freedom from major index limb amputation and survival, nor in freedom from CLTI at 1-year.

CYSTIC ADVENTITIAL DISEASE OF THE POPLITEAL ARTERY: ENTRAPMENT SYNDROME

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Keywords: *Cystic adventitial disease*

Cystic adventitial disease (CAD) is a rare vascular disorder characterized by arterial occlusion owing to the development of a cystic mass in the outer (subadventitial) layer. The popliteal artery is most often involved, leading to symptoms of lower extremity claudication. Diagnosis is supported by imaging, including ultrasound examination, computed tomography (CT) scans, magnetic resonance imaging (MRI), and angiography. Surgical intervention, percutaneous aspiration, and surveillance are among the possible treatment options. Here, we present a case of a 52-year-old man with CAD whose presentation and imaging findings mimicked that of the popliteal artery entrapment syndrome.

A 52-year-old Caucasian man without any medical pathology was advised for a vascular surgery consultation due to persistence of a dull ache in his upper right calf for the last six months. Recurrence of the pain occurred with walking short distances and was relieved with rest. He had no prior symptoms of claudication or associated trauma. There was no skin discoloration or swelling, and his femoral, popliteal, and posterior tibial pulses were palpable bilaterally on physical examination. CT angiography demonstrated a stenosis of the supragenicular popliteal artery owing to extrinsic compression of the artery, admitting the hypothesis ofcystic adventitial disease. Owing to disabling symptoms, surgical intervention was pursued. A posterior approach using a lazy S incision was performed for entry into the left popliteal fossa. Dissection occurred between the heads of the gastrocnemius muscle for exposure of the neurovascular bundle. A cystic adventitial was found and removed, a gelatinous texture of the cystic component was observed.

Ninety percent of cases of CAD are unilateral, with involvement of the popliteal artery. Less commonly, the external iliac, femoral, radial, ulnar, brachial, and axillary arteries are implicated. Young to middle-aged generally healthy patients, particularly males, are mostly affected. The classic presentation consists of new-onset intermittent claudication of a lower extremity, with a recovery time longer than that seen in peripheral artery disease (approximately 20 minutes). Recovery after exertion is associated with gradual opening of the artery secondary to decompression of the cyst.

ENDOVASCULAR REPAIR OF EXTERNAL ILIAC ARTERY OCCLUSION AFTER HIP PROSTHESIS REPAIR

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Keywords: *Endovascular Repair of External Iliac Artery Occlusion*

Delayed vascular injury after total hip arthroplasty is a rare complication, which may result in arterial laceration, pseudoaneurysm formation, hemorrhage, and ischemia of the ipsilateral extremity from thromboembolic occlusion. The most commonly injured vessels are the external iliac artery (EIA), common femoral artery (CFA), and iliac vein. Once such an injury is suspected, an emergent arteriogram is warranted, followed by immediate vascular reconstruction to restore distal blood flow.

A 62-year-old man presented to the Emergency Department 2 months following a right hip arthroplasty revision. He complained of pain in the right lower limb that lasted a few hours at rest. On physical examination at this admission, the patient had normal pulses in the left lower extremity, but absent pulses on the right, with mottled skin discoloration. Plain radiographs revealed migration of the acetabular hip prosthesis cup through the left pelvic wing without bony attachment to the ischium or ilium. Subsequent abdominal computed tomography (CT) showed the metallic acetabular portion of the hip prosthesis in the iliac fossa, demonstrated severe external compression of the left EIA by screws. He was proposed for emergency surgery with the collaboration of Orthopedics and Vascular Surgery to review the prosthesis and angiography with stent placement in EIA, final angiogram revealed a patent left EIA to the infrapopliteal arteries.

Severe vascular injury during total hip arthroplasty is a rare complication estimated at between 0.16% and 0.25%. Direct damage may occur by arterial transection due to a misplaced retractor or by excessive reaming and by arterial penetration of a screw during cup fixation. Longitudinal vascular laceration may cause intraoperative bleeding and a decline in blood pressure. Because the bleeding of puncture injuries results in a slow and small amount of bleeding, it is likely this will not be observed during surgery. The bleeding will form a false aneurysm presenting as a hematoma or pulsatile mass. The patient can complain of hip pain due to pressure or ischemic symptoms caused by impaired blood flow. Indirect damage can be caused by compression, stretching, or tearing of a vessel or by excessive heating by the bone cement. Secondary formation of a thrombus or presence of an intimal flap can lead to hypoperfusion and ischemia of the distal leg. Immediately after surgery, the dorsalis pedis arterial pulse can be absent.

ERECTOR SPINAE PLANE BLOCK AS AN ANALGESIC TOOL FOR THORACIC OUTLET SYNDROME SURGERY

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Keywords: *Erector spinae plane block, Thoracic Outlet Syndrome Surgery*

INTRODUCTION

In thoracic outlet syndrome (TOS), surgical treatment is often an option in arterial or venous compression cases, to relieve the compression over the vascular structures. Post-operative pain can be severe because it involves skin, fascia, muscles and bone. We present a case in which the erector spinal block effectively controlled post-operative pain in a supraclavicular TOS surgery.

CASE REPORT

A 25-year-old man, ASA II, came to the emergency department with extensive edema of the left upper limb with signs of collateral venous circulation. CT angiography revealed a thrombus in the proximal third of the left subclavian vein. He underwent catheter-directed fibrinolysis, and the control venography showed stenosis localized to the site of the left costo-clavicular compression, with residual thrombus. Subsequently, he was anticoagulated and the excision of the 1st rib via the supraclavicular route was proposed.

The patient consented to combined anesthesia with left erector spinae block and balanced general anesthesia.

The patient was placed in the left lateral decubitus position and given 2 mg of midazolam and 100 micrograms of fentanyl. The erector spinal block was performed by ultrasound at T1 level on the left with a 22G blocking needle. 15 mL of 0.375% ropivacaine was administered (figure 1).

Intraoperatively, 1g of paracetamol, 30 mg of ketorolac, 5 mg of morphine were administered and the surgical wound was infiltrated with 5ml of 7.5% ropivacaine.

The surgery was uneventful (figure 2). In the post-anesthetic care unit, the patient reported pain EN=1.

In the first 24 hours after surgery, paracetamol i.v. 1g 6/6h, ketorolac i.v. 30 mg 6/6h and tramadol 100 mg every 8hours. The patient did not require any rescue doses of morphine. The patient scored 0 pain at rest and 2 pain on movement in the first 48 hours after surgery.

CONCLUSIONS

Thus, this clinical case suggests that the erector spinal block may be an important analgesia for first rib resection surgery via the supraclavicular route. However, more studies are needed to explore the advantages and applicability of this technique.

A RARE CASE OF ACUTE RIGHT VENTRICLE FAILURE: UHL DISEASE

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Keywords: *Heart failure, Right ventricular disease, Uhl anomaly, Glenn procedure*

Uhl's disease is a rare condition due to selective but uncontrolled apoptosis of right ventricular myocytes during the perinatal period, after complete cardiac development, leading to the absence of right ventricular myocardium and the direct apposition of endocardium to epicardium without a myocardial layer in between, resulting in right ventricular failure. This leads to a lack of contraction and, consequently, the chamber acts as a transition zone between the right atrium and pulmonary artery. Pulmonary circulation is maintained by the pumping action of the right atrium, whereas the right ventricle balloons aneurysmal in systole. Histological examination confirms cardiac muscle wastage and replacement by fibrous tissue. However, despite this anomaly in the RV myocardium, the septal and left ventricular myocardium is preserved. In severe forms, RV failure develops during childhood, with pulmonary circulation being dependent on the right atrium. Cyanosis is also present in the event of an atrial shunt1. Cardiac magnetic resonance imaging shows an extremely dilated thin-walled right ventricle and absence of trabeculations, with no fat signal in the right ventricular wall, in contrast to that seen in arrhythmogenic ventricular dysplasia[2].

We report a case of a two months-child with acute central cyanosis crisis with a transthoracic echocardiogram showing right cavities dilation, ostium secundum atrial septal defect, severe biventricular disfunction, a moderate tricuspid regurgitation and right atrial and ventricular clots. The CT-Angiography showed aneurismatic right ventricle outflow tract and a left atrial septum bulging. After refractory cardiogenic chock with low output syndrome, the child was submitted to emergent cardiac surgery - endomyocardial biopsy next to bidirectional Glenn procedure. A central VA-ECMO was implanted before discharge operatory room due to low output syndrome refractory to epinephrine, norepinephrine, dopamine and Nitrous oxide. The post operative period was complicated with convulsions, disseminated intravascular coagulopathy and Streptococcus pneumoniae pulmonary infection and eventually an hemorrhagic transformation of an ischemic stroke resulting on the patient's demise.

Despite the rarity of the disease and the outcome of patient, we presented this case to demonstrate a set of right ventricle anomalies and effects. A cardiac surgery is being considered to life-saving procedure.

A RARE CASE OF MULTIPLE CONGENITAL HEART DEFECTS: SHONE´S-LIKE SYNDROME

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Keywords: *Heart failure, Shone complex, Congenital heart disease*

Shone's syndrome is a rare congenital heart disease that may include four cardiovascular anomalies: supravalvular mitral ring, parachute mitral valve, subaortic stenosis, and coarctation of the aorta. Echocardiography plays an important role in detecting this disease: careful anatomical observation of the left ventricular inflow and outflow tracts, particularly the mitral valve, is vital1. The degree of involvement of left ventricular inflow tract obstruction is the predominant factor determining outcome in Shone's anomaly. Valve repair is indicated whenever feasible and should be considered before the occurrence of pulmonary hypertension2. Long-term outcome is related to the degree that the obstructive lesions can be relieved2 and the degree of pulmonary hypertension3.

We report a case of a 4 year-boy from Guinea Bissau with 4 hospitalizations last year due to acute heart failure. At physical exam, an aortic systolic murmur was identified and an apex diastolic murmur. The transthoracic echocardiogram showed a hypoplasia of mitral valve with systolic anterior motion and severe stenosis with transmitral gradient 25/17mmHg; left ventricle outflow tract obstruction due to subaortic ring 11mm distant from aortic valve and infundibular posterior interventricular septum deviation with an associated gradient of 40/23mmHg; Subaortic interventricular septal defect of 9mm and an associated left to right shunt; and a patent arteriosus ductus - Shone´s-like Syndrome. Cardiac catheterization revealed severe pulmonary hypertension (pulmonary vascular resistance of 9 WU). The patient was submitted to fibrotic supramitral and subaortic rings resection, Morrow myectomy plus interventricular septal defect closure with Dacron patch and ductus arteriosus ligation. The intra-operative transesophageal echocardiogram showed no mitral or aortic regurgitation, a mild left ventricle outflow tract obstruction gradient and no residual septal shunts. The patient was weaned from cardiopulmonary bypass with minor inotropic support – epinephrine and milrinone. No complications on the post-operative period and patient discharge after 6 days under oral furosemide and spironolactone.

Despite the rarity of the disease, we presented this case to demonstrate a set of multiple combined congenital anomalies associated to Shone syndrome. A cardiac surgery is being considered to treat this rare condition and good outcomes are available to obtain.

HEART TRANSPLANT RECIPIENTS OVER 65 YEARS OLD: SHORT AND LONG-TERM OUTCOME

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Keywords: *Heart transplantation, Marginal donors, Cardiac allograft vasculopathy, Acute cellular rejection*

INTRODUCTION

Heart transplantation is the most important last-line treatment for advanced heart failure. The number of receptors and their age, at the time of transplant, has increased in the last few decades. The organ donor shortage compromises heart transplantation's viability in advanced-age patients. Studies on survival rates post-transplant and frequency of complications in patients with or above 65 years, compared with younger patients, are controversial. This study aimed to compare short and long-term outcomes (1, 5, and 10 years) of cardiac transplant patients with less and more than 65 years and evaluates the role that chronological age plays in post-transplant survival.

METHODS

A retrospective analysis of 313 patients submitted to cardiac transplant in one center between 2003 and 2020 was carried out. Two groups of patients were created according to their age. Group A – cardiac receptors aged between 45 and 64 years; Group B – cardiac receptors with or above 65 years. The statistical study was performed using the software SPSS, version 25, with a level of significance of 0.05.

RESULTS

Mortality, frequency of complications and new comorbidities between the two groups during the follow-up of 1, 5, and 10 years did not show significant statistical differences. In group A, the mortality rates in the 1st, 5th and 10th years were 10,5%, 16,5% and 23,0%, respectively, and 16,9%, 21,5% and 32,3% in group B, respectively. The acute rejection rate during the first year post-transplant was also similar (22,2% vs. 23,1%; p=0.942). However, the free survival time of allograft vasculopathy was double in the receptor group of 45 to 64 years (1620,8±1133,6 vs. 888,7±977,7 days; p=0.032).

CONCLUSIONS

The short and long-term outcomes did not show significant differences between the two groups of patients. The chronological age of the receptors was not a negative predictor of survival and should not be considered an isolated criterion of exclusion for heart transplantation.

IMPACT OF INTRAOPERATIVE COMPLETION STUDIES ON THE OUTCOMES OF BYPASS PROCEDURES TO DISTAL POPLITEAL OR INFRAPOPLITEAL ARTERIES

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Keywords: *bypass surgery, popliteal artery, infrapopliteal artery, arteriography, duplex ultrasound, patency*

INTRODUCTION

Infrainguinal bypass procedures may encounter challenges such as inappropriate inflow, intrinsic conduit abnormalities, technical errors, graft tunneling errors, or inadequate runoff vessels. Overlooking these potential crucial issues can compromise the patient's postoperative outcomes. Intraoperative arteriography or duplex scanning allow to rapidly evaluate the conduit, tunnel, anastomoses, and outflow for significant graft-threatening lesions.

OBJECTIVE

To analyze disparities in postoperative outcomes after bypass procedures to distal popliteal or infrapopliteal arteries concerning the use of intraoperative completion studies.

METHODS

A retrospective review of a tertiary center's institutional database was conducted to identify all patients who underwent after bypass procedures to distal popliteal or infrapopliteal arteries from January 2021 to December 2022. Twelve patients were excluded due to lack of follow-up. Patients were divided into two groups based on the utilization of intraoperative arteriography or duplex scanning. Primary outcomes included primary patency, secondary patency, and major amputation rate at the 6-month follow-up period. Statistical analysis of the data was performed using percentages, odds ratios (OR), and p-values to assess statistical significance.

RESULTS

We identified a total of 102 patients to include in our analysis, 16 with and 86 without intraoperative completion study. Mean age was 69.2 years [43-89] and 90.2% of the patients were male. No significant differences were encounter between both groups concerning gender, pathology, comorbidities, and type of bypass conduit. Intraoperative exams were significantly more used in bypass surgeries to infrapopliteal arteries. We identified defects requiring correction in 25% of the bypass procedures using intraoperative arteriography or duplex scanning. At 6 months follow-up period, primary patency was 93.8% vs 61.2% (OR=9.340; CI[1.178;74.045]; p=0.034), secondary patency was 93.8% vs 64.0% (OR=8.455; CI[1.065;67.107]; p=0.043), and major amputation rate was 6.3% vs 18.6% (OR=0.292; CI[0.036;2.372]; p=0.249) for patients with and without intraoperative completion studies, respectively. Concerning only the 79 patients with peripheral arterial disease, similar significant disparities were observed between both groups.

CONCLUSION

Integrating routine completion studies into bypass procedures to distal popliteal or infrapopliteal arteries increases the probability of attaining optimal technical outcomes. Consequently, this approach improves overall patient results, as evidenced by significantly higher primary and secondary patency rates at mid-term follow-up. Additionally, this study indicates a tendency towards lower major amputation rates.

MODIFIED BENTALL PROCEDURE WITH CARBOSEAL VALSALVA™ CONDUIT COMPLICATED BY AN EARLY MECHANICAL PROSTHETIC AORTIC VALVE THROMBOSIS AND CORONARY EMBOLISM

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Keywords: *modified Bentall procedure; CarboSeal Valsalva™conduit; mechanical prosthetic aortic valve thrombosis; coronary embolism; thrombolytic therapy; VA-ECMO*

This case report illustrates one of the most serious and rare thromboembolic complications described in the literature, in a 34-year-old male undergoing a modified Bentall procedure with the CarboSeal Valsalva™ conduit. Although prosthetic heart valve thrombosis (PVT) is a risk in this type of surgery, its occurrence is an infrequent condition, especially when it happens in the first few hours after surgery and becomes complicated with coronary embolism.

The main relevance of this case report is to describe, for the first time, the use of a modified thrombolysis protocol successfully performed for PVT (bolus of 10 mg of tissue plasminogen activator (t-PA) followed by ultraslow infusion (25 hours) of low dose (25 mg)) in a critically ill patient with haemodynamic instability supported with venoarterial extracorporeal membrane oxygenation and with a non-negligible risk of bleeding. This procedure resulted in the resolution of the PVT and recovery of heart function, with the VA-ECMO being removed 8 days post-implantation.

Given the success of this clinical case, ultraslow infusion of low-dose of t-PA, after an initial bolus, could be considered as a viable treatment in critically ill patients with hemodynamic instability due to obstructive PVT, as long as systemic organ perfusion is ensured.

MIDCAB – 5TH YEAR SINGLE-CENTER EXPERIENCE

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Keywords: *Minimally Invasive Cardiac Surgery, CABG, MIDCAB*

INTRODUCTION

Minimally invasive cardiac surgery approaches remain a hot topic due to their early phase of adoption in most centers. As these types of techniques are increasingly adopted, care must be taken to ensure continuing quality, especially during the initial learning curve. In this study we aimed to understand the results of our minimally invasive direct cardiac revascularization (MIDCAB) program in the first 5 years since its implementation.

OBJECTIVES

Evaluate the first 5 years of early morbidity and perioperative complications in patients submitted to coronary artery bypass grafting (CABG), using a MIDCAB approach.

METHODS

Patients submitted to MIDCAB surgery (n=78) from January 2019 to August 2023, in a single center, were compared across 61 variables. This study evaluated both demographic and patient preoperative factors, as well as perioperative morbidity and mortality.

RESULTS

In our study period 78 consecutive patients were submitted to CABG, through a MIDCAB approach. 81,1% of patients were male, with a mean age of 64 ± 11,1 years and a reported BMI of 27,25 ± 3,71. 34 patients (43,6%) were diabetic and previous history of myocardial infarction was observed in 37 patients (47,4%), 21 in the 6 months prior to surgery. Mean Euroscore II score was 1,50 ± 1,49.

Most patients (98,7%), were submitted to LIMA-LAD revascularization. Complete revascularization was achieved in 48 patients (61,5%).

Atrial fibrillation was the most common complication (11,5%), followed by non-oliguric acute renal failure in 3 patients (3,8%), surgical wound infection in 3 patients (3,8%), postoperative respiratory infection in 3 patients (3,8%), bleeding leading to surgical revision in 2 patients (2,6%) and acute postoperative myocardial infarction in 1 patient (1.3%). Most patients were extubated in OR (98.7%), and a mean ICU stay of 49,36 ± 16,8 hours was reported.

There was no need to revascularize any surgically treated vessel in our study, and early postoperative mortality is currently 2,6% (2 patients).

CONCLUSIONS

In this single-center analysis, MIDCAB shows early comparable results to single-vessel conventional CABG surgery, despite the initial learning-curve.

Further studies are needed to compare long-term results with conventional CABG surgery. These results and the growing center expertise should encourage further development of the minimally invasive CABG surgery program.

OUTCOME OF THE FIRST EIGHT CASES OF PECTUS EXCAVATUM TREATED BY PECTUS-UP TECHNIQUE: A SINGLE CENTER CASUISTIC

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Keywords: *Pectus excavatum, Haller Index, Nuss procedure, Ravitch procedure, Pectus-Up*

INTRODUCTION

The pectus excavatum is the most common congenital anterior chest wall deformity[1, 2] which is often repaired using the Ravitch and Nuss procedures[3]. A new minimally-invasive alternative approach, Pectus-Up technique, is emerging with an external sternal traction system and screw fixation[1].

OBJECTIVES

The aim of this study was to evaluate the outcome of the first 8 patients with Pectus Excavatum treated by Pectus-Up technique in one single center.

METHODS

We reviewed the first 8 patients who underwent surgical Pectus-Up surgical technique. We analyzed the pre-operative, intra-operative and post-operative databases between August 2022 and September 2023.

RESULTS

We collected 8 patients on our study, 63% females (n=5). Mean age of group was 22,8±14,2 years, 2 of them older than 30 years. The preoperative data showed 25% of patients with fatigue (n=2), 12,5% with mental depression (n=1) and a mean of 8 (1-10) of interference in quality of life. Atopic Dermatitis was presented in 12,5% of patients (n=1) as Asthma and Patent Arteriosus Ductus, Allergic Rhinitis in 25% (n=2). The mean of pre-operative Haller Index was 4,00±0,67, LVEF 56,2±4%, 25% of patients (n=2) with Right ventricle compression signals on transthoracic echocardiogram, EVF1 89±24%, FVC 81,2±20% and TI 87±13. The ribs deformity was bilateral in 75% of patients (n=6) and unilateral (right ribs) in 2 patients.

All the patients were submitted to Pectus Up surgical technique by 3-4cm median sternal incision. The vertical incision was performed in 62,5% of patients (n=5) and longitudinal in 3 patients. The mean surgical time was less than 2 hours and no complications were observed during surgical time. The vacuum drainage was implanted in all patients.

About postoperative data, 87,5% of patients (n=7) removed the drainage on 1st post-operative day, 1 patient on the 2nd day. No complications were observed during the hospital stay and 87,5% of patients (n=7) discharge to home on the 2ndpost-operative day, 1 patient on the 3rd day.

No mortality was observed. The mean of pain at home during the first year (1-10) was 2,3±2,7 and 8,6±0,6 (1-10) about the aesthetic satisfaction. One patient had bare metal allergy treated with corticoids and 1 patient superficial suture dehiscence treated by surgical revision and antibiotics.

CONCLUSIONS

From the perspective of functional and aesthetic dimensions, the results of this single center casuistic were very acceptable and showed a safe alternative surgical technique to Nuss or Ravitch procedures to treat Pectus Excavatum.

NEUROLOGICAL DEFICITS AND FUNCTIONAL INDEPENDENCE AFTER STROKE: AN EXPLORATORY ANALYSIS OF URINE AND PLASMA METABOLOMICS

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Keywords: *Pectus excavatum, Haller Index, Nuss procedure, Ravitch procedure, Pectus-Up*

INTRODUCTION

Stroke is a life-threatening condition and the second largest cause of death worldwide. Gut microbiota (GM), through its metabolites, has been shown to play a role in stroke severity and post-stroke cognitive impairment.

AIM

To uncover the metabolomic profile of stroke patients during the acute and recovery phases and its association with functional independence and neurological deficits.

METHODS

Patients admitted to the Stroke Unit (February to December 2022) were recruited and a follow-up visit was scheduled 3 months later. Twenty-nine ischemic stroke patients were included. Clinical data, urine and blood samples were obtained at both time points. Neurological deficits were characterized using the National Institutes of Health Stroke Scale (NIHSS) – at 0h, 24h and 7 days post-stroke – and functional independence through the modified Rankin Scale (mRS) 3 months post-stroke. Untargeted metabolomic profiles of plasma were obtained through proton nuclear magnetic resonance spectroscopy (1H-NMR), and those of urine through gas chromatography coupled to mass spectrometry (GC-MS). The association between metabolomic profiles and neurological deficits or functional status was explored using linear mixed-effect modeling and bootstrapped to assess model stability.

RESULTS AND DISCUSSION

The median age of the cohort was 75 years, 52% were women. In the first 7 days, 25 patients showed improved neurological deficits (indicated by a NIHSS decrease), while 3 presented no changes and only 1 deteriorated. A positive association was observed between the NIHSS score and 2-ethyl-1-hexanol, cyclohexanone and acetophenone in urine, and B-hydroxybutyrate in plasma. These findings are possibly associated with neurotoxicity, cellular death, worsening of cardiovascular function and cognitive deficits. Twenty-two patients showed worsened functional outcomes 3 months post-stroke (given by a higher mRS), while 7 remained unchanged. A positive association was found between the mRS and 5-methyl-3-hexanone and pyrrole in urine, and 6 regions containing lipid resonances in plasma. Of the latter lipid-containing regions, 4 positively correlated with triglycerides and 1 with HDL levels measured within the in-hospital stay. These findings may reflect dysbiosis of the GM, oxidative stress and perturbations in lipid metabolism.

CONCLUSION

Despite the small cohort size, these findings suggest that metabolomics has the potential to identify post-stroke metabolic disruptions and their association with neurological deficits and functional independence. Identifying metabolic alterations associated with a poor cognitive status may help to uncover novel therapeutic targets and improve the management of preventive strategies.

THE RISK OF WAITING FOR CARDIAC SURGERY

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Keywords: *Cardiac surgery, Waiting list*

INTRODUCTION

Cardiac disease is associated with a risk of death, not only by the cardiac condition but also by comorbidities. There is a waiting time since the onset of symptoms, completion of the diagnosis and surgical waiting list (SWL). This study was conducted during the SARS-COV2 pandemic which disturbed the surgical capacity and patients' morbidities.

Our aim is to study the hazards of waiting, mortality predictors and develop recommendations regarding waiting times.

METHODS

The study cohort includes 1914 consecutive adult patients (36,6% women, mean age 67,3 ±11,2 years), prospectively registered in the official SWL January 2019 to December 2021. Only waiting times between 4 days and one year were analyzed, to exclude urgencies and outliers. Patients were classified by the national criteria of priority for general surgery or for oncology surgery (Table).

RESULTS

During study period 74% patients were operated, 19,2% were still waiting, 4,3% were dropped out and the mortality was 2,5%. Most cases were valvular (41,2%) or isolated bypass procedures (34,2%).

The most frequent causes of dropping out were a very high risk on a second evaluation, patient refusal, and surgery at another institution. The remaining 1831 patients were studied and classified as non-priority 29,7%, priority 61,8% and high priority 8,6%, with significant different SWL mean times between groups ($p<0,001$). The overall mean waiting time was 167,3±135,1 days.

By univariate analysis there was a trend to higher mortality on priority patients versus non-priority ($p=0,065$) and the year 2021 versus 2019 ($p=0,074$). There was no significant difference among the types of procedures. On multivariate analysis there were two mortality independent predictors: age (HR1,05 (CI95%1,01-1,08) and the year 2021vs2019 (HR2,07 (CI95%1,02-4,21).

There was a constant mortality risk increase with time during the overall SWT with different slopes for each year (Figure).

Patients operated on time, had a lower risk ($p=0.11$) compared with those that exceeded it, in each priority group. Using the time limits for SWL in oncology, there would have been a significant risk reduction ($p=0.011$).

CONCLUSION

This study shows that if we follow the time limits for SWL in oncology, mortality will be lower.

The increased risk observed in 2021 may be related to the pandemic by increasing the waiting time or by direct mortality. Since risk stratification is not accurate, the waiting time is the most important factor for mortality.

COMPLICATIONS AND RISK ASSESSMENT IN HUMANITARIAN PEDIATRIC TETRALOGY OF FALLOT SURGERY

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Keywords: *Tetralogy of Fallot, Risk Score, Pediatric patients, Humanitarian programs, Surgical correction*

INTRODUCTION

Surgical correction of Tetralogy of Fallot is typically performed during the early months of life. Humanitarian programs offer untreated pediatric patients coming from underdeveloped countries the opportunity of surgical intervention. However, late repair increases the risk of complications for these patients.

OBJECTIVE

To assess postoperative complications following Tetralogy of Fallot in humanitarian pediatric patients and to develop a risk score for complications using pre-operative, peri-operative, and post-operative variables.

METHODS

Between January 2019 and May 2023, with support of humanitarian program, 115 patients underwent complete repair of Tetralogy of Fallot in our institution. We collected pre-operative, peri-operative and post-operative data and analysed complications within the first 30 days postoperatively.

RESULTS

A total of 115 patients underwent complete repair of Tetralogy of Fallot, with a median age of 1451 (1384) days. All patients survived; however, 24,3% of patients experienced at least one type of complication within the first 30 days postoperatively. We observed that pre-operative variables, such as "pulmonary valve annulus" (OR=0.053; 95%CI=0.008-0.374; p=0.003) and "pulmonary valve annulus Z-Score" (OR=0.680; 95%CI=0.511-0.907; p=0.009), as well as peri-operative variables including "surgical technique for Right Ventricle Outflow Tract using RV-PA conduit" (OR=6.560; 95%CI=1.938-22.211;p=0.003) and "Cardiopulmonary bypass time" (OR=1.020; 95%CI=1.004-1.035; p=0.010) and post-operative variables such as "maximal residual Right Ventricle Outflow Tract gradient" (OR=1.057: 95%CI=1.003-1.113; p=0.039), "intensive ventilation time"(OR=1.068; 95%CI=1.028-1.110; p=0.001), "Intensive Care Unit time" (OR=2.240; 95%CI=1.502-3.339; p<0.001) and "Hospitalization time" (OR=1.202; 95%CI=1.094-1.320; p<0.001) were significantly associated with overall complications. We formulated a risk score that include these variables that demonstrated good discriminatory capacity to distinguish patients with and without global complications (AUC=0.859; p<0.001), assuming a sensitivity cutoff point of 90.9% and specificity of 71.1%.

CONCLUSIONS

This study demonstrates that late complete surgical repair of Tetralogy of Fallot has low morbidity. The presence of post-operative complications is associated with the surgical technique for Right Ventricular Outflow Tract using RV-PA conduit, as well as pre-operative hypoplasia of pulmonary valve annulus, and post-operative increase in maximal residual Right Ventricle Outflow Tract gradient, extracorporeal circulation time, intensive ventilation time, intensive care unit time, and hospitalization time. The proposed risk score can distinguish patients with and without post-operative complications.

HYBRID APPROACH TO A PANCOAST TUMOR

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Keywords: *Pancoast; Apex; Lung Cancer; VATS*

According to the American College of Chest Physicians, Pancoast tumors are tumors of the apex of the chest and invade apical chest wall structures, accounting for 3-5% of lung tumors.

We report a surgical technique for a Pancoast tumor resection using thoracoscopy and a transmanubrial approach.

We report a case of a 64-years-old nonsmoking caucasian male with no relevant personal history who presented with upper chest pain over the past 7 months. Physical and neurological examination were normal.

Imaging evaluation revealed a highly hypermetabolic mass of 36mm long axis in the right lung apex without cleavage plane with the mediastinum, right subclavian artery and vein and the posterior surface of the 1st rib, without other hypermetabolic lesions or adenopathies. EBUS-TBNA of mediastinal stations 4L, 7, 10R and 11R were free from disease. Brain MRI and lung function test were normal. Transthoracic biopsy confirmed malignancy. Four weeks after 2 cycles of neoadjuvant chemotherapy, the patient underwent a 3-stage surgery. Firstly, the patient was positioned in left lateral decubitus and, through uniportal VATS, it was confirmed that the apex was invading the thoracic inlet and it was divided from the remaining right upper lobe. Then, the patient was positioned in dorsal decubitus for a transmanubrial approach of the thoracic inlet. A J-shaped manubriotomy at the first intercostal space was made and dissection allowed the identification of the right subclavian artery and vein which were not invaded by the tumor, as well as the first rib. Therefore, its complete resection (R0) was possible without excising any surrounding structures. In the third stage, the patient was re-positioned in left lateral decubitus and right upper lobectomy was completed with mediastinal lymphadenectomy by uniportal VATS.

Pathology reported a PD-L1 negative neuroendocrine large cell carcinoma combined with adenocarcinoma with visceral and parietal pleura invasion, ypT3N0M0, IVL, IPN (TNM 8thed).

No intra or post-operative complications were reported and the patient was discharged on the 5th post-operative day. Six weeks after surgery 2 cycles of adjuvant chemotherapy were initiated. At 8-months follow-up, no evidence of recurrence was found.

Pancoast tumors are difficult to resect due to the location of the apex, a small and rigid area, and the need to approach the pulmonary hilum. Classic approaches may be very mutilating, causing post-operative pain and physical limitations. In this case, thoracoscopy and preservation of the sternoclavicular joint allowed a rapid recovery, adequate pain control and no sequelae.

PREDICTIVE FACTORS DRIVING POSITIVE AWAKE TESTS IN CAROTID ENDARTERECTOMY USING MACHINE LEARNING ENSEMBLE MODELS

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Keywords: *Carotid stenosis; intraoperative neurologic deficits; atherosclerosis; perioperative stroke; regional anesthesia*

BACKGROUND

Positive neurologic awake testing during the carotid cross-clamping may be present in around 8% of patients undergoing carotid endarterectomy (CEA), a vascular procedure to treat carotid stenosis and further secondary stroke prevention. The present work aimed to assess the accuracy of an artificial intelligence (AI)-powered risk calculator in predicting intraoperative neurologic deficits (ND).

METHODS

Data was collected from carotid interventions performed between January 2012 and January 2023 under regional anesthesia. Patients with ND were selected along with consecutive controls without ND in a case-control study design. A predictive model for ND was developed using machine learning, specifically Extreme Gradient Boosting (XGBoost) model, and its performance was assessed and compared to an existing predictive model. SHAP analysis was employed for the model interpretation.

RESULTS

Among 216 patients, 108 experienced ND during CEA. The AI-based predictive model achieved a robust area under the curve (AUC) of 0.82, with an accuracy of 0.75, precision of 0.88, sensitivity of 0.59, and F1Score of 0.71. High body mass index (BMI) increased contralateral carotid stenosis, and a history of limb paresis or plegia were significant ND risk factors. Elevated preoperative platelet and haemoglobin levels were associated with reduced ND risk.

CONCLUSIONS

This AI model provides precise ND prediction in CEA, enabling tailored interventions for high-risk patients and ultimately improving surgical outcomes. BMI, contralateral stenosis, and selected blood parameters emerged as pivotal predictors, bringing significant advancements to decision-making in CEA procedures. Further validation in larger cohorts is essential for broader clinical implementation.

THE RARE CASE OF A THYMIC MASS: THE LIMITS OF THORACOSCOPIC THYMECTOMY

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Keywords: *thymoma; lymphangioma; CNS metastasis; video-assisted thymectomy*

The goal of thymic tumor surgery is complete en-bloc resection of the entire gland and all involved structures with free margins. Median sternotomy was the standard approach but minimally invasive techniques have long proved effective in a wide range of patients.

A 37 years-old man was diagnosed a central nervous system (CNS) venous thrombosis after perioral myoclonus. Investigation for a paraneoplastic syndrome revealed an anterior non-invasive mediastinal heterogeneous mass with peripheral calcifications, measuring 67x58x57 mm. One month later, a repeat cranial-encephalic (CE) magnetic resonance imaging (MRI) demonstrated a slight increase in the previous lesion and a new millimetric fronto-basal lesion, favouring metastasis. Positron emission tomography (PET-CT) showed hypermetabolism of the mediastinal mass only. Beta-2 microglobulin, beta-human chorionic gonadotropin, a-fetoprotein, calcium and parathyroid hormone were normal. Multidisciplinary discussion involving Neurology, Oncology and Thoracic Surgery, proposed surgical approach after taking into consideration the absence of diagnosis and probability of complete resection. Left-sided 3 port video-assisted thoracic surgery (VATS) identified a multicystic non-invasive lesion of the anterior mediastinum. Radical en-bloc thymectomy was achieved with excision of mediastinal fat pad from the apex to the diaphragm. The specimen was removed whole, inside an Endobag, through a mini-thoracotomy, connecting the 2 inferior ports. He was discharged the second post-operative day. Pathology revealed a pT1N0, B2 thymoma within a lymphangioma, with free margins.

In spite of the hypothesis of a mediastinal tumor, with metastatic CNS lesions, a resectable mass of the anterior mediastinum has clear indication for primary surgical approach. Regardless of recommendations against VATS thymectomy in large lesions, a complete en-bloc resection was achieved by VATS, and pathology confirmed the suspicion of thymoma, not usually associated with CNS metastasis. Thoracoscopy can also be used as initial intraoperative evaluation of undiagnosed mediastinal masses less accessible to transthoracic core biopsy. Given the diagnosis of stage I B2 thymoma, the hypothesis of CNS metastasis was questioned at the multidisciplinary meeting and a control MRI planned in 2 months.

Thoracoscopic thymectomy seems a safe alternative to median sternotomy in experienced centers, offering excellent visualization with adequate resection, reduced morbi-mortality, and enhanced cosmetic appearance. Size in itself is not a contraindication to complete VATS resection, given that the specimen is gently handled, and is extracted whole, without pleural seeding.

THORACO-ABDOMINAL WALL RECONSTRUCTION OPTIONS: CLINICAL CASE AND REVIEW OF THE LITERATURE

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Keywords: *chondrosarcoma; R0 resection; diaphragmatic reconstruction; PTFE prosthesis; polypropylene mesh; titanium bar; plastic surgery*

Chest wall tumours reflect a wide range of uncommon diseases and represent a diagnostic and therapeutic challenge. The resection strategy is to ensure an R0 resection that requires a multidisciplinary cooperation of thoracic and plastic surgeons.

We present the case of a 49-year-old man, that was diagnosed a benign nodule of the right lower rib cage four years earlier in a computed tomography (CT) scan. A painful swelling was now evident upon examination and the CT scan revealed an osteolytic lesion of the 8th right rib, measuring 85x73x78mm, with extensive liver contact and no safe cleavage plane. An image-guided core biopsy suggested a low grade chondroid proliferation. After multidisciplinary sarcoma tumor board discussion, a low-grade chondrosarcoma was assumed with indication for surgical resection.

He underwent en bloc excision of the lesion encompassing the anterior segments of the 7th to 9th costal arches and diaphragmatic flap that was involved but there was no evidence of hepatic adhesions. Free macroscopic margins of 2cm were assured. Diaphragmatic reconstruction was performed with a double-sided polytetrafluoroethylene (PTFE) prosthesis. The chest wall was reconstructed using a polypropylene mesh and a titanium bar neo-rib. The polypropylene mesh covered both the thoracic and abdominal defect and was fixed to the PTFE prosthesis, creating a neo-gutter. Then, the plastic surgeon covered the defect with a myocutaneous rotation of the latissimus dorsi muscle. The post-operative period was uneventful. Pathological anatomy revealed a grade 2 chondrosarcoma with free margins.

Reconstruction options vary according to size, location, functional and cosmetic goals. The ideal prosthetic materials should satisfy some characteristics such as being appropriately rigid, inert, malleable, and if possible, radiolucent. Rigid prosthesis for reconstruction was deemed necessary in this case after resection of three ribs of the anterolateral chest wall, allowing for chest wall contour and volume to be maintained. If diaphragmatic function could be compromised in the resection, or a large portion of the lung removed, the option of a higher diaphragmatic reimplantation, without the need for rigid chest wall reconstruction was also an option. A prosthetic material was used but biological materials are also eligible.

With the advances and experience in toraco-abdominal wall reconstruction with the variety of materials available today, including 3D printing for complex reconstructions, nearly any chest wall lesion can be managed successfully. The variety of techniques and prosthetic devices remains a topic to be debated.

CHYLOTHORAX MANAGEMENT: A SINGLE CENTRE EXPERIENCE

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Keywords: *Chylothorax; daily output of pleural fluid; nil per oral diet; octreotide; invasive treatment*

Chylothorax is a rare condition that results from the accumulation of lymphatic pleural fluid (PF). Causes are divided into traumatic or spontaneous. To date, consensus guidelines on its management are unavailable.

The aim of this study was to review our experience with the diagnostic and therapeutic approach to chylothorax.

This is a cross-sectional retrospective study of patients diagnosed with chylothorax at our thoracic surgery department between January 2017 and July 2023. Data included demographics, aetiology, treatment and drainage evolution.

A total of 19 patients (6 males, 13 females) with a medium age of 61,7 years-old (32-77) were included. 18 patients presented a traumatic cause (94,7%), 17 of which following lung/mediastinal surgery, and 1 after blunt trauma. The average daily output (DO) of PF was 383,8 ml (range100-1200) the first 24 hours after surgery, and 426,5 ml (range 0-3000) after initiation of nil per oral diet (NPO) with octreotide (one outlier case of high flow chylothorax). Within the cases resolved conservatively, average DO was 294,2 ml the first 24 hours, dropping to 223 ml after initiation of NPO. On the other hand, the cases needing invasive management, average initial DO was 675 ml with 1087,5 ml after NPO. Patients completed on average 6,7 days of NPO (range 1-25) and 8,5 days of octreotide (range 2-25). In 9 cases, total parenteral nutrition was instituted for 6,6 days (range 3-20). Medium pleural drainage was 15,2 days (range7-48). All patients initially underwent conservative treatment, due to low initial drainage, but subsequently, 4 needed surgical /percutaneous treatment (1 pleurodesis, 3 thoracic duct ligation, 1 percutaneous lymphangiography).

Post-operative (PO) chylothorax can be treated with conservative measures in most cases since initial high volume is a poor indicator for treatment success. First approach should be a watchful waiting of at least 24h after instituting NPO. Nutritional and immunological depletion is a risk in high volume chylothorax, so a swift decision for optimal management is essential to avoid complications and even death. The role of octreotide has not been validated but has been shown to reduce lymphatic drainage, which is in agreement with our experience.

Conservative treatment with NPO and octreotide was successful in resolving 76,5% of PO chylothoraces. However, cause, volume of PF, nutritional status and early response to non-invasive management are factors to take into consideration when choosing the best therapeutic approach.

MINIMALLY INVASIVE TECHNIQUES IN MITRAL VALVE COMPLICATION: CASE REPORT OF A VALVE-IN-VALVE REPLACEMENT

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Keywords: *MICS, Mitral Valve, Redo Cardiac Surgery*

INTRODUCTION

Repeat cardiac surgery is a challenging scenario that is becoming increasingly common as healthcare advances lead to early diagnoses, extended lifespans, and improved patient care. In this case report, we present the challenges encountered during the reoperation of a mitral valve failure due to thrombosis in a 64-year-old woman with atrial fibrillation and rheumatic mitral valve disease. Her initial surgery in 2021 included mitral valve replacement, tricuspid valve annuloplasty, and left atrial appendix occlusion using an external clip device. Notably, the patient had a significant medical history, having previously experienced type 2 heparin-induced thrombocytopenia (HIT) during her initial post-operative period.

OBJECTIVES

This complex case was characterized by the timing of the previous surgery, the patient's immune response to heparin, and her fragile clinical state. Our primary objective was to provide the patient with a life-saving intervention to replace the damaged prosthesis with a functional valve.

METHODS

The surgical and anaesthesiology teams extensively discussed the approach, ultimately opting for a right mini-thoracotomy with peripheral femoral cannulation. Bivalirudin was chosen as the anticoagulation strategy during cardiopulmonary bypass. Upon reaching the mitral prosthesis, we encountered firm adherence to the surrounding atrial tissue and mitral ring, raising concerns about the risk of atrioventricular groove avulsion. Collaboration with the cardiology team led to the decision to implant a valve-in-valve trans-aortic valve system. Following the removal of the damaged leaflets, the transcatheter aortic valve (TAV) was anchored on the rigid ring of the prosthesis under direct vision. Intraoperative transoesophageal echocardiography confirmed the proper positioning of the new valve with no obstruction to the left ventricular outflow tract.

RESULTS

Despite challenges in weaning the patient from invasive ventilation, she exhibited a favourable postoperative course with minimal cardiovascular support requirements. Serial transthoracic echocardiograms consistently showed excellent surgical results, including a mean gradient across the mitral valve of 3 m/s, absence of perivalvular leaks, and preserved biventricular function. Approximately one month postoperatively, the patient was transferred to a local hospital to continue respiratory therapy and cardiac rehabilitation.

CONCLUSION

This case emphasizes the critical role of a multidisciplinary approach in managing complex cases involving multiple comorbidities and previous surgical interventions. Furthermore, it underscores the benefits of employing minimally invasive techniques in redo cardiac surgeries to reduce surgical trauma and enhance postoperative recovery.

VENTRICULAR SEPTAL RUPTURE AFTER ACUTE MYOCARDIAL INFARCTION – CAN MECHANICAL CIRCULATORY SUPPORT GIVE US EXTRA TIME?

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Keywords: *acute myocardial infarction; mechanical complications; mechanical circulatory support.*

INTRODUCTION

Ventricular septal rupture (VSR) after myocardial infarction (MI) is a rare but life-threatening complication. Since reperfusion became standard of care, its incidence decreased from 1-3% to 0.17-0.31%; but mortality remains high (20-90%). Patients may present or rapidly evolve to cardiogenic shock (CS) and ineffective stabilization may prompt emergent surgery and worsen mortality rate. Although surgery is the gold standard treatment, best surgical timing is still a matter of debate, and studies are showing a tendency towards survival improvement with delayed intervention. Mechanical circulatory support (MCS) may be useful for hemodynamic stabilization and myocardial scarring until surgical repair.

OBJECTIVES

To share the outcomes and management of two MI-associated VSR patients submitted to delayed surgery after MCS stabilization.

RESULTS AND CONCLUSION

Both patients were male, with 46 years (Patient A) and 58 years (Patient B), diagnosed with inferior MI due to right coronary artery occlusion and complicated with VSR and left-to-right shunt. Patient A had intra-aortic balloon pump (IABP) insertion at diagnosis and was put on VA-ECMO at ICU admission a few hours later. At day 8 (D8) was submitted to scheduled VSR correction plus coronary artery bypass graft (CABG) and kept post-operatively on VA-ECMO. Several complications arouse including intra-operative difficult bleeding control, cardiac tamponade and septal patch malfunction a few hours later with resurgence of ventricular shunt. Unsuccessful percutaneous closure was attempted 7 days later (D15). The patient was then submitted to heart transplant (HT) 11 days later (D26), decannulated from ECMO at D28 and ICU discharged at D37. Patient B was submitted to primary percutaneous intervention and IABP insertion at diagnosis. At day 5, he complicated with cardiac tamponade and emergent VSR repair in this context was done. No apparent intraventricular shunt was present after the procedure. Ventriculography 7 days after surgery showed large septal defect with left-to-right shunt, so it was decided a redo surgery with apparent resolution of septal defect (D20). The patient evolved with CS peri-procedure needing ECMO-VA for MCS. Favourable clinical evolution allowed decannulation from ECMO-VA 9 days later (D28). However, at D32 ventricular shunt reappeared and left ventricular dysfunction developed and worsened despite medical therapy, reason why he was submitted to HT (D40). He was discharged from ICU 8 days later. Although VSR repair did fail, MCS allowed patient's stabilization and, more importantly, became a bridge for successful heart transplant.

LEAD EXTRACTIONS OVER 15 YEAR PERIOD

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Keywords: *Lead extraction, Lead removal, Cardiovascular implantable devices, Transvenous extractions, Open-heart surgery*

INTRODUCTION

The number of cardiovascular implantable electronic devices has increased over recent years. As a result, more of them will require removal over time. Clinical research is essential for understanding efficacy and risks of lead extractions, predictors of procedural failure, other major complications and how to overcome them

OBJECTIVES

Analyze all consecutive lead extractions performed in our medical and surgical center over a 15-year period.

METHODS

Consecutive lead extractions, performed between 2008 and 2022 were retrospectively reviewed. Lead explants with <1 year were excluded. Definitions as in 2018 EHRA expert consensus described in table 1. The primary composite endpoint represents procedural safety defined by major procedure-related complications including procedure-related death, procedure failure or bailout surgery. Secondary endpoints included procedural and clinical success, incomplete removal, and re-infection.

RESULTS

The population included 176 patients (300 leads); [mean age 70(8–92) years; 73% men]. Transvenous extractions tools: 16%(n=28) single traction; 19%(n=33) locking stylets, and 29%(n=51) powered sheaths (LASER 14%(n=25) and mechanical15%(n=26)). Surgical extraction as first intention: 5%(n=9) and as bailout surgery: 5%(n=9). Missing cases: 28%(n=49). The primary composite endpoint rate was 12%(n=21) including a mortality of 2%(n=4). The complete procedural success rate was 84%(n=148), the clinical success rate was 92%(n=162) and the procedural failure rate was 8%(n=14). The incomplete removal rate was 16%(n=28), with a radiological failure of 8%(n=14). On univariate analysis by binary logistic regression, the independent predictor of primary composite endpoint was leads with a dwell time>10 years (OR 2,77, 95% CI 1,07-7,14, p=0,035). Predictors of procedure-related death: incomplete removal (OR 17,64, 95%CI 1,76-176,39, p= 0,015); radiological failure (OR 43,90, 95%CI 4,21-457,72, p=0,002); COPD (OR 10,78, 95%CI 1,40- 82,53, p=0,022) and re-infection (OR 20,50, 95%.5-164,82, p=0,005). Extractions using LASER sheaths were independent predictors of incomplete removal (OR 3,08, 95%CI 1,77-8,07, p=0,022).

Radiological failure and incomplete removal were also predictors of re-infection (OR 6,03, 95%CI 1,36-26,64, p=0,018) and (OR 6,21, 95%CI 1,66-23,16, p=0,006) respectively.A stepwise multiple logistic regression was used to determine the predictors of procedure-related death. Incomplete removal and COPD remained significant predictors (OR 19,87, 95%CI 1,73- 227,10, p=0,016) and (OR 13,59, 95%CI 1,38-133,54, p= 0,025) respectively.

CONCLUSIONS

Incomplete lead removal and radiological failure were predictors of procedure- related death and re-infection. LASER sheaths were associated with a higher rate of incomplete removal. Leads with a dwell time>10 years were found significant predictors of the primary composite endpoint. Surgical extractions were not associated with worst outcomes.

HAND-ARM VIBRATION SYNDROME: A CASE REPORT

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Keywords: *Hand-arm vibration syndrome; HAVS*

Hand-arm vibration syndrome (sometimes abbreviated to HAVS) causes changes in the sensation of the fingers which can lead to permanent numbness of fingers, muscle weakness and, in some cases, bouts of white finger. It is caused by working with vibrating tools.

The vascular abnormalities are due to arterial spasm, stenosis, and occlusion; injury to the intima, leading to thrombosis; and injury to the media, leading to aneurysm formation.

We report a case that demonstrates how to diagnose HAVS on the basis of history, physical examination, and vascular imaging and its treatment options.

A 57-year-old man, previously healthy, who regularly used vibrating tools presented with nonhealing wounds on his right third and fifth digit. Initially, it was decided to perform an ultrasound scan that presented a lesion of the ulnar artery, but due to low acuity, an arteriography was also performed. Arteriography revealed occlusion of ulnar artery and occlusion of palmar arch on the cubital side and segmental occlusion of the digital arteries in his hand with formation of collaterals. Based on his history of prolonged exposure to vibratory tools and the pattern of disease in his imaging studies, we concluded that he had HAVS and advised limited vibration exposure, topical vasodilators, and systemic vasodilators. After several weeks of topical therapy and abstention from use of vibratory tools, the wounds on his right hand healed.

HAVS is a debilitating condition with often irreversible vascular damage, requiring early diagnosis and treatment. HAVS should be suspected whenever vascular or neurologic damage of the hands is present in a worker exposed to vibration. HAVS can be identified with a combination of occupational history, neurovascular symptoms, and vascular imaging.

CASE REPORT: WHERE OPEN-HEART SURGERY AND ENDOVASCULAR MEET

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Keywords: *Case report, Chronic Aortic dissection, Cardiac surgery, Endovascular, Frozen Elephant Trunk, TEVAR*

BACKGROUND

Chronic thoracic aorta aneurysm is associated with increased morbidity and mortality, especially when late dissection or aortic arch involvement occurs. Treatment and follow up of these patients is challenging requiring frequently surgical, endovascular or hybrid interventions to treat or prevent aortic rupture.

CASE PRESENTATION

We present a case report of a 72-year-old-male with a thoraco-abdominal aorta aneurysm type V, which was replaced 10 years ago by a conduit with implantation of 1 pair of intercostal arteries. The postoperative period was complicated with a mild paraparesis which he recovered.

The patient returned with an asymptomatic type A chronic aortic dissection and aneurysm extending from aortic root to the thoracic descending aorta just above the previously implanted conduct (diameter of ascending aorta 72 mm, aortic arch 48mm and descending aorta 66mm). The aortic valve had 3 normal leaflets, an enlarged right coronary sinus and a mild regurgitation. The false lumen was partially thrombosed.

The tailored surgical strategy was two sequential procedures with replacement of the aortic arch as a first stage, followed by a thoracic endovascular repair (TEVAR). The first procedure combined the frozen elephant trunk (FET) implantation with aortic valve repair (suspension of the aortic valve commissures) and exclusion of the non-coronary sinus. The post-op was uneventful and he was discharged on postoperative day 8. Five months later he was submitted to a non-fenestrated TEVAR procedure, which covered the previous implanted intercostal arteries. The post-op was complicated with a period of confusion and delirium, but no worsening of paraparesis or any other neurological dysfunction. He was discharged on day 21.

CONCLUSION

Chronic aortic dissection can be a complex disease with many treatment options. Tailoring the treatment to the patient's anatomy and the frailty, including surgical and percutaneously procedures, is the advised option.

BLUNT TRAUMA COMPLICATED BY POPLITEAL ARTERY ANEURYSM OCCLUSION: A RARE CASE OF ACUTE LIMB ISCHEMIA

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Keywords: *Blunt trauma; popliteal artery aneurysm; acute limb ischemia*

Popliteal artery aneurysms (PAAs) are rare in general population but represent the second most common peripheral arterial aneurysms following those located in the aortoiliac segment. PAA are responsible for 70 to 80% of cases of peripheral aneurysms. They have greatest incidence in men over 65 years of age and in 50% of cases they are bilateral.

While etiology is multifactorial, the most common agent is atherosclerosis. Other more unusual conditions such as trauma, congenital popliteal aneurysm, mycotic aneurysm, inflammatory arteritis, or popliteal entrapment are responsible.

Clinical diagnosis only occurs when arterial dilation has attained large dimensions or when ischemic complications in the limb emerge. Clinical manifestations of PAA include acute arterial thrombosis, distal embolization, compression of veins and/or nerves and rupture, the last of which is a rare complication.

Patients may be asymptomatic or they may present with ischemic symptoms related to thrombosis of the aneurysm or an embolic event secondary to it, which can occur in 33% of cases. The manifestations of ischemia are the same that result from any type of ischemic event, including pallor, low-temperature, absent pulses paresthesia and pain.

We report a case of a 86-year-old man with prior history of blunt trauma to the lower limbs 10 days before coming to ER department. The patient was admitted to our department complaining of pain and edema in the right lower limb. On examination, had irreversible ischemia of the right lower limb. Computed tomography angiogram (CTA) demonstrates thrombosed right popliteal aneurysm and left popliteal aneurysm measuring 5.8cm with significant mural thrombus. The patient underwent right transfemoral amputation and exclusion of the left popliteal aneurysm with reversed VGS femoropopliteal bypass.

TECHNICAL SUCCESS AND THROMBOTIC COMPLICATIONS ON UPPER LIMB VASCULAR ACCESS FOR ENDOVASCULAR REPAIR OF COMPLEX ABDOMINAL AORTIC ANEURYSMS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Keywords: *Complex abdominal aortic aneurysm, Endovascular repair, Upper limb vascular access, Technical success, 30-day stroke, 30-day mortality, Local complications*

OBJECTIVES

This systematic review and meta-analysis aim to evaluate the effectiveness and risk of complications associated with upper limb catheterization of visceral vessels during complex endovascular repair of abdominal aortic aneurysms.

DATA SOURCES

We systematically searched three major databases (PubMed, Cochrane CENTRAL, and Web of Science) in April 2023, without restrictions on language or publication date.

REVIEW METHODS

Following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines, we included various study designs (randomized controlled trials, non-randomized interventional studies, cohort studies, case-control studies, and case series) reporting on upper limb vascular access for elective endovascular repair of complex abdominal aortic aneurysms. Eligible populations comprised individuals aged 18 years and older. Exclusion criteria included non-complex abdominal aneurysms, ruptured aneurysms, and studies with fewer than 50 participants. We conducted study selection, data extraction, and quality assessment systematically. Quality assessment followed the National Heart, Lung, and Blood Institute (NHLBI) Study Quality Assessment Tool for observational cohort and cross-sectional studies (2013).

RESULTS

The meta-analysis revealed a high technical success rate (pooled estimate: 99.2%) for target vessel catheterization and endograft placement. However, significant heterogeneity was observed (I^2 = 95.7%). The incidence of 30-day stroke was low (pooled estimate: 1.4%) with moderate heterogeneity (I^2 = 22.8%). Similarly, 30-day mortality was rare (pooled estimate: 1.3%) but with significant heterogeneity (I^2 = 58.7%). Local access-related complications were observed in a considerable proportion (pooled estimate: 3.2%), with high heterogeneity (I^2 = 82.7%).

CONCLUSION

Upper limb catheterization for visceral vessel access during complex endovascular repair of abdominal aortic aneurysms demonstrates high technical success rates but carries a risk of local access-related complications. The low incidence of 30-day stroke and mortality suggests the procedure's overall safety. These findings underscore the importance of meticulous patient selection and procedural planning to minimize complications. Further research is needed to refine the understanding of the comparative risks and benefits associated with upper limb vascular access in this context.

EMPYEMA? MAYBE NOT – CASE REPORT

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Keywords: *empyema; solitary fibrous tumor*

CASE REPORT

A 75-year-old woman with no significant personal history, sought the emergency department with right-sided posterior chest pain that has been evolving for 24 hours. The pain had pleuritic characteristics, occurred after minimal exertion, without radiation, and fever. She also reported dyspnea during moderate efforts (mMRC 2) for approximately 2 months. A chest X-ray showed homogeneous hypotransparency on the right side, and blood gas analysis indicated hypoxemia. Laboratory tests revealed leukocytosis and a C-reactive protein level of 28mg/dL. Blood cultures were negative. A chest CT scan revealed a right pleural effusion with a predominant volume in the sub pulmonary region, assuming an estimated oval-shaped morphology measuring 95 x 97 x 60 mm (T x AP x L), with density higher than water and minimal gas within its upper aspect, suggesting the presence of an empyema with apparent encapsulation. Additionally, there was subtotal consolidation with air bronchogram in the right lower lobe, highly suggestive of an associated parenchymal infectious process, as well as passive atelectasis due to the aforementioned effusion. Empiric treatment with Piperacilin/tazobactam was initiated for 21 days due to suspected empyema but did not result in clinical or radiological improvement. Pleural fluid's biochemistry: pH 7.31, glucose level 119mg/dL. Microbiological and cytological analysis was negative. Multiple attempts to place a thoracic drain under ultrasound guidance were unsuccessful. Subsequently, the patient underwent thoracotomy, during which a solid capsular lesion of approximately 9 cm was found above the diaphragm, sub pulmonary, and adhered to the chest wall below the right inferior lobe. The parietal pleura appeared highly hemorrhagic after the excision of the lesion. The pathology results indicate a low-grade malignancy/benign fusocellular neoplasm, with inconclusive findings from the immunohistochemical study. However, the observed morphological characteristics and clinical context strongly suggest that it may be a solitary fibrous tumor.

DISCUSSION

Solitary fibrous tumor of the pleura is a rare tumor originating in mesenchymal cells. They affect mainly adults between the sixth and seventh decades of life with the same distribution between men and women and represent less than 5% of all tumors of the pleura. They are of variable behavior but mostly indolent and benign. Generally, SFTP is vimentin, CD34, CD99 and bcl-2 positive and cytokeratin negative. Immunohistochemically, strong nuclear staining of signal transducer and activator of transcription 6 (STAT6) has become characteristic of SFTP. The exact cause of SFT remains unknown. Surgical resection of tumor is the treatment of choice.

SEGMENTECTOMIES: 5-YEAR EXPERIENCE OF A CENTER.

Catarina Figueiredo (Portugal)[1]; Catarina Moita (Portugal)[1]; Zenito Cruz (Portugal)[1]; João Maciel (Portugal)[1]; Ana Rita Costa (Portugal)[1]; João Santos Silva (Portugal)[1]; João Eurico Reis (Portugal)[1]; Paulo Calvinho (Portugal)[1]

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Keywords: *segmentectomy, early-stage lung cancer, survival*

INTRODUCTION

Segmental anatomical resections have been a subject of debate in recent years. There is increasing evidence that these procedures may offer some advantages in the treatment of early-stage lung cancer, with overall survival (OS) and disease-free survival (DFS) similar to those seen in lobar anatomical resections.

OBJECTIVES

This study aims to review all segmentectomies performed, focusing on those performed for primary lung neoplasms in our center. We aim to provide a descriptive analysis of this patient cohort, and evaluate OS and DFS outcomes.

MATERIALS AND METHODS

We conducted a retrospective analysis of patients who underwent segmentectomy at our center between January 2018 and September 2022.

Patients undergoing trauma-related segmentectomy or as a secondary procedure were excluded.

RESULTS

37 segmentectomies were performed, of which 34 were included in this analysis. 29 (85.3%) were performed for malignancies, 5 (14.7%) for benign conditions. Of the malignancies, 24 (82.8%) were primary lung neoplasms (PLN): 17 (70.8%) adenocarcinomas (ADC), 2 (8.3%) squamous cell carcinomas (SCC), 4 (16.7%) typical carcinoids (TC), and 1 (4.2%) adenomatous hyperplasia; 5 (17.2%) were colorectal-origin metastases. Among the benign cases: 3 (60%) were aspergillomas.

Regarding PLN patients: Mean age was 71 years (min=56;max=88), with 9 (37.5%) females and 15 (62.5%) males. In 11 (45.8%), FEV1 or DLCO was <60%. 18 (75%) were smokers. Lesions were mostly solid nodules (N=12;50%). Others included subsolid lesions (N=11;45%) and 1 (4.2%) cystic formation.

At surgery, only 3 (12.5%) patients had a pre-operative histological diagnosis (ADC=2; SCC=1). 21 (87.5%) were stage IA, 3 (12.5%) were IB.

Procedure was performed via VATS (N=17;70.8%), via thoracotomy (N=5;20.8%) and via RATS (N=2;8.3%). 23 (95.8%) were R0 resections.

Postoperatively: 19 (79.2%) were stage IA; 3 (12.5%) IB; ,1 (4.2%) IIB, and 1 (4.2%) IIIA. 3 (12.5%) had upstaging.

2 (8.3%) patients underwent adjuvant chemotherapy, 1 (4.2%) had completion lobectomy. 2 (8.3%) experienced recurrence.

DFS was 100% at 3, 6, and 12 months, and at 3 and 5 years, was 88.9% and 66.7% respectively. OS was 100% at 3, 6, and 12 months and 95,2% at 3 and 5 years.

Median follow up time was 33 months.

CONCLUSION

This study reinforces the idea that segmental resections should be considered a viable option for patients with early-stage lung cancer. Although this analysis has some limitations, such as a limited number of preoperative histological diagnoses and postoperative upstaging, our results demonstrate promising OS and DFS, in accordance with recent literature.

HOW TO USE RADIO-GUIDED OCCULT LESION LOCALIZATION IN THE DETECTION OF PULMONARY NODULES: A PRACTICAL EXAMPLE

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Keywords: *radioguided occult lesion localization, lung nodule, preoperative localization, video-assisted thoracoscopic surgery*

INTRODUCTION

When a pulmonary nodule is identified and malignancy is suspected, a histological diagnosis is necessary to define therapy.

This can be performed using various techniques, such as image-guided percutaneous biopsy or bronchoscopy. However, due to nodule's characteristics and location, these may not be technically feasible or provide sufficient information for decision making.

Therefore, surgical biopsy may be the only viable option. Nevertheless, palpation and visual inspection may not be sufficient to identify the nodule and perform a resection with an adequate margin.

Various materials and techniques can be used to preoperatively identify the nodule's location, mainly with imaging support.

Radio-Guided Occult Lesion Localization (ROLL) was first described in year 2000 and is used in several centres. The principle of ROLL is the image-guided injection of a gamma-ray-emitting radiopharmaceutical into the target nodule. Intraoperatively, using a gamma probe, the signal is converted into a numerical and sound emission scale.

OBJECTIVES

To demonstrate in a case that ROLL was essential in identifying a cavitated lesion during a VATS-biopsy procedure.

METHOD AND RESULTS

We present a case of a 59-year-old woman, with history of rectal adenocarcinoma surgically treated in 2021.

A follow-up chest-CT showed bilateral, cavitated pulmonary nodules, with irregular morphology, suspicious of metastases. PET-CT revealed a nodule in left superior lobe with SUV=5.3.

In multidisciplinary team, we concluded that transthoracic/endobronchic biopsy was not feasible, so surgical biopsy was proposed, with ROLL-guided marking the day before.

In the operating room, VATS with 2 ports was performed. Gamma probe was then utilized, and the nodule was detected, both through numerical scale visualization and by audible feedback. Wedge resection was performed. Specimen was sent to pathological analysis, confirming R0 resection.

Definitive pathological analysis confirmed rectal adenocarcinoma metastasis.

CONCLUSION

With the rise of minimally invasive procedures in thoracic surgery, localization of small, non-solid pulmonary nodules continues to be a challenge.

Multiple techniques are feasible and effective. However, institutional preferences, workflows and resources influence the choice of one technique over another.

The efficacy of ROLL is high. It has a low rate of complications, and the route taken by the needle within the lung doesn't impact the surgical piece's volume. This enables the removal of deep nodules while preserving as much healthy lung tissue as possible. Additionally, it facilitates scheduling flexibility by allowing the procedure to be performed hours later, thus enhancing coordination among surgeons, radiologists, and nuclear medicine specialists.

EXTENSIVE ELECTIVE CARDIAC SURGERY IN ACHONDROPLASTIC PATIENT: CASE REPORT

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Keywords: *Achondroplasia, Ascending aorta aneurysm, Aortic stenosis, Coronary artery disease, Cardiac surgery*

Achondroplasia is the most common etiology of short stature in adults, with a prevalence estimated at 1 in 22,000 births. Patients with achondroplasia have an increased risk of cardiovascular disease, predisposing this population to surgical cardiac intervention. Surgical concerns arise regarding dimensions and skeletal abnormalities associated with achondroplasia. Post-operative care is also of concern. In spite of this, there is a low volume of published literature regarding cardiac surgery in this population.

In this paper we present a 77-year-old male referred to cardiac surgery due to symptomatic 2-vessel coronary artery disease, ascending aortic and arch aneurysm, and high-gradient aortic stenosis. We believe this to be the first report of extensive elective cardiac surgery including aortic aneurysm correction in this population.

The patient underwent ascending aorta and hemiarch repair, aortic valve replacement and single coronary artery bypass grafting. Right axillary artery was used for arterial cannulation, and venous cannulation was performed via the right atrium. Deep hypothermic circulatory arrest was initiated at 24º C, with selective bilateral antegrade cerebral perfusion.

Operative findings of remark include a severely calcified and functionally unicuspid aortic valve. The left anterior descending artery was of small caliber, but a viable target for left internal mammary artery bypass. Cardiopulmonary weaning was uneventful and totaled 181 minutes. Aortic cross clamp lasted 137 minutes and circulatory arrest was held for 30 minutes. Postoperative care was complicated with delayed extubation, need for non-invasive ventilation, prolonged use of inotropes, prolonged stay in the intensive care unit (ICU), and need for readmission to the intensive care unit due to respiratory insufficiency, adding up to 6 days of total time in the ICU. The patient was asymptomatic at the time of discharge, 28 days after surgery. Follow-up at 1 year showed clinical stability after recovery and satisfactory surgical result.

We present this case to expand the literature regarding cardiac surgery interventions in the subpopulation of achondroplastic patients with regards to their specific needs, limitations and potential complications, in order to tailor the care provided.

VIDEOTHORACOSCOPIC EXCISION OF CASTLEMAN'S DISEASE

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Keywords: *Castleman's disease, Uniportal VATS*

INTRODUCTION

Castleman's disease (CD) or angiofollicular lymph node hyperplasia is a rare spectrum of lymphoproliferative disorders. CD tumors are commonly localized in the mediastinum and are usually asymptomatic. It can pose a diagnostic dilemma because of its lack of any specific presenting characteristics and distinguishing radiographic features. The differential diagnosis for mediastinal masses is extensive, and CD tumors, although uncommon, should be considered. The mainstay of treatment is surgical resection and has typically been performed using open thoracotomy. The highly vascular nature of the tumor makes surgical management challenging. We describe a case report of a carinal Castleman's tumor resected thoracoscopically.

CASE REPORT

We present a case of a 45 year-old female, never-smoker who underwent a chest CT scan due to asthenia complains after Sars-Cov infection. From the imaging study carried out, an 47x36 mm infra-carinal mediastinal mass was identified. The mediastinal mass underwent biopsy through endobronchial ultrasound-guided transbronchial needle aspiration. The anatomopathological result of the biopsy was inconclusive, only lymphoid tissue being identified, excluding malignancy. Despite patient's refusal to receive blood or blood products due to religious reasons, she underwent surgery via right video-assisted thorascoscopy. The procedure and the postoperative course was uneventful and the patient was discharged home on the third post-operative day. The anatomopathological result of the surgical specimen is ongoing.

CONCLUSION

In this case report we aimed to clarify the role of VATs for diagnosis and treatment of intrathoracic Castleman's disease.

CHEST WALL RECONSTRUCTION WITH A TITANIUM PROTHESIS – SINGLE CENTER EXPERIENCE

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Keywords: *Titanium; Chest wall; Reconstruction; Sternum*

Sternal tumor resection with an anterior chest wall defect may result in severe respiratory and circulatory compromise. Defects involving more than 2 ribs anteriorly or more than two-thirds of the sternum may cause flail chest. To avoid respiratory dysfunction, rigid reconstruction is necessary.

Our goal is to share our experience of 3 cases of chest wall reconstruction with a titanium prothesis (TRIONYX®) after sternum resection.

CASE 1

A 38-years-old patient diagnosed with myasthenia gravis and a progressing thymoma after two previous thymectomies by median sternotomy, third-line chemotherapy and radiation therapy, was referred to our department. We performed an en bloc resection of the body of the sternum, xiphoid process, and adjacent anterior mediastinal mass with subsequent sternal and costal cartilage reconstruction using a total titanium custom-made neosternum. Peri-operative care was uneventful during a 6-day in-hospital stay.

CASE 2

A 41-years-old patient presented with a stiff sternal prominence. After investigation, a sternal enchondroma was diagnosed. It was performed a full thickness en bloc resection of the body of the sternum, xiphoid process, 4º-12º costal cartilages bilaterally, adjacent anterior tissue and skin. Subsequent chest wall reconstruction was performed as described in case 1. The patient was discharged on the 10th postoperative day without perioperative complications.

CASE 3

A 68-year-old patient, with type 2 diabetes, presented with a painful and hard lesion in the body of the sternum. Biopsy was compatible with chondrosarcoma G2.

The patient underwent an en bloc resection of the body of the sternum, xiphoid process, and costal cartilages bilaterally. Subsequent chest wall reconstruction was performed as described in case 1. The patient was discharged on the 5th postoperative day, however, 10 days later was re-admitted due to surgical wound dehiscence. After debridement, vacuum dressings and antibiotics for 16 days, the patient was discharged. No microorganism was identified, and full healing was achieved after 6 weeks (without prothesis removal).

Follow-up periods for the 3 cases were 19, 8 and 23 months, respectively. During these periods, chest was stable, without paradoxical motion or material displacement, pleural or lung abnormalities. Patients deny limitation on daily activity and shortness of breath.vHowever, in cases 2 and 3, patients complain of recurrent chest pain.

Chest wall reconstruction with TRIONYX® titanium system guaranteed structural rigidity of the chest wall to avoid paradoxical movements and adequate protection of mediastinal structures from external trauma. No material rejection or displacement was reported and the cosmetic results were pleasant.

CHEST WALL RECONSTRUCTION WITH A TITANIUM PROTHESIS – SINGLE CENTER EXPERIENCE

Luís L. Graça (Portugal)[1]; Rita S. Lopes (Portugal)[1]; Susana Lareiro (Portugal)[1]; Rita Pancas (Portugal)[1]; João Bernardo (Portugal)[1]

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CASE 3

A 68-year-old patient, with type 2 diabetes, presented with a painful and hard lesion in the body of the sternum. Biopsy was compatible with chondrosarcoma G2.

The patient underwent an en bloc resection of the body of the sternum, xiphoid process, and costal cartilages bilaterally. Subsequent chest wall reconstruction was performed as described in case 1. The patient was discharged on the 5th postoperative day, however, 10 days later was re-admitted due to surgical wound dehiscence. After debridement, vacuum dressings and antibiotics for 16 days, the patient was discharged. No microorganism was identified, and full healing was achieved after 6 weeks (without prothesis removal).

Follow-up periods for the 3 cases were 19, 8 and 23 months, respectively. During these periods, chest was stable, without paradoxical motion or material displacement, pleural or lung abnormalities. Patients deny limitation on daily activity and shortness of breath.vHowever, in cases 2 and 3, patients complain of recurrent chest pain.

Chest wall reconstruction with TRIONYX® titanium system guaranteed structural rigidity of the chest wall to avoid paradoxical movements and adequate protection of mediastinal structures from external trauma. No material rejection or displacement was reported and the cosmetic results were pleasant.

CLINICAL CASE: HYPOVOLEMIC SHOCK AND THE NEED FOR INVASIVE MECHANICAL VENTILATION ON A PATIENT WITH CONGENITAL HEART DISEASE

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Keywords: *Congenital Heart Disease, venoarterial-extracorporeal membrane oxygenation, VA-ECMO*

Techniques of venoarterial-extracorporeal membrane oxygenation (VA-ECMO) have evolved and improved over the last two decades, allowing numerous applications of this life saving support.[1] Most of the patients who benefit from such support have reversible low cardiac output, or sudden cardiac arrest from a correctable cause.[1]

Here we describe a clinical case of a 21-year-old male with a history of congenital heart disease; characterized with severe right ventricle hypoplasia, pulmonary artery stenosis with a surgical cavapulmonary shunt and a maintained atrial septal defect despite previously attempted closure. Brought to the Emergency Department due to a Mallory-Weiss syndrome, with an upper-endoscopy showing a "laceration at the esophagogastric junction with active bleeding", clips were applied. However, the patient's condition worsened with hypovolemic shock, needing noradrenaline (0.2mg/h), a significant drop in hemoglobin and repeated hematemesis. Furthermore, the patient was intubated to maintain airway protection, with significant deterioration following invasive mechanical ventilation (IMV), particularly from the hemodynamic perspective, with sustained hypotension having to increase noradrenaline (max20mg/h) despite adequate fluid resuscitation. The echocardiogram revealed preserved left systolic function. Given the patient's congenital heart defect combined with positive intrathoracic pressure from the IMV, may have contributed to the deterioration and worsening of the shock, as the patient possesses a hypoplastic right ventricle and an extracardiac conduit that limits hemodynamic compensation. Needing rescue VA-ECMO and admitted to the ICU, where initial treatment included volemia optimization, adjusting ventilation parameters to lower intrathoracic pressure and started on milrinone and sildenafil. Another upper-endoscopy showed laceration at the gastroesophageal junction, followed by the placement of clips with haemorrhage control. A transthoracic-echocardiogram revealed "Normal left ventricle. Hypoplastic right ventricle. Mild mitral regurgitation; aortic VTI 19cm. IVC 22mm. RV/RAgradient 70mmHg. Interatrial bidirectional shunt". The clinical evolution was favourable permitting extubation and suspension of milrinone and sildenafil, followed by ECMO decannulation. An echo/doppler was performed by vascular surgery which documented right common femoral artery pseudoaneurysm and right femoral deep vein thrombosis, needing surgical correction with patch and started on anticoagulant for 3 months.

The results of rescue ECMO has shown that many patients with congenital heart disease are salvageable despite sudden decompensation[2]. In this case the IMV seemed to be the key factor to worsening shock as positive intrathoracic pressure limits hemodynamic compensation due to a non-functional non-compliant right ventricle, leading to a pre-load dependent cardiogenic shock.

A STRANGE CASE OF SADDLE THROMBUS LEADING TO ACUTE MESENTERIC ISCHEMIA

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Keywords: *Acute mesenteric ischemia; Saddle Thrombus; Thrombectomy*

INTRODUCTION

Acute mesenteric ischemia (AMI) is an uncommon but highly lethal cause of acute abdomen in an emergency setting. Presentation, physical exam and laboratory values are non-specific. Despite open laparotomy with mesenteric revascularization and resection of necrotic bowel has been considered the gold standard of care, recent advances in percutaneous catheter-directed techniques have demonstrated its advantages. We present a case of AMI due to a saddle thrombus treated by aspiration thrombectomy.

CASE REPORT

An 82-year-old male patient, Jehovah's witness, arrived at the emergency department due to abdominal pain and vomiting with less than 24h of onset. The patient had prior medical history of prostatic cancer and Parkinson. The symptoms did not relief after medical therapy and due to the patient's severe discomfort a CT scan was performed showing an occlusion of de celiac trunk (CT) and superior mesenteric artery (SMA) by a saddle thrombus and bilateral pulmonary embolism (PE) (Image 1A). Since the patient did not present peritonitis and due to PE and to minimize blood loss an endovascular treatment was planned. Exposure of the left axillary artery was performed and an 8-French sheat was introduced. The diagnostic DSA showed a saddle thrombus (image 1B) occluding the ostium of CT and SMA. Using Penumbra Indigo CAT8 an aspiration thrombectomy of SMA and CT was performed with complete permeabilization of both arteries and branches on completion angiography. The control CT showed patency of CT and SMA with no residual thrombus (Image 2).

CONCLUSION

The management of acute mesenteric ischemia is still a challenge. The more suitable approach will depend on each patient. In the absence of peritonitis, an endovascular approach should be considered but the threshold for intervention due to intestinal ischemia must be low so as not to allow a situation to progress that in a few hours can become irreversible and fatal.

SUPERIOR VENA CAVA SYNDROME CAUSED BY A GIANT RIGHT CORONARY ARTERY ANEURYSM

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Keywords: *CABG, Cardiac anatomy, VA ECMO*

CASE PRESENTATION

We present a case of a 61-year-old male patient who was admitted with a superior vena cava syndrome (SVCS) referring increasing fatigue, headache, rapid breathing and distension of face veins during the last two weeks.

The patient´s history includes a coronary artery bypass grafting (CABG) five years ago with left internal mammary artery to the left anterior descending artery and a right internal mammary artery in free-graft from the ascending aorta to the first obtuse marginal branch. The right coronary artery (RCA) at the time did not present any significant lesions.

At the time of SVCS presentation, echocardiography and CT angiography showed a giant right coronary artery aneurysm measuring 78x70x68 mm and compressing the superior vena cava (see images). The performed bypasses both were patent.

Due to hemodynamic deterioration emergent redo cardiac surgery was performed to remove the aneurysm and alleviate the superior vena cava compression. The patient was transferred to the ICU and postoperative echocardiography showed good left ventricular function and a dilated right ventricle with poor systolic function.

The first postoperative hours were marked by hemodynamic instability and poor response to increased inotropic support. On the second postoperative day, it was decided to advance for percutaneous veno-arterial extracorporal membrane oxygenation (VA ECMO). Over the course of 6 days, hemodynamics and metabolic function improved significantly, allowing to remove VA ECMO and transfer the patient to the ward unit and ultimately discharge.

DISCUSSION

SVCS is caused by obstruction of flow usually caused by cancer and less often in patients with implanted devices.

Coronary aneurysms are defined by a diameter that exceeds 1,5 times the largest coronary vessel of the patient. The RCA is the most involved vessel, followed by the LAD. Most patients with coronary artery aneurysms are asymptomatic and their diagnosis is accidental during catheterization.

This case represents a rare cause of SVCS caused by a RCA aneurysm in a patient who had already been operated five years ago. The RCA at the time of CABG did not show any significant lesions and no aneurysm was neither present nor detected on any routine echocardiography. Rapid hemodynamic deterioration was leading to emergent cardiac surgery, complex intensive care unit treatment including postoperative VA ECMO and a good overall clinical outcome.

This is the second case of right coronary aneurysm causing superior vena cava syndrome described in the literature and the first to have survived treatment.

DESCENDING NECROTIZING MEDIASTINITIS IN CHILDREN: A RESURGENT SURGICAL EMERGENCY

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Keywords: *descending necrotizing mediastinitis, pediatric, surgical drainage, thoracic surgery, mediastinitis classification*

INTRODUCTION

Descending necrotizing mediastinitis (DNM) is a rare, life-threatening complication arising from oropharyngeal and cervical infections that spreads into the mediastinum. While predominantly observed in adults, cases in the pediatric population are increasingly being reported. It represents a true surgical emergency requiring early diagnosis and effective multidisciplinary therapeutic strategy.

OBJECTIVES

analyze the clinical characteristics and review the management options applied to DNM pediatric cases.

METHODS

We retrospectively analyzed all patients with DNM who underwent mediastinum surgical drainage in our institution between 2017 and 2023. DNM was diagnosed based on the criteria proposed by Estrera et al. We applied the Endo et al pathological classification, modified by ESTS.

RESULTS

3 patients were identified over a 7-year period, all cases detected in 2023. Mean age was 2,6 (±1.15) years, with male predominance 2:1. The most prevalent underlying cause observed was parapharyngeal abscess (100%). According to the classification described previously, 1 patient was considered a type I; 1 patient was type IIC and the last one was classified as type III due to pleural involvement.

All patients underwent combined ENT and thoracic surgery approach. All patients were submitted to a transoral approach. Our type I patient only required additional cervicotomy, whilst the other 2 needed a combined approach through cervicotomy and thoracotomy. A total of 4 surgical drainage procedures were accounted. Only 1 of the patients needed a reoperation.

The mean ICU and hospital stay was 6,6 (±2,3) days and 33,7 (±23,8), respectively. The main isolated bacteria in blood cultures were Streptococcus pyogenes (2 of the 3 patients). Other agents were Streptococcus constallatus and Prevotella veroralis, commensal bacteria of the oral cavity. At least 3 weeks of broad-spectrum antibiotics was administered independently of agent isolation due to DNM being typically a polymicrobial infection. No deaths occurred and all patients remain asymptomatic without evidence of major complications.

CONCLUSION

The importance of early recognition and aggressive intervention in DNM cannot be overstated, as delayed treatment can lead to high mortality rates. In the pediatric population, there is a need for a heightened clinical suspicion, rapid diagnosis, and multidisciplinary care to optimize outcomes. This new surge of severe infections in children described in recent literature (streptococcic and staphylococcic upper and lower airway infections) might be a consequence of children being less exposed to common pathogens during covid-19 lockdown in the early years of development.

SINGLE-CENTER MANAGEMENT OF POSTOPERATIVE PROLONGED AIR LEAK AFTER LUNG RESECTION

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Keywords: *Prolonged air leak; lung resection; pleurodesis*

INTRODUCTION

Alveolar-pleural fistula causing prolonged air leak (PAL) is a frequent complication after lung resection surgery and contributes to prolonged hospital stays, increased morbidity and postoperative costs. Management of PAL may be challenging. Aside from supportive care, further management options include instillation of sclerosing agents, autologous blood patch pleurodesis and surgical revision.

OBJECTIVES

The purpose of this study was to report our experience on the treatment of postoperative PAL.

METHODS

We performed a retrospective cohort study of all patients who presented PAL after lung resection surgery, from January 2020 to June 2023, at our institution. Exclusion criteria included surgery for treatment of primary or secondary pneumothorax. PAL was defined as an air leak persisting longer than 5 days postoperatively. Demographics, intraoperative parameters, postoperative PAL management strategy and morbimortality were analyzed.

RESULTS

Prolonged air leak was observed in 49 patients (8,4%) – average age was 65 (±10.6) years, and 35 (71,4%) were male. Sixteen patients (32,7%) had COPD and 35 patients (71,4%) had active or past history of smoking. Median FEV1 was 85,69% (±24.36) and DLCO 73,49% (±25.47).

Thirty-two patients (65,3%) underwent thoracotomy. LVRS was performed in 3 cases (6,1%) and anatomical resection in 33 (67,3%). Pleural adhesions were reported in 69,5% of cases.

Twenty-six patients (53,1%) were managed with continued pleural drainage until resolution, 11 (22,4%) with autologous blood patch pleurodesis and 4 (8,2%) with chemical pleurodesis. Eleven patients (22,4%) were submitted to surgical repair of PAL after treatment failure (3 of them after blood patch pleurodesis). Total average LOS was 12.7 days (range: 7-24 days). Subgroup analysis shows time to discharge after surgery was 4.5 days (± 1.8), chemical pleurodesis was 4.3 days (± 4.3), however, time to discharge after blood patch pleurodesis was 6.9 days (± 3.4). Despite none of the patients submitted to chemical pleurodesis required surgical repair, no statistically significant difference was found between the pleurodesis groups ($p = 0.243$). Complications rate was 12,2% and no perioperative mortality was reported.

CONCLUSION

Our study shows early intervention (either surgery or chemical pleurodesis) may help reduce PAL length of stay. Although no statistically significant difference was found between pleurodesis failure rates, chemical pleurodesis showed no treatment failure in our population. Our center's incidence of air leak after lung resection, as well as complication rate, is comparable to literature. Further larger prospective studies comparing the treatments modalities available are needed in order to tailor PAL management and optimize postoperative care.

DEFERRED PERCUTANEOUS INTERVENTION VERSUS SAPHENOUS VEIN GRAFT FOR RIGHT CORONARY ARTERY REVASCULARIZATION

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Keywords: *Right coronary artery revascularization, SVAo, SVrima, PCI, Long-term survival, Immediate postoperative outcomes*

INTRODUCTION

The optimal strategy to revascularize the right coronary artery (RCA) can vary depending on the patient's clinical condition and the extent of coronary artery disease. Different perspectives have been raised in the literature regarding the best approach to revascularize the RCA.

AIM

To compare long term survival, need for redo CABG and immediate postoperative outcomes among 3 alternatives for RCA revascularization: saphenous vein graft (SVG) anastomosed to the ascending aorta[SVAo]; right internal mammary artery prolongation with SVG(aortic no-touch technique)[SVrima]; and post-operative percutaneous intervention - Hybrid approach[PCI].

METHODS

Longitudinal, retrospective, single-center cohort including consecutive patients that underwent primary isolated multivessel(≥2 vessels disease, with indication for RCA revascularization)off-pump CABG, between 2004-2014. Emergent or salvage surgeries were excluded. The primary outcome was all-causes mortality(accessed in February 2023). Time-to-event outcomes were represented using Kaplan-Meier Curves, Log-Rank test and multivariable Cox Regression(considering SVAo as the reference strategy).Median follow-up was 11 years, maximum of 19 years.

RESULTS

We included 599 patients, 76%(454) SVAo, 9%(52) PCI and 15%(93) SVrima. PCI's group had older patients (mean age PCI-66±10 years, SVAo-65±9 years, SVrima-62±10 years, p=0.020). The prevalence of cardiovascular risk factors was well balanced between groups(arterial hypertension, p=0.946; dyslipidemia, p=0.836; diabetes mellitus, p=0.394, obesity, p=0.775), except for active smoking habits that was higher in SVrima patients. Coronary artery disease was similar between studied groups(Canadian Coronary Society - grade IV, p=0.721 and recent myocardial infarction, p=0.429). Concerning intervention characteristics, complete revascularization was higher in SVrima group than in SVAo and PCI(SVrima97%, PCI83%, SVAo81%, p<0.001). In the univariable survival analysis, no differences were found between groups (Log Rank test p=0.71). At 5-and 10-years of follow-up, cumulative survival for SVAovsPCIvsSVrima were 90%vs83%vs90% and 70%vs65%vs69%, respectively. Multivariable adjustment showed that the RCA approach did not impact on long-term survival (HR[95%CI]:1.11[0.65-1.92], p=0.700 and HR:1.14[0.74-1.75], p=0.500). Most of post-operative outcomes were similar between groups, except time to discharge that was higher in PCI patients (median time[min-max] PCI: 8[5-29] days; SVrima: 6[5-64]; SVAo: 6 [4-142], p<0.001). Reoperation for redo-bypass were performed on a total of 2 patients from SVAo groups, one in the immediate post-operative period and the other after 62 months.

CONCLUSION

The approach for RCA revascularization did not seem to be associated with major outcomes, namely all-causes of death and redo-bypass after 19 years of follow-up. However, for establishing an optimal approach for each patient is necessary to also explore data from other events, including need for percutaneous re-revascularization and data from graft patency.

RECURRENT STUMP MASS RELATED TO TITANIUM SURGICAL MATERIAL

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Keywords: *titanium allergy, foreign-body reaction, granuloma*

Newly detected masses during the postoperative follow-up of a patient with prior lung cancer resection commonly bear a diagnostic challenge.

We report a case of a 45-year-old woman with a history of right upper lobectomy for pStage IB adenocarcinoma, diagnosed with a metabolically active mass adjacent to the right hilum at 3rd month follow-up. Transbronchial biopsies found no malignancy. Due to gradual lesion growth, re-thoracotomy was performed and a double sleeve was required to remove all macroscopic lesion. On follow-up, a mass contiguous to surgical material reapeared on CT-Scan and the patient developed worsening chronic cough and expectoration of multiple surgical clips. Further studies revealed the recurrent stump mass and sudden clinical aggravation to be associated with titanium allergy reaction.

This report emphasizes the importance of considering granuloma as a diagnostic possibility in postoperative lesions in close proximity to the primary surgical site, regardless of SUVmax values, especially on an early timeframe where recurrence seems yet unlikely.

LEFT RATS 6 SEGMENTECTOMY: NEW TECHNOLOGY BUT OLD CHALLENGES

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Keywords: *RATS, Segmentectomy*

Lung segmentectomies should be offered as a therapeutic option in selected cases of lung cancer. With recent advances in medical technology, robotic assisted thoracoscopic surgery (RATS) has become an alternative to Video assisted thoracic surgery and open surgery. RATS segmentectomies can have the advantage of a thorough dissection, nevertheless patient related difficulties may arise.

This case aims to present a step-by-step video of a RATS left segment 6 (L6S) segmentectomy performed at our institution.

We present the case of a 53-year-old man, active smoker (40 pack year), diagnosed with rectal adenocarcinoma three years prior (treated with a combination of chemoradiation and surgery). During oncological follow-up CT scan, a 15mm lung nodule was identified in L6S. The PET scan revealed nodule hypermetabolism, as well as in mediastinal and hilar lymph nodes. Videomediastinoscopy was conducted (stations 4L, 7 and 4R were sampled) with no tumor in the specimens. During oncological multidisciplinary board cT1bN0M0 was assumed. The patient's lung function tests indicated an FEV1 of 106% and a DLCO of 62%. Given these findings, a left segment 6 segmentectomy with lymphadenectomy was performed.

A 4 port RATS approach was conducted. The patient presented with a substantial amount of adhesions of the lung to the parietal pleura, mediastinum and diaphragm, requiring extensive and time consuming adhesiolysis. Afterwards, the segment 6 lung nodule was identified, and a thorough stations 5, 7, and 9 mediastinal lymph node dissection was performed. A trans-cisural dissection, isolation, and section of A6 was carried out. The lung was pulled anteriorly to facilitate the identification, dissection, and sectioning of B6, following a lung inflation test. To ensure precise delineation of the intersegmental plane, indocyanine green was intravenously injected. Subsequently, the intersegmental planes were carefully sectioned to complete the segmentectomy. Following the specimen retrieval, a chest tube was inserted, and the incisions were closed.

The patient's postoperative course was uneventful. Chest tube was removed on the third postoperative day, and the patient was discharged on the fourth postoperative day. Pathological examination revealed a pT1b N0, R0 lung adenocarcinoma. No adjuvant therapy was required. The patient is currently in the ninth month post intervention, with no evidence of local recurrence.

In conclusion, this case emphasizes the capacity of RATS in overcoming "old" challenges such as extensive adhesions during a segmentectomy while achieving successful oncological results with less morbidity.

UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC SURGERY APPROACH FOR PARA-AORTIC LYMPH NODE METASTASIS

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Keywords: *VATS, lymph node, para-aortic*

INTRODUCTION

Surgical treatment for tumors involving the cervicothoracic junction and/or mediastinum often requires access to the apical dome and mediastinal structures. Therefore, the optimal surgical approach for each patient should be considered based on tumor location and characteristics that will make an R0 resection most feasible. When tumor involvement includes the cervicothoracic area, pulmonary hilum, mediastinum, or the great vessels the hemi-clamshell (HCS) or the transmanubrial approach (TMA) may be indicated. These procedures allow access to nearly the entire thoracic cavity and facilitates dissection of the pre-tracheal, para-aortic or subaortic lymph nodes. Several approaches have been proposed with the intent of being less invasive for the patient but respecting the oncologic principles of extended resection and radical lymphadenectomy.

CASE REPORT

This case report presents a case of a 43-year-old female patient with bilateral breast cancer diagnosed in 2021. The patient underwent preoperative chemotherapy and bilateral mastectomy with axillary lymph node dissection, followed by adjuvant systemic treatment and radiotherapy. In March of 2023 a PET/CT showed a hypermetabolic lymph node in the mediastinum superior to the aortic arch, between the emergence of the left subclavian and left carotid arteries. We present the video of the video-assisted thoracoscopic (VATS) lesion removal. After the intervention, the histopathology examination confirmed lymph node metastasis. The patient had a rapid postoperative recovery and was discharged on the third day post-operation.

DISCUSSION

For a long time, HCS or TMA were considered the gold standard approaches to tumor resection when involvement of the aorta or main pulmonary artery and mediastinum was suspected, but they unfortunately entailed severe postoperative pain and functional impairment. The chest wall deformities, large incisions, and associated pain along with altered breathing mechanics are at the basis of most pulmonary complications. Although technical restrictions of VATS can make these procedures challenging this approach is less invasive for the patient, with a minimal postoperative impact and better functional outcomes, and may be considered only when it doesn't compromise oncologic principles. VATS can also have an adjunctive role and be used to assess the characteristics of tumor invasion and to determine which structures will need resection before a larger initial incision is made. For each tumor and its local invasion characteristics, a specific surgical approach should be tailored by the surgeon as elicited on history, physical examination, and preoperative imaging.

AGE-RELATED WHITE MATTER CHANGE PREDICTS LONG-TERM CEREBROVASCULAR MORBIDITY IN CAROTID ENDARTERECTOMY

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Keywords: *cardiovascular disease, survival analysis, carotid stenosis, Fazekas Score, major adverse cardiovascular events*

The study of cerebrovascular diseases has long been a focal point in medical research because of their significant impact on global morbidity and mortality. Carotid stenosis is a prevalent cerebrovascular disease that affects older people. This condition can affect the blood supply to the brain and induce changes in the white matter.

This study aims to observe if the age-related white matter change scores can help predict if a patient who underwent carotid endarterectomy (CEA) is at greater risk of suffering a cardiovascular event.

Patients from a tertiary referral care center that underwent CEA with regional anesthesia (RA) from January 2012 until January 2022 were registered from a prospective database. A post-hoc analysis was sequentially performed on the patients with preoperative CT.

In terms of comorbidities, the existence of contralateral stenosis and degree of contralateral stenosis showed a significant association in the patients with lower grades in the Fazekas Score (38 (64.4) vs. 11(36.7), $p=0.013$; 68.5% vs 58.7%, $p=0.016$). Association was found between the patients with higher grades in the Fazekas Score and Acute Heart Failure (AHF), stroke, MACE and all-cause mortality ($p<0.001$, $p=0.003$, $p=0.008$ and $p=0.0041$, respectively).

Higher grades of Fazekas score showed a significant increase in the risk of adverse cardiovascular events, such as stroke, MACE, AHF and all-cause mortality. This study might unveil the potential that Fazekas score shows as a possible predictor of long-term cardio and cerebrovascular events in patients undergoing CEA.

ONCOLOGICAL OUTCOMES OF RADICAL SURGERY WITH AND WITHOUT INDUCTION AND ADJUVANT CHEMOTHERAPY IN MESOTHELIOMA PATIENTS – 8-YEAR EXPERIENCE IN A SINGLE CENTER

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Keywords: *mesothelioma, pleural malignancy, neo-adjuvant chemotherapy, pleurectomy, decortication*

INTRODUCTION

Mesothelioma is a devastating, insidious disease with a long latency period. Its peak incidence occurs between 5thand 6th decades of life, up to 40 years after asbestos exposure which is strongly related to the disease. The optimal treatment is an object of an intense discussion.

OBJECTIVES

The established outcomes were disease free survival (DFS) and 1-year mortality analyzed in correlation with neo-adjuvant chemotherapy or upfront surgery and adjuvant chemotherapy to establish the most advantageous treatment in terms of oncological results.

MATERIALS AND METHODS

A search of the department's surgical database between Jan/2016 and Dec/2022 revealed 16 cases of epithelioid invasive mesothelioma. Due to the small size of our patient cohort, which did not allow us to conduct a statistical analysis we analyzed the data using descriptive analysis techniques.

RESULTS

The median follow-up period (MFUP) was 27 months (ranging from 3 to 82 months), calculated from the surgery date until the date of last contact or death from any cause. The group had 68% of recurrence, DFS of 20 months (0-82) and 1-year survival of 69%.

The 3 patients treated with surgery without any systemic treatment, had a MFUP of 7 months (3-12), 67% of recurrence, DFS of 6 months (0-12) and 1-year survival of 33%.

The 6 patients treated with neoadjuvant chemotherapy, surgical resection and adjuvant therapy, had a MFUP of 45 months (8-82), 67% of recurrence, DFS of 32 months (2-82) and 1-year survival of 83%.

The 1 patient was treated with neoadjuvant chemotherapy and subsequently surgery had a follow-up of 29 months with DFS of 20 months and he was alive at the time of submission of this article.

The 6 patients treated with an up-front surgery and adjuvant chemotherapy had a MFUP of 20 months (8-33), 67% of recurrence, DFS of 15 months (6-33) and 1-year survival of 67%.

CONCLUSION

The findings of our review should be approached with caution due to the limitations of our small cohort which makes it challenging to draw robust conclusions. Our results, despite these limitations, suggest that the multimodal approach with both neoadjuvant and adjuvant chemotherapy demonstrates the longest MFUP, DFS and 1-year survival. The worst results were observed in patients treated only with radical surgery. Noteworthy, the sequence of systemic treatment did not influence the rate of recurrence. As we continue to analyze larger patient cohorts, we hope to validate these findings and demonstrate the value of multimodal treatment.

VALVE-SPARING AORTIC ROOT REPLACEMENT: EXPERIENCE AND LONG-TERM OUTCOMES OF A SINGLE CENTRE

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Keywords: *David Procedure*

INTRODUCTION

Aortic valve-sparing root reimplantion surgery, also known as the David Procedure, was first described by Tirone E. David in 1992. This procedure allows treatment of aortic root aneurysms with or without aortic insufficiency while preserving the patient's native aortic valve, allowing a stable repair of the aortic valve with a longer survival and better quality of life, as it avoids the risks and morbidity of aortic valve replacement. Due to its advantages, over the years this procedure has been largely adopted, with very good results.

OBJECTIVES

The purpose of this study is to analyse and report our centre's experience with David Procedure, as well as evaluate long term outcomes.

MATERIALS AND METHODS

We performed a retrospective observational study including all patients who underwent David Procedure between January 2009 and September 2023 in our centre. Relevant pre-operative, intra-operative and post-operative variables were collected and analysed.

RESULTS

During our study period, a total of 77 patients underwent David Procedure, 83% of which were male (n=64), with a mean age of 48,3±19.5 years. Marfan syndrome was present in 18 patients (23.38%), and bicuspid aortic valve in 21 (23.2%). Most patients (76.6%) had some degree of aortic regurgitation, and an additional aortic valve repair technique was performed in 37 patients (48.1%). Concomitant cardiac procedures were performed in 13 cases (16.9%). The vast majority of cases were elective procedures (97,4%), with only 2 cases of emergent surgery for aortic dissection.

The follow-up was complete in 100% of cases, with a mean follow-up of 84.5±55.5 months(4 to 190 months). In-hospital mortality rate was 2.6%(n=2). The causes of postoperative death were low cardiac output syndrome in 1 patient and neurological complications in the other. Mortality during follow up was 2.6%(n=2).

Valve-related reoperation free survival was 97% at 1 year, 88% at 5 years and 80% at 10 years. Causes for valve-related reoperation were severe aortic regurgitation (n=4), endocarditis (n=1) and aortic stenosis (n=1).

CONCLUSIONS

The David procedure is a safe and durable approach for aortic root aneurysms with the advantage of preserving the native aortic valve, with low mortality and a long reoperation free and survival rates.

Our centre's experience further supports the use of this procedure in selected patients, but longer and better follow-up is necessary to determine the long-term outcomes of the procedure, as well as more experience regarding its use in acute aortic dissection.

PREVENT III SCORE AS A LONG-TERM CARDIOVASCULAR RISK FACTOR AFTER AORTOILIAC REVASCULARIZATION – A PROSPECTIVE STUDY

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Keywords: *Aortoiliac disease, Major adverse cardiac events, Survival analysis, Atherosclerosis, Peripheral Arterial Disease, Predictive Value of Tests, Prospective Studies, Risk Assessment, Postoperative Complications*

BACKGROUND

Aortoiliac occlusive disease can have diverse clinical presentations, ranging from claudication to critical limb-threatening ischemia. The Prevent III risk score is a simple tool originally designed to predict amputation-free survival in patients with critical limb-threatening ischemia undergoing infra-inguinal vein bypass. However, its full prognostic value in other patient groups has yet to be explored

OBJECTIVES

In this prospective study we aimed to validate the prognostic value of the Prevent III risk score in patients undergoing aortoiliac revascularization, both in limb-related outcomes as well as cardiovascular risk.

METHODS

Patients who underwent elective aortoiliac revascularization, between January 2013 and January 2021, from two centers, a tertiary referral center and a secondary center, were included in this prospective cohort study. Patients' demographic and clinical characteristics, including their cardiovascular risk factors and their procedural and lesion-specific details, were retrieved. Prevent III score was calculated for each patient. Points were added for each variable present: dialysis-dependency (4 points), presence of tissue loss (3 points), age ≥ 75 years (2 points), hematocrit ≤ 30% (2 points), and a history of advanced CAD (1 point). Patients were then assigned a risk category: low-risk (score ≤ 3), medium-risk (score 4-7), or high-risk (score ≥ 8). Mann-Whitney-U was used with variables whose normal distribution could not be assumed and Chi-squared test for analysis of categorical variables. Multivariable logistic regression was performed to determine independent factors associated with Prevent III score, Log Rank estimator was used to test the effect of the score on time-dependent variables and Multivariate Cox regression analysis was performed for independent predictors of long-term MALE, MACE and all-cause mortality.

RESULTS

The PIII Score effectively discriminated patients with higher risks of major adverse limb events and all-cause mortality during long-term follow-up. Regarding short-term outcomes, patients with PIII scores equal or greater than 4 exhibited lower ankle-brachial index changes at 30 days and longer hospital stays. There were no significant associations between PIII scores and major adverse cardiovascular events and all-cause mortality at 30 days.

CONCLUSION

By analysing five user-friendly clinical parameters, Prevent III score can be a reliable predictor of long-term cardiovascular and mortality risk in patients undergoing aortoiliac revascularization procedures. More research with larger cohorts should be conducted in the future, as well as studies comparing Prevent III with other validated scores.

ACUTE RENAL ARTERY OCCLUSION OF A SINGLE KIDNEY, WHEN IS IT TOO LATE TO REVASCULARIZE?

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INTRODUCTION

The kidney is an organ characterized by a constant and physiologically demanding supply of arterial blood flow. After 30 minutes of warm ischemia, the kidneys suffer irreversible damage. This case report refers to a kidney donor with renal artery thrombosis of the remaining kidney submitted to late revascularization that precluded the need for renal replacement therapy.

METHODS

Retrospective analysis of electronic medical records and surgical reports.

CASE REPORT

A 62-year-old healthy male with normal renal function was considered for a living kidney donation. Preoperative computed tomography (CT) revealed aortic atherosclerosis adjacent to the emergence of both renal arteries, a single left renal artery, and two renal arteries on the right, including an inferior polar renal artery.

The patient was submitted to a laparoscopic left nephrectomy for kidney harvesting with no complications and was discharged after two days with normal renal function. One week later, the patient presented to the emergency department with a 2-day history of fever, nausea, anorexia, and abdominal pain. His analysis revealed an increased serum creatinine (6.07mg/dL) and C-reactive protein (404mg/L). CT-angiography showed totally occlusive thrombosis of the right renal artery associated with extensive areas of renal parenchyma hypoperfusion and patency of the polar artery. The inferior third of the kidney maintained partial perfusion by the accessory polar artery.

The patient underwent immediate intra-arterial catheter-directed thrombolysis. Nevertheless, the patient was apprised of the inherent risk of irreversible kidney damage. The fibrinolytic control at 24 hours and 48 hours evidenced the gradual permeabilization of the left renal artery. At 72 hours, the last imaging showed total renal artery permeability, however, with scarce renal parenchyma contrast perfusion on angiography. The catheter was removed at this time.

During his stay, the patient maintained a reasonable urinary output without needing dialysis and had a constant decrease in serum creatinine. The patient was discharged with serum creatine of 3,32mg/dL. At the 12-month follow-up, the patient remained asymptomatic, with an eGFR of 20 mL/min/1.73m2, with no need for renal replacement therapy.

DISCUSSION AND CONCLUSION

This case highlights how unspecific the symptoms of acute renal ischemia can be and the need to maintain a high clinical suspicion for accurate diagnosis. It also reveals that even though renal ischemia can very rapidly conditionate renal necrosis, if there is minimal collateral circulation, it could be beneficial to perform renal artery revascularization to preserve some remaining renal parenchyma, even after days of acute renal artery occlusion.

SYMPTOMATIC COMPLEX TYPE 2 THORACOABDOMINAL AORTIC ANEURYSM TREATED WITH A TWO-STAGED EVAR AND IBEVAR

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Keywords: *EVAR, iBEVAR, Type 2 thoracoabdominal aortic aneurysm*

INTRODUCTION

Complex endovascular treatment of the aorta with fenestrated or branched endografts plays an essential role in modern vascular surgery. Innovative solutions for demanding aortic pathologies require the vascular surgeon to keep up to date on devices, deployment, and bail-out techniques to achieve the best outcome, particularly in emergent scenarios.

CLINICAL CASE

We report the case of a 75-year-old male patient who presented hemodynamically stable to the emergency department with persistent back and lower abdominal quadrant pain over the past four days. CTA revealed a complex type 2 thoracoabdominal aneurysm involving the iliac arteries, along with instability in the infra-renal segment.

Given material constraints in the emergency setting, clinical and imaging findings, and expected F/BEVAR in the short-term, our treatment strategy prioritized addressing the infra-renal and iliac aneurysms. We opted for an aorto-bi-iliac EVAR approach, with unconventional fixation of the proximal neck in a compatible segment of the aorta located approximately 50mm below the renal arteries. The procedure proved successful, and the patient's clinical symptoms resolved, allowing for the subsequent treatment of the thoracoabdominal aneurysm two weeks later.

During the second intervention, we deployed an off-the-shelf iBEVAR endograft in the visceral aorta, supplemented by two proximal thoracic endografts starting below the left subclavian artery. We established a distal connection to the previous EVAR using a tubular endograft. However, unforeseen complications arose after this phase. Firstly, due to the patient's native vessel tortuosity, the iBEVAR deployment device failed to close adequately, capturing one of the inner branches; the efforts required to retrieve the device (together with its guide-wire) pulled down the iBEVAR, disconnecting it from the thoracic endografts and rendering one renal branches irretrievable. Secondly, when the new sealing thoracic endograft was being deployed, we observed that the new guide-wire had traversed outside the iBEVAR, potentially leading to a parallel deployment. To rectify, this endograft was pushed and deployed upward, and another graft was introduced for sealing.

The remainder of the procedure was uneventful, and the patient was discharged after an 18-day hospital stay, experiencing no additional issues.

CONCLUSION

This case highlights the importance of adapting to unexpected challenges in complex aortic interventions and underscores the importance of meticulous procedural planning and execution. While full endovascular solutions can effectively treat such cases, they demand the expertise of vascular surgeons who are not only skilled in using endovascular devices but also proficient in anticipating and managing potential complications.

AORTIC VALVE REPLACEMENT IN OCTAGENARIANS

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Keywords: *AVR, Arotic valve replacement, Octagenarians*

BACKGROUND

Transcatheter aortic valve implantation (TAVI) increasingly questions the use of conventional aortic valve replacement (AVR) in high-intermediate risk patients, particularly in octogenarians. Nevertheless, AVR has become less-invasive and surgical outcomes have improved in the last years. In this study, we evaluate the perioperative outcomes, survival and functional status after AVR in octogenarian patients.

METHODS

From Jan-2006 to Dec-2016, 2947 patients were submitted to AVR, of whom 385 (13.1%) were octogenarians and constitute the subject of this study. Mean age was 82.1±2.0 years, 57.7% female, and 47.3% were in New York Heart Association (NYHA) class III-IV. Median EuroSCORE-II: 3.6 ± 3.9. Aortic root enlargement was performed in 105 cases (27.1%).

RESULTS

Only one patient died during hospitalization (0.3%) and thirty-day mortality was 0.8% (3 patients). Permanent pacemaker implantation occurred in 3.5%, stroke in 0.8% and acute myocardial infarction in 0.8%. Only 18 patients had peri-prosthetic leak (minimal or mild), no moderate or severe leakage was observed. Mean hospital stay was 8.0±3.2 days. Median follow-up time was 4.4±2.64 years (range: 1-12 years). Survival at 1, 5 and 10 years was 95.1±1.1%, 76.3±2.5% and 41.7±5.3%, respectively, significantly better than the expected survival of the general population (age and gender-matched). Atrial fibrillation (HR:2.428; CI:1.552-3.798, p=0.008), renal failure (HR:1.404; CI:1.037-1.902, p=0.028) and higher NYHA classes (HR:1.464; CI:1.106-1.939, p=0.007) were independent risk factors of late mortality. The majority of subjects (97%) showed a high degree of satisfaction with the surgery and 82.9% were in NYHA class I-II.

CONCLUSIONS

Contemporary isolated AVR in octogenarians carries very low mortality and morbidity. In our series, the risk-score calculators overvalued mortality.

JUXTARENAL SYMPTOMATIC AORTIC ANEURYSM TREATED WITH A PHYSICIAN MODIFIED ENDOGRAFT: WHAT WE LEARNED FROM THE FIRST CASE AT OUR CENTRE

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Keywords: *Physician Modified Endograft, Juxtarenal symptomatic aortic aneurysm*

INTRODUCTION

Urgent and emergent management of patients with juxta-renal abdominal aortic aneurysms is achievable through multiple modalities, including open surgical repair, endovascular parallel graft techniques and physician-modified stent grafts (PMEG). The existing literature on PMEG demonstrates technical success rates exceeding 97%, with target vessel patency and freedom from secondary reintervention recorded at 96% and 91%, respectively, within one year.

CLINICAL CASE

We present the case of a 69-year-old male patient who was transferred from another healthcare facility due to severe hypogastric pain that had persisted for four days. Computed tomography angiography revealed a juxta-renal abdominal aortic aneurysm with 14mm increase in size over the previous six months and signs of instability at the proximal neck, which measured 25mm (Figure 1). Upon admission to our institution, the patient exhibited hypertension but remained hemodynamically stable. Pain management was achieved through opioid analgesia and hypertension control. Subsequently, the patient was scheduled for a deferred urgent surgical repair.

Following careful preoperative planning, the decision was made to employ a PMEG, incorporating fenestrations for both renal arteries and a scallop for the superior mesenteric artery. A 30mm Medtronic Valiant endograft was deployed, and fenestrations (positioned at 3 and 9 o'clock) and scallop (at 12 o'clock) were crafted using thermocautery and reinforced with Cook MReye coils, sutured with polypropylene. One of the proximal radiopaque markers was reshaped and re-implanted in the anterior aspect of the graft (Figure 2, arrow). Graft re-sheathing was accomplished using a strangling silk. PMEG preparation was completed in under 90 minutes.

After the patient was appropriately prepped and draped, surgical exposure of the right common femoral artery was performed, and left femoral percutaneous access was obtained under ultrasound guidance. The PMEG was deployed slightly above the intended landing zone, making renal artery cannulation more challenging but ultimately feasible using a steerable sheet. Both 6mm renal grafts were proximally flared with a 10mm balloon. Standard techniques were employed for distal bi-iliac reconstruction. Postoperative contrast-enhanced tomography revealed partial occlusion of the celiac trunk ostia due to the graft scallop, which was promptly addressed through the deployment of an 8mm balloon-expandable endograft accessed via an upper-arm route.

CONCLUSION

Fenestrated PMEG emerges as a safe and efficacious alternative for the urgent management of juxta-renal abdominal aortic aneurysms necessitating preservation of renal arteries. The process of modifying endovascular aortic repair grafts is highly technical, demanding meticulous planning and a wealth of experience in fenestrated endovascular aortic repair.

PERCUTANEOUS TREATMENT OF CORONARY SUBCLAVIAN STEAL SYNDROME. A CASE REPORT AND LITERATURE REVIEW

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Keywords: *Steal Syndrome*

INTRODUCTION

Coronary subclavian steal syndrome (CSSS) is a rare entity and occurs in patients with prior coronary artery bypass graft (CABG) specifically when the left internal mammary artery (LIMA) is used for inflow. When there is a left subclavian artery (LSA) significant stenosis/occlusion a "steal" occurs from the CABG to the arm to maintain its perfusion leading to angina. We present a case of CSSS that presented with unstable angina due to an occlusion of LSA proximal to CABG.

CASE REPORT

A 77-year-old male arrived at the emergency department complaining of thoracic pain for 3 days that was exacerbated with minimal effort. The patient had a prior medical history of CABG from LIMA to left anterior descending artery and peripheral artery disease. The pain irradiated to the mandibular region was associated with dyspnea and increased with efforts related to the left upper limb. In addition to unstable angina, a difference of 45mmHg in systolic blood pressure was noticed comparing both upper limbs and blood analysis showed elevated troponin. An angiography was performed showing a total calcified occlusion of the LSA from its ostium prolonged by 32mm and with a 15mm margin from de CABG (Image 1). A retrograde percutaneous recanalization of LSA was performed. Following an ultrasound-guided puncture of the left axillary artery an 8-french sheath was placed. The revascularization was done with a 0.018 guide wire supported by a BER catheter. Then we performed an angioplasty with a 6x40mm balloon followed by stenting with a VBX 11x39mm (Image 2). The access site was closed with proglide. At the completion angiography, the CABG maintained its perfusion. The angina resolved after the treatment and the patient was discharged the next day.

DISCUSSION

The prevalence of CSSS is unknown and mainly related to LSA atherosclerotic stenosis. CSSS presentation can range from stable angina to cardiac arrest and a difference of >15mmHg in blood pressure in both arms should raise the suspicion of LSA stenosis in CABG patients. Despite the information given from duplex ultrasound, CT or MRI, angiography remains the gold standard for diagnosis. The endovascular approach is the first line to treat CSSS and can be performed safely.

CONCLUSION

CSSS requires an early diagnosis. Successful improvement of CSSS symptoms can be safely and effectively performed via percutaneous revascularization.

AN 89-YEAR-OLD PATIENT WITH PLEURAL SOLITARY FIBROUS TUMOUR RECURRENCE: FROM REFUSAL TO LIFE-SAVING REINTERVENTION DUE TO A CRITICAL COMPLICATION

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INTRODUTION

The solitary fibrous tumour of the pleura (SFTP) is a rare neoplasm that originates in the pleura. This tumour is more frequently benign, but can be malignant. The primary treatment is surgical resection. Regular medical follow-up and consultation with pulmonary oncology specialist are essential to determine the best treatment plan and monitor the progression of the disease.

Doege-Potter syndrome is a rare paraneoplastic syndrome presenting as a hypoinsulinaemic hypoglycaemia from the ectopic secretion of a prohormone of insulin-like growth factor II (IGF-II) from a solitary fibrous tumour.

MATERIAL AND METHODS

We report a case of an 89-year-old patient who initially refused further surgical intervention after solitary fibrous tumour recurrence. However, after a few years, due to recurrent hypoglycaemia caused by the tumour, she had to undergo a new surgical resection.

RESULTS AND CONCLUSIONS

The giant tumour was first resected in 2013. Six years later, in a follow-up consultation it was noticed tumour recurrence, but the patient refused surgery. In 2023, she went to the emergency department due to recurrent hypoglycaemia. It was decided to proceed with tumour resection. The surgery was difficult due to the presence of a large, hard, haemorrhagic, and extrapulmonary pleural tumour (20x15x20 cm). Incidentally, it resulted in the destruction of the right lower lobe of the lung, requiring not only the removal of the tumour but also a right lower lobectomy. The patient was hospitalized for 15 days in the thoracic surgery department, where she underwent a respiratory rehabilitation program and made a full recovery. She with no further hypoglycaemic episodes.

Doege-Potter syndrome treatment is the surgical resection, in the majority of the cases. If, however, the diagnosis is not suspected and treatment is delayed, it can lead to hypoxic cerebral injury or death. For a diagnosis of Doege-Potter syndrome, symptoms attributable to hypoglycaemia and low blood glucose levels should be present along with the secretion of prohormone IGF-II.

In this case, despite the patient's age and initial refusal of surgery following tumour recurrence, the only way to cure the recurrent hypoglycaemia episodes that were leading to emergency department visits and affecting the patient's quality of life was surgical reintervention, despite the significant risk of complications.

SOLO STENTLESS BIOPROSTHESIS FOR AORTIC VALVE REPLACEMENT - CLINICAL AND HEMODYNAMIC EVALUATION THROUGH SYSTEMATIC REVIEW AND META-ANALYSIS

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Keywords: *stentless bioprosthesis, aortic valve replacement, survival*

INTRODUCTION

Almost 20 years after the introduction of the Freedom Solo stentless bioprosthesis, it is of utmost relevance to systemize the available evidence on its clinical and hemodynamic outcomes.

OBJECTIVES

To describe and combine, through a systematic review and meta-analysis, early and long-term outcomes after aortic valve replacement (AVR) with the Freedom Solo or Solo SMART Stentless(FS) bioprostheses.

EVIDENCE ACQUISITION

A literature review was performed using 3 databases. Studies that reported at least one of the following outcomes: mortality, immediate complications, need for reoperation or hemodynamic evaluation, were included. Random effects models were used to compute pooled estimates by generalized linear mixed-effects model and logit-transformed for proportions and by inverse variance method for continuous variables.

EVIDENCE SYNTHESIS

From 355 records screened, 109 studies were selected for eligibility assessment. Out of these, 44 studies were included in this meta-analysis. From a total of 7720 patients, 48% were men, 95% confidence interval (CI): 44-52%, and the pooled mean age was 74 years (95%CI: 73-75). The pooled mean logistic Euroscore was 11.5 (95%CI: 8.7-14.3).Early mortality occurred in 3.1% (95%CI: 2.6-3.7) of patients, bleeding problems in 3.5% (95%CI: 2.5-4.9) and neurological events in 2.1% (95%CI: 1.7-2.6). Definitive pacemaker implantation was needed in 2.0% (95%CI: 1.5-2.6). The follow-up time ranged from 5 days to 10 years. Survival rates at 1-, 3- and 5-years ranged between 87.5% and 97.0%, 82.6% and 96.0%, and 58.5% and 94.0%, respectively.

CONCLUSIONS

AVR with FS bioprosthesis can be considered a safe procedure, as supported by satisfactory early and mid-term outcomes.

FÍSTULA PLEUROPARENQUIMATOSA APÓS CRIOBIÓPSIA: DESCRIÇÃO DE UM CASO

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Keywords: *fistula, criobiopsia*

INTRODUÇÃO

A fístula pleuroparenquimatosa é uma situação caracterizada por uma comunicação anómala entre a pleura e o parênquima pulmonar. Pode surgir por causas primárias (ex. lesões pulmonares, processos infecciosos, pneumotórax espontâneo) ou secundárias (trauma ou iatrogenia). A sua incidência como complicação da criobiópsia pulmonar é desconhecida.

CASO CLÍNICO

Homem de 71 anos, sem antecedentes pessoais de relevo, não fumador.

Seguido em consulta de Pneumologia por doença difusa do interstício pulmonar, é enviado para a Unidade de Pneumologia de Intervenção do Hospital Pulido Valente para realização de criobiopsia para caracterização histológica da sua patologia.

Foi submetido ao procedimento endoscópico, sob anestesia geral, ventilação mecânica e controlo fluoroscópico, tendo sido realizadas 2criobiópsias no lobo inferior direito. Não se verificaram complicações imediatas, mesmo na fluoroscopia de controlo no final do procedimento.

Uma hora depois, o doente apresentou toracalgia direita do tipo pleurítico e dessaturação tendo a radiografia do tórax confirmado volumoso pneumotórax direito. Foi colocado dreno torácico. Por ausência de re-expansão pulmonar após 72 horas e fístula de alto débito foi colocada indicação cirúrgica. Foi realizada videotoracoscopia que evidenciou a presença de orifício fístuloso ao nível da parede anterior do lobo inferior direito, tendo sido realizada rafia do orifício fístuloso. Houve melhoria progressiva da fuga aérea, tendo o dreno sido retirado ao 3º dia de pós-operatório e o doente teve alta ao 5º dia.

CONCLUSÕES

A criobiopsia pulmonar é uma técnica pouco invasiva que se tornou fundamental no estudo de doenças pulmonares, mas embora seja uma ferramenta valiosa, é importante reconhecer que está associada a complicações potencialmente graves.

Este caso sublinha a importância da reavaliação clínica e imagiológica do doente após a realização de criobiópsias para identificação e correção precoce de eventuais complicações. Na fístula prolongada, de grande débito ou com suspeita de fístula, a abordagem cirúrgica é consensual.

INTENSIVE CARE IN PATIENTS SUBMITTED TO THORACOABDOMINAL ANEURYSM REPAIR: ANALYSIS OF A CASE SERIES

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Keywords: *Intensive care unit, Thoracoabdominal aneurysm repair, Postoperative*

INTRODUCTION

Patients submitted to thoracoabdominal aortic aneurysm repair (TAAAR) represent a true challenge and diligent postoperative care is required for successful outcomes. Despite the careful patient selection and the meticulous surgical planning associated with the use of different monitoring and support strategies, a specialized intensive care unit (ICU) is a cornerstone in the perioperative period.

AIM

To describe the postoperative period of patients submitted to TAAAR in a tertiary care hospital center.

METHODS

This is a retrospective observational descriptive study of a case series that includes patients electively operated for TAAAR between 2017 and 2023. Demographic data, characterization of TAAA, intraoperative data (surgery, anesthesia/operating room time and mechanical circulatory support/mini-CPB durations), monitoring data and data related to the postoperative period such as mortality, length of hospital stay, cardiovascular and respiratory support durations, need for reoperation and extracorporeal support, and the incidence of complications were collected.

RESULTS

During this period, 20 patients were identified. The average age was 51,2 years and they were mostly male (75%). Only 25% of the patients had a prior diagnosis of a genetic condition associated with TAAA and about half of the patients had a TAAA Crawford II classification. The average surgery and anaesthesia duration was 6,6 ± 1,5 hours and 9,3 ± 1,7 hours, respectively. The average mini-CPB duration was 146,5 ± 39,2 minutes. In 45% of cases, there was a need for surgical reintervention during the hospitalization, mainly re-exploration for excessive bleeding. The 30-day and 1-year mortality rate was 15% and 27.7%, respectively. The average length of stay in the ICU and global hospital stay was 15,0 ± 22,2 days and 44,9 ± 41,5 days, respectively. Cardiovascular pharmacologic support was almost universal and had an average duration of 8,5 days. All patients were admitted to the ICU with invasive mechanical ventilation (IMV) and they had an average ventilation duration of 10,2 ± 22,2 days. In 2 patients, there was a need to extracorporeal support with VV-ECMO due to severe ARDS. The complications found in these patients were diverse and in line with the literature. The most frequent were respiratory (55%), cardiovascular (40%) and acute kidney injury (45%). The diagnosis of infection was also assumed in 35% of patients. Neurological complications occurred in 35% of cases.

CONCLUSIONS

A thorough understanding of the postoperative course and recovery is needed to further improve care and outcomes.

ÁCIDO TRICLOROACÉTICO COMO TRATAMENTO ENDOSCÓPICO DE FÍSTULAS BRONCOPLEURAIS

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Keywords: *Fístula broncopleural, Broncoscopia, Ácido tricloroacético*

INTRODUÇÃO

O termo fístula broncopleural (FB) diz respeito a uma comunicação anormal entre o brônquio e o espaço pleural; podendo surgir como complicação pós-cirúrgica e/ou associada a empiema. Dependendo da exequibilidade e indicação cirúrgica, o tratamento broncoscópico e especificamente recorrendo a agentes cauterizantes como o ácido tricloroacético (TCA), pode ser uma hipótese.

OBJECTIVOS

Perceber o sucesso terapêutico da utilização de TCA no tratamento de FB, na prática clínica de um Serviço de Pneumologia.

MÉTODOS

Foram revistos os processos clínicos dos doentes com FB, submetidos a tratamento endoscópico com TCA no Serviço de Pneumologia do Hospital Pulido Valente entre 2011 e 2022. O diagnóstico de FB foi confirmado com videobroncofibroscopia.

RESULTADOS

Foram identificados 4 casos, todos do sexo masculino, com média de idades de 59 anos. Todas as fístulas se desenvolveram como complicações pós-operatórias, sendo que num dos casos se desenvolveu em simultâneo como uma infeção de loca residual decorrente de uma compressa. Três doentes tinham o diagnóstico prévio de neoplasia do pulmão e o último um status pós-tuberculose pulmonar. Dois doentes foram submetidos a pneumectomia esquerda, um doente a pneumectomia direita e o quarto doente a bilobectomia superior. Todos os doentes tinham dreno torácico.

O diagnóstico de todas as fístulas foi confirmado por videobroncoscopia, por visualização do orifício fistuloso e recorrendo a instilação por cateter de azul de metileno. Ao diagnóstico, o diâmetro das fístulas variou entre 2 e 5 milímetros. Duas das fístulas localizavam-se no brônquio principal esquerdo, outro doente tinha duas fístulas, no terço distal da traqueia e no coto cirúrgico e o último doente (também apresentava duas fístulas), nas zonas proximal e distal do brônquio principal direito. Foi aplicado TCA a 50% com uma escova protegida por cateter. O número médio de tratamentos foi de 5 aplicações por doente, em tempos distintos e separadas por dias a 2 semanas.

Em dois dos doentes conseguiu-se o encerramento a longo prazo das FB. Um dos doentes no qual não foi possível o encerramento da fístula acabou por falecer de outras complicações numa fase inicial do tratamento.

CONCLUSÕES

As fístulas broncopleurais são causadoras de morbilidade e mortalidade importante nos doentes, especialmente nos doentes com baixo performance status. Em casos selecionados de fístulas milimétricas, pode ser lícito considerar o tratamento broncoscópico com ácido tricloroacético como uma das opções terapêuticas.

IMPACTO DO TRATAMENTO ENDOVASCULAR NA MELHORIA DA QUALIDADE DE VIDA E DOR NA SÍNDROME DE CONGESTÃO PÉLVICA

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Keywords: *síndrome de congestão pélvica, qualidade de vida, tratamento endovascular*

INTRODUÇÃO

A Síndrome de Congestão Pélvica (SCP) e a dor pélvica crónica associada têm uma importância clínica e social que está relacionada com o impacto substancial na qualidade de vida dos pacientes, autoestima, relacionamento social e função familiar e reprodutiva. Pretende-se avaliar o impacto do tratamento endovascular na melhoria dos sintomas e qualidade de vida dos doentes tratados por SCP.

MÉTODOS

Estudo observacional transversal com análise retrospetiva e prospetiva histórica em doentes do sexo feminino com diagnóstico clínico de SCP submetidas a tratamento endovascular no Serviço de Cirurgia Vascular do Hospital de Braga entre o período de 30 de abril de 2019 e 30 de abril de 2023. Procedeu-se à aplicação por entrevista do questionário PVVQ (Pelvic Varicose Veins Questionnaire) e da escala numérica da dor (VAS) em doentes tratados a esta patologia, comparando os momentos pré e pós tratamento.

RESULTADOS

Dos 42 doentes submetidos a tratamento, participaram 35 doentes no estudo, com idade média de 42 anos, sendo que a maioria teve 2 ou mais gestações, sendo a prevalência de dor pélvica crónica de 74%. O tempo médio de seguimento foi de 92 semanas. A SCP tipo 1 (classificação de Greiner) foi o diagnóstico mais comum (63%). A maioria (86%) apresentavam insuficiência da veia gonadal esquerda. Aplicando o PVVQ, observou-se uma diferença significativa entre o score pré e pós tratamento ($p<0.001$), com um diminuição média de 13,7 pontos no score, sendo observada a redução nas 4 partes. Aplicada a VAS, observou-se igualmente uma diferença entre os 2 momentos ($p<0.001$), com uma redução média de 4 pontos na escala. Em nenhum dos scores, houve diferenças significativas na sub-análise por idade, numero de gestações e classificação de Greiner. Houve melhoria marcada da dispareunia em 83% das doentes ($p<0.001$).

CONCLUSÃO

O presente estudo demonstra a eficácia do tratamento endovascular na melhoria da qualidade de vida e da dor, em doentes com diagnóstico de SCP.

LUNG BIOPSY IN INTERSTITIAL LUNG DISEASE: THE ICU EXPERIENCE OF A TERCIARY UNIVERSITY HOSPITAL

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INTRODUCTION

Interstitial Lung Disease (ILD) includes a wide variety of diffuse diseases of the lung parenchyma, with different etiologies, that are associated with high mortality in patients admitted to an ICU (>50%). Its differential diagnosis is complex, requiring integration of semiological, imagiological and histological data. Surgical lung biopsy (SLB) continues to be the gold standard for histological diagnosis, with evidence of agreement rates <30% between clinical diagnosis and final diagnosis after anatomopathological study. However, the higher mortality after urgent SLB in critical care patients compared to elective biopsies in noncritical patients is a cause of low achievement of SLB in ICU patients.

METHODS

We conducted a retrospective, single-center, observational study from January 2013 to December 2022 in patients admitted to the polyvalent ICU of the Hospital de Santa Maria in Lisbon who were submitted to a SLB. We analyzed the clinical indication for SLB, the impact of the histological study on definitive diagnosis and treatment and the mortality during ICU stay.

RESULTS

During these 10 years, a total of 15 patients were submitted to SLB. The most common indication was histological diagnosis of lung tumors (n=9, 60%). The other 40% (n=6) of the patients had ILD with unknown etiology. Among these 6 patients, the lung biopsy allowed for definitive diagnosis in 5: two of them had viral pneumonia, 2 had fungal pneumonia, and the other had sarcoidosis. No major perioperative or intraoperative complications occurred. These results influenced patient management on 3 occasions (50% of patients with ILD). In-hospital mortality among patients with ILD submitted to SLB was 66.7% (n=4).

CONCLUSIONS

In our population, the SLB was an infrequent diagnostic tool. However, it was useful in the definitive diagnosis of patients with complex ILD presentations who were selected for this procedure. No significant adverse effects or complications were noted. It is consistent with recent evidence that shows relatively low rates of severe complications even in patients requiring mechanical ventilation. These complications are less common with video-assisted techniques. The high mortality rates after the surgical procedure historically observed in these patients are probably a direct and inevitable consequence of disease severity. SLB could be a last resort for accurate diagnosis and effective management which highlights the importance of a multidisciplinary approach and timely referral for surgical evaluation and shared decisions about SLB indications and clinical feasability.

RESULTS OF THE IMPLEMENTATION OF A CARDIAC SURGERY PROGRAMME AT HOSPITAL LUSÍADAS PORTO

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INTRODUCTION

Hospital Lusíadas Porto decided to implement a cardiac surgery program to face the growing demand for these procedures. Surgical activity begun in January 2019. Here we present the results of a clinical audit of patients operated between January, 2019 and June, 2023.

RESULTS

A total of 140 patients were included. Average age was 66.4 years [24-87]. 95 patients (67.9%) were male. The average body mass index was (n=139) 26.4 [16.67-42.98]. The most common procedures were valvular surgery (88 pts), CABG (34 pts) and combined valvular and coronary procedures in 13 patients. Extracorporeal circulation was used in 103 patients. All patients were admitted to the ICU in the post-operative period. The average length of stay of the initial ICU admission was 2.78 days [1-13]. Thirteen patients (9.3%) required readmission to the ICU after the initial discharge. The average hospital LOS was 7.96 days [3-46], with a median of 6 (IQR 3).

The Euroscore II (ES-2) risk assessment tool was computed for all patients. The average predicted in-hospital mortality was 2,62%. The observed mortality was 1,43% (n=2). Follow-up data at 6 months was available for 85 (61,6%) of 138 survivors. All were alive and independent for major activities. 30-day follow-up status was known for 33 of the 53 patients missing 6-month data. All were alive and well.

Regarding post-operative complications, arrhythmias occurred in 60 patients (29 atrial fibrillation and 31 other conditions); post operative infection was noted in 16 cases. Of these, 6 had respiratory infection, 3 had surgical site infection (1 died), 3 had UTI and 1 had a catheter-related BSI. Of note 3 patients had a clinical diagnosis of infection without clear source and no microbiological isolates. Other reported complications were delirium (12), pericarditis (8) and severe post-operative shock (6). One patient suffered acute occlusion of bypass surgery complicated by shock and post-operative stroke. Patients with recorded complications were older (68,31 vs 64,7 years), had similar BMI (26,0 vs 26,8) and frailty indexes (2,75 vs 2,73). The average ES-2 predicted mortality was higher (3.07 vs 2.21%). They had significantly longer hospital stays (9,40 vs 6,57 days; p<0.05) and more often required readmission to the ICU (16.2 vs 2.8%).

CONCLUSIONS

Implementation of a cardiac surgery program at our institution proved successful. Meticulous care to avoid complications seems paramount to improve outcomes.