SUPPLEMENT

ABSTRACTS OF THE SPCCTV 4D VISIONS 2025

CONGRESSO SPCCTV 4D VISIONS 25

VASCULAR SURGERY

VASCULAR

FROM SURGERY TO REHABILITATION: LONG-TERM OUTCOMES AFTER MAJOR LOWER-LIMB AMPUTATION

João Marcelo Cabral, Henrique Almeida, Andreia Pinelo, Ivone Silva, Rui Machado

[1] Unidade Local de Saúde de Santo António

Keywords: *amputation, rehabilitation, prosthesis*

INTRODUCTION: Rehabilitation and functional recovery following major lower-limb amputation are pivotal determinants of quality of life in patients with peripheral artery disease. Successful prosthetic fitting and rehabilitation are associated with enhanced mobility and independence. However, candidacy for prosthetic use and long-term adherence are strongly influenced by age, comorbidity burden, and the level of amputation. This study aimed to assess post-amputation care, surgical outcomes, and rehabilitation pathways in a tertiary vascular surgery center. **METHODS:** A retrospective cohort study was conducted including 585 consecutive patients who underwent major lower-limb amputation between 2017 and 2023. Demographic, surgical and rehabilitation data were extracted from electronic medical records. **RESULTS:** The mean age at amputation was 72 ± 12 years with a male predominance (388 patients, 66%). Transfemoral (AK) amputation was the most common procedure, accounting for 359 cases (61%). The mean surgery duration was 51 ± 23 minutes. The average length of hospital stay was 19 days and 15% of patients required readmission. The reamputation rate was 8.5%. A statistically significant association was found between amputation level and the risk of reamputation.

VASCULAR

DIFFERENT SCENARIOS, SAME SOLUTION: THE SANDWICH TECHNIQUE FOR COMPLEX ILIAC DISEASE

Patrícia Carvalho, Daniel Brandão, Roberto Boal, Alexandra Canedo

[1] Unidade Local de Saúde Gaia e Espinho
[2] Hospital do Divino Espírito Santo

Keywords: *Sandwich Technique, Iliac Artery Aneurysm, Endoleak*

INTRODUCTION: Endovascular repair has become the mainstay of treatment for iliac artery aneurysms. To preserve at least one internal iliac artery (IIA) and avoid pelvic ischemia, innovative techniques have been developed, such as the sandwich technique (ST). **OBJECTIVES:** We aim to present a case of an anatomically challenging common iliac artery aneurysm (CIAA), and a case of a type Ib endoleak (EL) after endovascular aortic repair (EVAR), both solved using the ST. CASE 1: A 67-year-old male, with a prior history of an aorto-aortic and a left aorto-femoral grafts, presented with a 40mm right CIAA ten years later. The right IIA and left external iliac artery (EIA) were chronically occluded, while the left CIA and IIA remained patent but ectatic. Based on this singular anatomy, an endovascular approach combining an iliac branch endograft (IBE) and a ST was planned (figure 1). Due to the short distance from the lowest renal artery to the aorto-femoral graft, a Gore® Excluder® IBE, instead of a standard EVAR, was deployed inside the aorto-aortic graft. To preserve the only patent IIA, a ST was used with deployment of two Gore® Viabahn® stent grafts to both left IIA and right EIA. A standard iliac limb was then deployed from the side branch of the IBE to the aorto-femoral graft. Sequential five-year follow-up computed tomography angiographies (CTAs) constantly showed patency and perfect apposition of the stent grafts, with exclusion of the iliac aneurysm. CASE 2: A 73-year-old male, previously submitted to an EVAR due to an infrarrenal abdominal aortic aneurysm, presented with aneurysm sac growth due to bilateral type Ib EL. On the right side, in order to preserve the only patent IIA, a ST was performed with deployment of two Gore® Viabahn® stent grafts to both right IIA and EIA (figure 2). Due to left IIA chronic occlusion, the EL on the left side was excluded by deploying a Gore® VBX® and a Gore® Viabahn® stent grafts from the left EVAR limb to the left EIA. One-year follow-up CTA showed patency and good apposition of the endografts, with complete exclusion of both ELs. **CONCLUSION:** ST represents a safe, valuable and innovative solution in different clinical scenarios, particularly in patients with aorto-iliac disease, allowing the preservation of pelvic circulation thus preventing buttock claudication, erectile dysfunction, bowel ischemia or pelvis necrosis.

VASCULAR

SUCCESSFUL RENAL FUNCTION RESTORATION BY RENAL ARTERY STENTING IN ANURIC ACUTE KIDNEY INJURY WITH SEVERE AORTO-RENAL ATHEROSCLEROSIS: A CASE REPORT

Francisco Basílio, Ricardo Gouveia, Luis Fernandes, Marta Machado, Alexandra Canedo

[1] Unidade local de Saúde Gaia e Espinho

Keywords: *Renal occlusive disease, Endovascular treatment*

INTRODUCTION: Renal artery stenting is generally not recommended for atherosclerotic renovascular disease, as emphasized in the latest ESVS guidelines. However, revascularization remains indicated in selected high-risk scenarios, including acute kidney injury, recurrent pulmonary edema, or rapidly progressive renal dysfunction. **OBJECTIVES:** To report a case of dialysis-dependent acute kidney injury in the context of extensive aorto-iliac occlusion and critical renal artery stenosis, successfully treated with renal artery stenting. **MATERIALS AND METHODS:** We describe the clinical course of a 63-year-old man with severe systemic atherosclerosis, complete abdominal aortic occlusion, and extensive coraliform aortic disease causing ostial involvement of visceral vessels, including bilateral renal artery stenosis. The patient developed oligoanuric acute kidney injury requiring hemodialysis. Following multidisciplinary evaluation, percutaneous transluminal angioplasty with stenting of the left renal artery (the only viable kidney) was performed. **RESULTS:** Due to the extensive aortic disease, a long balloon-expandable uncovered stent (7×39 mm) was deployed, not only dilating the renal artery but also extending into the aortic lumen to compensate for the adjacent lesion. The procedure successfully restored perfusion of the left kidney, leading to recovery of urine output and progressive improvement in renal function, allowing dialysis discontinuation. The patient was discharged clinically stable under dual antiplatelet therapy. **CONCLUSIONS:** This case illustrates that, even after several days of anuria and dialysis dependence, revascularization of a viable kidney can restore renal function. Careful patient selection and multidisciplinary discussion are crucial to identify those who may benefit from renal artery stenting in high-risk clinical settings.

VASCULAR

EFFICACY AND SAFETY OF SIROLIMUS IN VASCULAR MALFORMATIONS

Paulo Miguel Gomes de Sousa Ferraz dos Santos, Luis Loureiro, Andreia Pinelo, Rui Machado

[1] ICBAS-UP School of Medicine and Biomedical Sciences, Centro Hospitalar e Universitário de Santo António, ULS de Santo António EPE

Keywords: *Vascular anomalies, Medical treatment, Vascular malformation*

INTRODUCTION: Vascular malformations are rare congenital anomalies that may cause significant morbidity and reduced quality of life. Standard treatments such as compression therapy, sclerotherapy, embolization, or surgery are often insufficient, especially in complex or refractory cases. Sirolimus, an mTOR inhibitor, has emerged as an off-label therapeutic option by targeting the PI3K/AKT/mTOR pathway, which is implicated in the pathogenesis of these lesions. This study aimed to evaluate the efficacy and safety of sirolimus in a clinical cohort of patients with vascular malformations. **OBJECTIVES:** To assess clinical outcomes, recurrence, adverse events, and genetic findings in patients with vascular malformations treated with sirolimus. **MATERIALS AND METHODS:** We performed a retrospective analysis of 24 patients with vascular malformations treated with sirolimus. Demographic, clinical, genetic, laboratory, and treatment-related data were collected. Treatment response was categorized as complete response, partial response, stable disease, or disease progression. Adverse events were graded according to CTCAE v5.0. **RESULTS:** The median age was 25.5 years (range 5–78), with 15 females. Venous malformations predominated (n=18), followed by combined malformations (n=4) and vascular tumors (n=2). The most frequent site was the lower limbs (n=14). Pain was reported in 22 patients (92%). Ten had undergone previous interventions, mainly sclerotherapy. Genetic testing was performed in nine patients, with pathogenic variants detected in five (three PIK3CA, one FGFR3, one ERBB2), and three were negative. Fifteen patients achieved a partial response, and five had stable disease. Symptom recurrence occurred in six cases, and sirolimus was reinitiated in five. Adverse events were recorded in 12 patients (50%), predominantly grade 1 (n=10) and one grade 2, most commonly oral mucositis and dyslipidemia. Baseline D-dimer levels, available in 18 patients, showed a median of 460.5 ng/mL (range 113–17,683). **CONCLUSIONS:** In this series, sirolimus provided clinical benefit with partial responses in most patients and an acceptable safety profile, as adverse events were generally mild. Genetic testing identified variants in half of the tested patients, supporting the rationale for targeted therapy. Elevated D-dimer levels were frequent, reflecting disease activity. These findings reinforce sirolimus as a valuable and safe therapeutic option for complex or refractory vascular malformations.

VASCULAR

MANAGING PERIRECTAL ARTERIOVENOUS MALFORMATION WITH EMBOLIZATION: A CASE STUDY

João Marcelo Cabral, Luís Loureiro, Henrique Almeida, Andreia Pinelo, Rui Machado

[1] Unidade Local de Saúde de Santo António

Keywords: *perirectal, malformation, endovascular*

INTRODUCTION: Perirectal vascular malformations (PVM) are rare and often misdiagnosed as haemorrhoids. They may present with recurrent rectal bleeding, anaemia, or anal discomfort. Advances in imaging have improved their detection, while endovascular embolization has emerged as a minimally invasive and effective therapeutic option. This clinical case aims to demonstrate the application of innovative therapeutic strategies for rectal pathology. **METHODS:** A retrospective analysis was conducted using electronic medical records and imaging studies retrieved from PACS. **RESULTS:** A 28 y.o. male had been conservatively managed for suspected haemorrhoids since the age of 15. Over time, his symptoms progressively worsened, and he began experiencing anal discomfort and profuse rectal bleeding. Physical examination revealed large, congested internal haemorrhoids. A colonoscopy identified a distal rectal lesion that began extensive bleeding during the procedure. He was also submitted to an endo anal ultrasound exam that presented with thickening of the submucosal layer of the anterior wall of the rectal ampulla, raising suspicion of a PVM. Given the patient's atypical clinical presentation and findings, abdominal CT angiography was performed and confirmed the previous suspicion. The PVM measured approximately 12 mm in diameter, it was supplied by the inferior mesenteric artery and drained into the gonadal vein, extending into the rectal lumen. Endovascular embolization was subsequently proposed. Retrograde vascular access was achieved via the right common femoral artery, and the inferior mesenteric artery was selectively catheterized using a SHK catheter. Angiography confirmed the presence of the PVM, originating from the superior rectal artery. Using a 1.7 Fr Asahi Veloute microcatheter, the PVM was embolized with 0.3 mL of Onyx 18. Post-procedural angiography demonstrated complete resolution of the PVM. At follow-up, the patient reported significant improvement, with complete relief from anal discomfort and no further episodes of rectal bleeding. Additionally, an improvement in bowel function was observed. **CONCLUSION:** This case highlights the efficacy and safety of endovascular embolization as a treatment modality for PVM. It also reinforces the potential of endovascular techniques, not only in managing PVM but also in addressing rectal haemorrhage associated with other conditions, such as haemorrhoids.

VASCULAR

MANAGEMENT AND OUTCOMES OF UPPER EXTREMITY VASCULAR TRAUMA: INSIGHTS FROM A DECADE-LONG RETROSPECTIVE STUDY

Ana Margarida Rocha, Andreia Pires, Luís Diogo Fernandes, Marta Machado, Alexandra Canedo

[1] Angiology and Vascular Surgery Department, Unidade Local de Saúde Gaia e Espinho, Gaia, Portugal

Keywords: *Vascular trauma, upper extremity*

INTRODUCTION: Upper extremity vascular injuries are relatively uncommon, accounting for a small proportion of overall vascular trauma. Currently, there is a striking paucity of data in the literature regarding management and outcomes after upper extremity vascular trauma, highlighting an important gap in knowledge that warrants investigation. **OBJETIVES:** To evaluate the mechanism of injury, management and outcomes of traumatic upper extremity vascular injuries. **METHODS:** We conducted a retrospective review of patients with traumatic upper extremity vascular injuries who underwent intervention in the Vascular Surgery Department of a Level I trauma center between January 2015 and December 2024. Data on patient demographics, injury patterns, management strategies and follow-up outcomes were obtained from clinical records. **RESULTS:** Thirty-one patients were included in the study. The majority were male (87.5%) and relatively young with a mean age of 45±16.7 years. Penetrating trauma was the predominant mechanism of injury (64.5%). Regarding the affected vessels, isolated radial artery lesions were the most frequent (35.5%), followed by injuries to the brachial (25.8%) and axillary arteries (16.1%). The majority of lesions underwent open surgical repair (96.8%) with both great saphenous vein (GSV) interposition graft and termino-terminal anastomosis representing the most common procedures (28.1% each), followed by bypass surgery with GSV (18.8%) and direct repair (6.3%). No prosthetic grafts were used. The most common concomitant injuries were nervous (48.4%), orthopedic (32.3%) and venous (16.1%). Intensive care unit admission was required in 6.5%, and one patient required perioperative reintervention. Two patients (6%) required amputation. No in-hospital mortality was reported. Overall, 64.5% of patients exhibited significant and lasting deficits, predominantly motor (25.8%) or combined motor and sensory (22.6%).No statistically significant correlation was found between the presence of deficits and either the mechanism of injury or the injured vessel. **CONCLUSION:** Upper extremity vascular trauma is relatively rare with low associated mortality and limb loss. However, most patients retain long-term functional impairment which is particularly concerning given that the affected population is often young. Additionally, although vascular interventions are associated with high technical success rates, long-term patency and vascular outcomes are largely unknown.

VASCULAR

UNCOVERING TISSUE PROTEOMIC SIGNATURES FOR PREDICTION OF MAJOR ADVERSE CARDIOVASCULAR EVENTS IN ABDOMINAL AORTIC ANEURYSM

Telmo Baltazar, Fábio Trindade, Rita Nogueira-Ferreira, Kak Khee Yeung, Marina Dias-Neto, Connie R. Jimenez,

[1] RISE-Health, Department of Surgery and Physiology, Faculty of Medicine of the University of Porto, 4200-319 Porto, Portugal
[2] Amsterdam UMC location University of Amsterdam, Surgery, Meibergdreef 9, Amsterdam, The Netherlands
[3] Department of Medical Oncology, OncoProteomics Laboratory, Amsterdam University Medical Centers, location VU medical center, The Netherlands

Keywords: *Abdominal aortic aneurysm, Major adverse cardiovascular events, Proteomics*

INTRODUCTION: Abdominal aortic aneurysm (AAA) is a life-threatening vascular disease, primarily due to risk of rupture. Major adverse cardiovascular events (MACE), including myocardial infarction (MI) and cerebrovascular accident (CVA), contribute substantially to overall morbimortality. Profiling the proteomic landscape of AAA tissue may uncover surrogate biomarkers for MACE risk prediction, improving clinical decision-making and patient prognosis. **AIM:** To compare the proteomic profiles of AAA tissue from MACE and non-MACE patients, for identifying candidate proteins for outcome risk prediction. Methodology: AAA patients undergoing open aortic repair were prospectively and consecutively recruited. Patients with and without a history of MI and/or CVA were categorized as MACE and non-MACE, respectively. Tissue biopsies (n=63) were homogenized using an optimized bead-beating system for protein extraction. Proteins were trypsin-digested via an S-Trap workflow and analysed by DIA-PASEF on a TimsTOF HT mass spectrometer. Only proteins present in >50% of the samples were retained for analysis. Differential expression between MACE and non-MACE patients was assessed (two-tailed t-test, p1.30): PON1, CEMIP, APOA4, GPLD1, OAF, APOA1, TREM2, LOXL1, CRLF3, and SEMA3C. Except for CRLF3, all these proteins can be monitored in plasma. **CONCLUSION:** The proteins identified in this study represent promising candidate biomarkers for stratifying AAA-related MACE risk, and warrant validation to determine their independent predictive value.

VASCULAR

OCCULT VASCULAR INJURY AFTER HIGH-NERGY TRAUMA: A CASE OF CELIAC TRUNK PSEUDOANEURYSM

Margarida Salvado, João Rocha Neves, Celso Carrilho, João Correia Simões, Amílcar Mesquita

[1] ULS Alto Ave

Keywords: *Visceral pseudoaneurysm, Celiac artery, Endovascular intervention*

INTRODUCTION: Celiac trunk (CT) pseudoaneurysms are rare, accounting for less than 4% of splanchnic artery aneurysms. Traumatic CT pseudoaneurysms represent an even rarer subset, with only a few cases reported in the literature. **OBJECTIVES:** CT trauma may result from endovascular procedures, blunt, or penetrating injuries. Despite not being true aneurysms, pseudoaneurysms carry a significant risk of rupture and require prompt treatment. We present a case of a traumatic CT pseudoaneurysm in a polytrauma patient following high-energy trauma, emphasizing the importance of multidisciplinary evaluation in detecting associated vascular injuries. **MATERIALS AND METHODS:** A 64-year-old man, with no relevant medical history, presented to the emergency department after a fall from a height of 5 meters, sustaining trauma to the right rib cage and dorsolumbar region. He was initially assessed by General Surgery and Orthopedics. On admission, he was awake, hemodynamically stable, and without signs of neurovascular compromise, reporting pain in the dorsolumbar spine and right rib cage. A thoraco-abdomino-pelvic and dorsolumbar spine CT revealed no acute musculoskeletal injury, but a left subdiaphragmatic hematoma adjacent to a 9 mm CT pseudoaneurysm, without active bleeding. The patient was admitted to the Vascular Surgery ward for monitoring and therapeutic planning. **RESULTS:** A computed tomography angiography (CTA) confirmed the diagnosis of a post-traumatic CT pseudoaneurysm, showing no active bleeding, sac enlargement, or hematoma progression. The patient underwent endovascular stent-graft implantation via brachial access. Intraoperative angiography did not visualize the pseudoaneurysm, but revealed a focal narrowing at the superior aspect of the proximal CT, with a characteristic hooked configuration consistent with median arcuate ligament syndrome. Postoperative CTA confirmed stent patency and exclusion of the pseudoaneurysm. **CONCLUSIONS:** CT pseudoaneurysms are rare vascular lesions, and their incidental detection following high-energy trauma is uncommon. This case underlines the need for a high index of suspicion and thorough vascular assessment, even when initial imaging shows no musculoskeletal injury.

VASCULAR

FEASIBILITY AND IMPACT OF CARDIAC REHABILITATION IN INTERMITTENT CLAUDICATION: A RETROSPECTIVE STUDY

Ana Margarida Rocha, Andreia Pires Coelho, Sofia Meixedo, Ana Esteves, Bruno Cancela,

[1] Angiology and Vascular Surgery Department, Unidade Local de Saúde Gaia e Espinho, Gaia, Portugal
[2] Physical Medicine and Rehabilitation Department, Centro de Reabilitação do Norte, Unidade Local de Saúde Gaia e Espinho, Gaia, Portugal

Keywords: *Intermittent claudication, Peripheral artery disease, Cardiac rehabilitation programs*

INTRODUCTION: Peripheral artery disease (PAD), specifically intermittent claudication (IC), may cause significant functional impairment and negatively impact quality of life. Current international guidelines consistently recommend exercise therapy—particularly supervised exercise programs—as the first-line treatment for patients with IC. The impact of cardiac rehabilitation programs (CRP) including, but not being limited, to supervised exercise could potentially have an incremental benefit compared to the current gold standard. **OBJETIVES:** To evaluate the implementation of a CRP in patients with limitant IC. **METHODS:** We conducted a single-center, retrospective study of patients with limiting IC referred to an established CRP from January to December 2024. Inclusion criteria were confirmed PAD with limiting IC and ability to attend three CRP sessions per week for six weeks. Patients with critical limb ischemia, recent revascularization, or contraindications to exercise were excluded. Each patient received a physiatrist and cardiology evaluation addressing comorbidities and rehabilitation needs, along with nutritional support, psychological management, health education, and supervised exercise training. Exercise sessions were conducted at hospital facilities over six weeks. Demographic and clinical data were extracted from medical records, and functional assessments included the six-minute walk test (6MWT) and exercise stress test at program start and completion. Results Forty-one patients (90.2% male, mean age 65.9±8.4 years) were included; 19.8% were professionally active at the time of the study. Most presented significant comorbidities. Patients attended a mean of 14.6±5.0 sessions. Smoking cessation with the program was reported in 18.2% of active smokers. The 6MWT increased by 55.0±71.9m during the program, without a statistically significant correlation with the number of sessions (p=0.081). Exercise tolerance improved, with an increase of 1.37±1.57 Metabolic Equivalents of Task (MET). **CONCLUSION:** CRP for patients with IC promoted meaningful improvements in functional capacity, evidenced by gains in both walking distance (6MWT) and exercise tolerance (MET). Further prospective studies are warranted to confirm the benefits and clarify the impact of rehabilitation in this population.

VASCULAR

PREDICTIVE FACTORS FOR PROSTHETIC FITTING IN PATIENTS UNDERGOING MAJOR LOWER LIMB AMPUTATION

Luís Miguel Gomes Ferreira

[1] Universidade do Minho

Keywords: *Amputation; Rehabilitation; Physical Therapy Modalities*

INTRODUCTION: The global incidence of peripheral arterial disease (PAD) and lower-limb ischemia has been steadily increasing, driven by population aging and the growing prevalence of cardiovascular risk factors. In severe cases, major lower-limb amputation remains the only viable therapeutic option, yet it carries profound repercussions for patients' quality of life and imposes substantial costs on healthcare systems. Prosthetic rehabilitation is an intrinsically complex and multifactorial process, but it can provide substantial gains in functional autonomy and quality of life. This study aims to identify factors associated with prosthetic eligibility to optimize rehabilitation pathways and streamline prosthesis allocation in this population. **OBJECTIVES:** This study aims to identify clinical, functional, and demographic factors associated with prosthetic eligibility in patients undergoing major lower-limb amputation for peripheral arterial disease. **METHODS:** A retrospective, observational, and analytical study was conducted, including 218 patients who underwent major lower-limb amputation at ULS Braga between 2020 and 2023. Demographic, clinical, and functional data were collected. Chi-square tests, Mann–Whitney tests, and multivariable logistic regression were used to evaluate associations with prosthesis prescription or waiting status. **RESULTS:** Only 30.7% of patients were deemed eligible for a prosthesis, and 12.8% actually received the device. In multivariable analysis, pre-amputation autonomy (OR = 0.222; p = 0.006) and participation in a rehabilitation program (OR = 34.7; p < 0.001) remained independently associated with prosthetic fitting. Younger age, male sex, and transtibial amputation level showed positive associations in univariate analysis. Overall mortality during follow-up was 52.3%. **CONCLUSION:** Pre-amputation functional autonomy and access to structured rehabilitation programs are critical determinants for successful prosthetic rehabilitation. Strategies that promote early rehabilitation and appropriate referral can improve functional outcomes, reduce healthcare costs, and enhance patients' quality of life.

VASCULAR

FATORES PREDITORES DE MORTALIDADE EM DOENTES SUBMETIDOS A AMPUTAÇÕES MAJOR DO MEMBRO INFERIOR

Ana Luísa Salvador Reis, Roger Rodrigues, Carlos Veiga

[1] Universidade do Minho
[2] ULS Braga

Keywords: *DAP; Mortalidade; Amputação*

INTRODUCTION: A Doença Arterial Periférica (DAP) é uma manifestação da aterosclerose e constitui um importante problema de saúde pública, associando.se a elevada morbimortalidade. Uma proporção significativa de doentes com DAP evolui para isquemia crónica do membro, podendo necessitar de amputação major, procedimento associado a taxas de mortalidade muito elevadas. Em Portugal, a evidência sobre os fatores preditores de mortalidade pós amputação é escassa, dificultando a estratificação de risco destes doentes. O presente estudo tem como objetivo identificar fatores sociodemográficos e clínicos associados à mortalidade. **OBJETIVOS:** Estudar os fatores preditores de mortalidade aos 30 dias e 1 ano pós cirurgia em doentes com DAP, analisando dados sociodemográficos, antecedentes médicos e cirúrgicos, medicação habitual, dados laboratoriais pré-operatórios e intercorrências pós amputação. **MÉTODOS:** Foi realizado um estudo retrospetivo, observacional e analítico incluindo 215 doentes submetidos a amputação major do membro inferior por doença arterial periférica, internados no serviço de Angiologia e Cirurgia Vascular da Unidade Local de Saúde de Braga entre janeiro de 2020 e dezembro de 2023, inclusivamente. Utilizaram-se regressões de Cox univariadas e regressões de Cox multivariadas para avaliar associações com a mortalidade. **RESULTADOS:** A taxa de mortalidade aos 30 dias pós cirurgia foi de 12,6% e no primeiro ano pós cirurgia foi de 31,6%. Na análise multivariada aplicada quer aos 30 dias quero no 1º ano após cirurgia, os fatores independentes associados à mortalidade foram a idade, o valor da ureia e a pneumonia como intercorrência pós cirúrgica. **CONCLUSÕES:** A mortalidade após amputação major do membro inferior por DAP é elevada e reflete a fragilidade clínica e funcional desta população. A identificação de fatores preditores permite melhorar a estratificação de risco e poderá contribuir para a definição de estratégias preventivas e de acompanhamento direcionadas.

VASCULAR

COMBINED TREATMENT OPTIONS FOR TARGET VISCERAL AORTA IN COMPLEX THORACO-ABDOMINAL ANEURYSM ENDOVASCULAR REPAIR

Helena Fidalgo, Gonçalo Alves, Adriana Figueiredo, Joana Cardoso, Daniela Gonçalves, Maria Emília Ferreira

[1] ULS São José

Keywords: *thoraco-abdominal aortic aneurysms, complex visceral aorta, endovascular treatment*

INTRODUCTION: Endovascular repair has become the standard of care for high-risk patients with complex thoraco-abdominal aortic aneurysms (TAAA) with suitable anatomy. Nonetheless anatomical restrictions continue to impose limitations for wider applications. We describe a case of a type I TAAA repair using a fenestrated and branched endovascular aortic repair (F/BEVAR) for which different approaches for target visceral vessels were used including single inner branch, bidirectional double cuffed inner branch and fenestrations. Methods: Based in clinic report. Case Report: A 74-year-old female patient with medical background of hypertension and smoker presented with an asymptomatic type I TAAA. Computed tomography angiography (CTA) revealed a 65 mm TAAA and challenging visceral anatomy associated to a celiac trunk (CT) downward sharp angle and stenosed compressed origin, a right renal artery (RRA) with early bifurcation at 1 cm and a double left renal artery (LRA) (Image 1.) The patient was proposed to endovascular repair with a thoraco-abdominal side-branch endograft (COOK®) customized with a inner branch for CT, a fenestration for superior mesenteric artery (SMA), fenestration for RRA and a bidirectional double cuff inner branches for LRA. Percutaneous bilateral femoral accesses were obtained. From femoral access SMA, RRA and anterior LRA were catheterized and bridging BeGraft® stents implanted. For RRA a double barrel stenting was performed with two BeGraft® in kissing stent for renal bifurcation. For anterior LRA retrograde inner branch was implanted a bridging BeGraft Plus®. A percutaneous right brachial access obtained, through which the anterograde inner branch for posterior LRA and the inner branch for CT were catheterized and bridged respectively with a BeGraft Plus® and BeGraft®. Final angiogram showed favorable endograft and visceral patency. Post-operatory CTA showed no complications and a favorable visceral patency. Conclusion: F/BEVAR is currently the standard repair for complex abdominal aorta and TAAA. New endograft designs had overcome anatomical limitations for its wider use. Novel solutions including the bidirectional double cuff inner branch have showed high technical success and no branch related complications.

VASCULAR

COMPENSATORY HYPERHIDROSIS AFTER THORACOSCOPIC SYMPATHECTOMY - CAN WE PREDICT ITS OCCURRENCE?

Beatriz Guimarães, Andreia Coelho, Luís Fernandes, Marta Machado, Victor Martins, Alexandra Canedo

[1] Unidade Local de Saúde Gaia e Espinho; Faculdade de Medicina da Universidade do Porto

Keywords: *Compensatory hyperhidrosis, Sympatectomy*

INTRODUCTION: Compensatory hyperhidrosis (CH) is an unpredictable adverse effect of endoscopic thoracoscopic sympathectomy which can severely impact patients' quality of life. Adhami et al found that increasing age, smoking habits, and primary indication other than palmar hyperhidrosis increased the risk of severe CH (SCH) and proposed a nomogram to predict this occurrence. This study's main aim was to idenitfy predictors of SCH and to validate proposed score in our population. **METHODS:** This is an observational single-center retrospective study. Medical records of all patients submitted to endoscopic thoracoscopic sympathectomy from January 2017 to December 2024 were reviewed. Primary outcome was defined as the development of SCH on the postoperative follow-up visit after surgery (defined as life-impairing hyperhidrosis in other locations other than hands). Patients with loss of follow-up after surgery were excluded, as were patients with previous sympathectomy procedures. Demographic, procedural data, postoperative status and events were recorded and analyzed. **RESULTS:** A total of 78 patients were included in this study, of which 45 (57.7%) presented with compensatory hyperhidrosis after surgery, with only 3 manifesting severe symptoms. The SCH group was significantly older (39.0+/-8.0 vs. 23.0+/-14.0 years, p = 0.045), but the remaining factors from the score were not significantly different between groups nor were other demographic factors. After applying the nomogram and calculating the final score, this did not correlate with the risk of SCH with a median score of 7.5 [-] in the SCH group vs. 3.5 [4] (p=0.071). **DISCUSSION:** Older age remains the strongest and most recurrent predictor of SCH, as highlighted both in prior literature and in our study. Other demographic factors (female sex, BMI, non-palmar surgical indication, smoking habits), are inconsistently reported as risk factors and were not significant in our analysis. However, the small sample size, and low incidence of SCH could explain the lack of significance in our population. Also, the poor representation of patients with non-palmar hyperhidrosis (14.3% in our series vs. 38.9% in Adhami et al.) also posed challenges in applying this nomogram in our population. In conclusion, only older age showed an association with SCH in our cohort and the risk score could not be externally validated. Additional studies with larger cohorts are currently necessary to assess the true value of the score.

VASCULAR

RESPONSE EVALUATION OF ELECTROCHEMOTHERAPY IN A LOCALLY ADVANCED ANGIOSARCOMA – A CASE REPORT

Catarina Palma, Catarina Figueira, Sara Carvalhal, Nuno Abecasis

[1] Cirurgia Geral, Hospital da Luz Lisboa
[2] Cirurgia Geral, Hospital Beatriz Ângelo
[3] Cirurgia Geral, Instituto Português de Oncologia de Lisboa Francisco Gentil

Keywords: *Electrochemotherapy, Angiosarcoma, Palliative treatment*

INTRODUCTION: Cutaneous angiosarcoma is an aggressive malignant mesenchymal vasoformative neoplasm that accounts for 1% of all soft tissue sarcomas. The lower limb and hip represent the 4th most common location. Electrochemotherapy (ECT) is a localized ablative treatment that combines systemic or local chemotherapy with electric pulses to the skin. Response rates up to 80% have been described, with minimal side effects, making it an option for advanced cutaneous angiosarcoma. **OBJECTIVES:** Here we describe a case of a lower limb angiosarcoma in a patient with chronic lymphedema (Stewart-Treves Syndrome), submitted to ECT with bleomycin. **MATERIALS AND METHODS:** An 86-year-old female patient, with chronic venous insufficiency associated with bilateral lower limb edema, was referred to the Dermatology consultation due to a violaceous plaque with a verrucous surface and irregular borders, approximately 6 × 12 cm in size, located on the anterior aspect of the right leg, with an 8-year history and more pronounced growth over the last 3 months. On examination, there was an extensive ulcerated lesion on the anterior aspect of the leg, measuring 15 × 12 cm, with satellitosis extending along the entire leg down to below the knee. **RESULTS:** A biopsy of the main lesion and of a more distant one was performed, both revealing histological diagnosis of angiosarcoma. Due to the extent of the lesion, which precluded surgical excision, the case was discussed at a multidisciplinary tumor board, and the patient was proposed for ECT for local control of the ulcerated lesion. No indication for systemic therapy was made due to the patient's frailty. The patient was then submitted to the first session of ECT with intravenous bleomycin (15,000 IU/m2) in August 2025, with electric pulses delivered to the main lesion but also to distal lesions. After a month the patient presented with a partial response, with decrease of the main lesion, disappearance of most of the satellite targeted lesions and with decrease of bleeding and exudate. A second session will be programed for the remaining proximal lesions. **CONCLUSION:** We presented a case of a locally advanced lower limb angiosarcoma in a patient with chronic lymphedema, treated with ECT showing an early partial response. Further evaluation will be addressed. This case illustrates the palliative benefits of ECT which include patient tolerability, local haemostasis and durable local control.

VASCULAR

EFFECTS OF INTRAOPERATIVE DEXMEDETOMIDINE ON PERIOPERATIVE OUTCOMES IN CAROTID ENDARTERECTOMY: A SYSTEMATIC REVIEW

João David Carvalho Martins, Pedro Videira Reis, João Rocha Neves,

[1] Department of Biomedicine – Unity of Anatomy, Faculdade de Medicina da Universidade do Porto, Porto, Portugal
[2] Unidade de Queimados do Hospital de São João, Porto, Portugal
[3] RISE-Health, Departament of Biomedicine, Faculdade de Medicina da Universidade do Porto, Porto, Portugal

Keywords: *Perioperative management; Alpha-2 adrenergic agonist; Carotid artery stenosis*

INTRODUCTION: Carotid endarterectomy (CEA) remains a cornerstone in stroke prevention, yet perioperative hemodynamic instability, neurological complications, and myocardial injury still pose as key procedural risks. Dexmedetomidine (DEX), has gained prominence as an anaesthetic adjunct, with reported benefits in stabilizing hemodynamic parameters, reducing anaesthetic requirements, and improving patient comfort. Nonetheless, existing evidence is scarce, originating from small, heterogeneous studies, and concerns regarding bradycardia, hypotension, and cerebral perfusion still persist. **OBJECTIVES:** This systematic review and meta-analysis aims to evaluate the impact of intraoperative DEX administration on hemodynamic stability, postoperative neurological and cardiac outcomes, recovery profiles, and incidence of adverse events - including stroke, myocardial infarction, and all-cause mortality - in patients undergoing CEA, compared with standard anaesthetic management. **METHODS:** A systematic search was conducted in PubMed, Web of Science, and Scopus to identify relevant articles evaluating the use of intraoperative DEX in CEA. Study selection and data extraction followed PRISMA guidelines. Meta-analyses were conducted using random effects models through OpenMeta software. **RESULTS:** Five RCTs and 263 patients demonstrated an incidence of 30-day stroke at 2% (95% CI [1–5%], p = 0.8960) with minimal heterogeneity observed across studies. No cases of early postoperative myocardial infarction were reported. Pooled data from eight studies (n=421) indicated that all-cause mortality occurred in only 1% of patients (95% CI [0–3%], p=0.9997). The occurrence of surgical hematoma was 2% (95% CI [0–6%], p=0.9238) consistent across three studies including 125 subjects. Three studies and 306 patients were included for myocardial infarction (MI). The pooled risk ratio (RR) was 3.00 (95% CI [0.13–70.87], p = 0.496). For stroke, two studies with the same sample size reported no clear effect (RR: 0.96, 95% CI [0.11–8.54], p = 0.972). Heterogeneity was negligible across outcomes, though wide confidence and prediction intervals highlight significant uncertainty. **CONCLUSION:** In patients undergoing CEA, intraoperative use of DEX appears safe, with low incidences of stroke, myocardial infarction, all-cause mortality, and surgical hematoma. However, the evidence base remains limited by small sample sizes, scarce events, and wide imprecision, warranting larger, higher-quality trials.

VASCULAR

ENDOVASCULAR APPROACH FOR ACUTE-ON-CHRONIC MESENTERIC ISCHEMIA: THE HOLY GRAIL FOR OLD AND FRAIL PATIENTS

Roberto Cunha, Luis Fernandes, Marta Machado, Francisco Basilio, Nuno Coelho, Alexandra Canedo

[1] Hospital do Divino Espirito Santo de Ponta Delgada
[2] ULS Gaia e Espinho

Keywords: *Acute-on-chronic mesenteric ischemia, Aspiration thrombectomy, Superior mesenteric artery*

INTRODUCTION: Acute mesenteric ischemia (AMI) is a rare but severe condition, accounting for 0.1% of hospital admissions and with mortality rates up to 80%. AMI may have thrombotic, embolic, or non-occlusive causes. With aging populations and increased anticoagulant use, thrombotic forms are now more common. Early diagnosis and treatment are crucial to prevent bowel necrosis. While surgery allows direct bowel inspection, it carries high morbidity. Endovascular techniques have emerged as promising alternatives in selected cases. **OBJECTIVES:** Describe a case of acute-on-chronic mesenteric ischemia treated successfully with endovascular techniques, and to discuss the rationale for this approach. **MATERIALS AND METHODS:** A 76-year-old woman with diabetes and history of cholecystectomy presented with 7 months of postprandial pain, 25–30 kg weight loss, and worsening symptoms in the last 3 days. Labs showed leucocytosis and high CRP. CTA revealed chronic celiac trunk occlusion and acute SMA thrombosis with distal embolization. An endovascular approach was selected. Through left brachial access, SMA catheterization was performed with a triaxial system. Catheter-directed thrombolysis with alteplase was followed by aspiration thrombectomy (Penumbra®) and primary stenting of the SMA ostium (Advanta® 6x39 mm). **RESULTS:** The procedure achieved complete reperfusion with excellent angiographic results. The patient improved clinically and was discharged on day 7 with apixaban. At 6 months, the stent remained patent, with 15 kg weight gain and no complaints. This case highlights the diagnostic challenge of acute-on-chronic mesenteric ischemia, where CTA played a crucial role. Endovascular treatment was favoured due to the patient's frailty, stable lactate, and absence of peritonitis or imaging signs of necrosis. Although not suitable for all patients, endovascular-first approaches are associated with lower mortality and shorter hospital stays. Primary stenting was added to enhance durability, with continued postoperative monitoring to detect complications. **CONCLUSIONS:** Endovascular-first treatment is a safe and effective option in selected AMI patients without bowel necrosis. Early diagnosis, appropriate imaging, and close multidisciplinary follow-up are essential to achieving favourable outcomes.

VASCULAR

UNEXPECTED DIAGNOSIS OF CONCOMITANT CASTLEMAN'S DISEASE FOLLOWING CAROTID BODY TUMOUR RESECTION: A CASE REPORT AND MANAGEMENT REVIEW

Roberto Cunha, Luis Fernandes, Marta Machado, Francisco Basilio, Nuno Coelho, Alexandra Canedo

[1] Hospital do Divino Espirito Santo de Ponta Delgada
[2] ULS Gaia e Espinho

Keywords: *Castleman´s disease, Carotid body tumour, Paraganglioma*

INTRODUCTION: Carotid body tumours (CBTs) are rare, predominantly paragangliomas, requiring differentiation from glomus vagale tumours and schwannomas. Only 1–2% of paragangliomas secrete catecholamines. Castleman's disease (CD) is an uncommon, non-clonal lymphoproliferative disorder, classified as unicentric or multicentric. The unicentric form usually affects a single lymph node and is asymptomatic, while the multicentric form often presents systemic symptoms. The hyaline-vascular variant is the most frequent histological subtype. Surgical resection is the gold standard for unicentric CD, with excellent outcomes, whereas multicentric cases may need immunotherapy. **OBJECTIVES:** Present a case of concomitant carotid body tumour and unicentric hyaline-vascular Castleman's disease, emphasizing diagnostic challenges and the importance of histopathology. **MATERIALS AND METHODS:** A 59-year-old man with metabolic comorbidities presented with a pulsatile mass at the right carotid bifurcation (Shamblin II). CTA showed a 28x31x41 mm lesion with no distant disease. Biochemical tests ruled out catecholamine secretion. The patient underwent uncomplicated tumour excision. Histopathology confirmed carotid body paraganglioma (GAPP score 4/10) and unexpectedly revealed hyaline-vascular Castleman's disease in adjacent lymph nodes. Postoperative imaging and PET/CT excluded metastatic or multicentric disease. Virology and immunological panels were negative. A multidisciplinary team recommended annual surveillance. **RESULTS:** The coexistence of CBT and unicentric CD at the carotid level is rare. Preoperative imaging showed no signs of CD. Histology revealed typical features of hyaline-vascular CD, including lymphoid follicles with concentric lymphocytes ("onion skinning") and vascular hyalinization. Surgical resection remains curative for unicentric CD, with 5-year survival exceeding 90%. Despite low recurrence risk, annual follow-up was planned given the disease rarity. Multicentric CD treatment differs substantially, focusing on IL-6-targeted therapies. **CONCLUSIONS:** This case underscores the importance of histopathological examination of regional lymph nodes in cervical tumour surgeries. Although rare and difficult to diagnose preoperatively, unicentric Castleman's disease should be considered in differential diagnoses. Multidisciplinary collaboration ensures accurate diagnosis and appropriate long-term management.

VASCULAR

DEFYING THE CLOCK: RESTORING RENAL FUNCTION AFTER 72 HOURS OF SUBACUTE RENAL THROMBOSIS

Roberto Cunha, Luis Fernandes, Marta Machado, Francisco Basilio, Nuno Coelho, Alexandra Canedo

[1] Hospital do Divino Espirito Santo de Ponta Delgada
[2] ULS Gaia e Espinho

Keywords: *Late renal revascularization, Acute renal occlusion, Renal artery thrombosis*

INTRODUCTION: Acute renal artery occlusion is rare, especially when caused by in situ thrombosis rather than embolism. Thrombotic occlusion is often associated with advanced atherosclerosis. Clinical presentation is typically nonspecific—flank pain, haematuria, renal failure—leading to delayed diagnosis. Although revascularization within six hours is generally recommended, its benefit beyond this period remains debated. We report a case of delayed endovascular revascularization for renal artery thrombosis with full renal function recovery. **OBJECTIVES:** To present a case of subacute renal artery thrombosis successfully treated with endovascular stenting after 72 hours of symptom progression, highlighting key factors that supported delayed intervention. **MATERIALS AND METHODS:** A 51-year-old male with cardiovascular risk factors presented with right flank pain and worsening renal function. He had visited the emergency department twice in the previous five days with similar symptoms. On the third visit, labs showed creatinine 2.4 mg/dL and eGFR 30 mL/min/1.73 m^2. CTA revealed right renal artery occlusion with infarction of the lower third of the kidney, but residual distal perfusion and contrast uptake in viable parenchyma. Anticoagulation with unfractionated heparin was initiated, and endovascular revascularization was performed via femoral access with deployment of a 5 × 22 mm Advanta® V12 stent-graft, without thrombolysis or aspiration. **RESULTS:** Angiography confirmed successful reperfusion, sparing the infarcted lower third. Renal function improved significantly, with eGFR rising to 77 mL/min/1.73 m^2 by discharge (day 4). At six months, the patient remained asymptomatic, with eGFR >90 and normal blood pressure, without antihypertensives. Imaging confirmed stent patency and no recurrence. **CONCLUSIONS:** This case supports the use of delayed revascularization in thrombotic renal artery occlusion when residual perfusion is evident. Primary stenting alone may restore renal function while avoiding risks linked to thrombolysis or thrombectomy. In selected cases, decision-making should be based on imaging and physiological criteria rather than rigid time cutoffs.

VASCULAR

EVALUATING THE INFLUENCE OF EXTRACRANIAL CAROTID ANEURYSM TYPE ON TREATMENT OUTCOMES

Joana Monteiro-Pacheco, João Rocha-Neves, Juliana Pereira-Macedo, Włodzimierz Hendiger, Piotr Szopinski, Piotr Myrcha

[1] Department of Biomedicine - Unit of Anatomy, Faculty of Medicine of University of Porto, Porto, Portugal
[2] RISE@Health, Departamento de Biomedicina – Unidade de Anatomia, Faculdade de Medicina, Universidade do Porto, Porto, Portugal
[3] Department of General Surgery, Unidade Local de Saúde do Médio-Ave, Vila Nova de Famalicão, Portugal

Keywords: *Carotid artery aneurysm, pseudoaneurysm, carotid stenting*

INTRODUCTION: Extracranial carotid artery aneurysms (ECAAs) are rare. True aneurysms (TECAAs) and false aneurysms (FECAAs) differ in epidemiology, presentation, coexistence of other aneurysms and comorbidities, but are usually analyzed together. **OBJECTIVES:** This study aimed to assess treatment, early and late outcomes of both groups. **METHODS:** All patients treated surgically or endovascularly for ECAA in a tertiary center (1983–2022) were retrospectively reviewed. Perioperative, early and long-term results were analyzed. Primary outcome: 30-day stroke and mortality. **RESULTS:** Forty-eight patients, 36 males (75%), with ECCA were included, with a mean age of 61.75±13.60 years. Median follow-up was 36 IQR: 18-60 months. 24 patients had TACAA, 24 had FECAA. The primary cause of TECAA was degenerative atherosclerosis 20 (83.3%), while the FECAA was posttraumatic in 7 patients (29.2%), postoperative in 5 (20.8%), iatrogenic in 3 (12.5%) cancer infiltration in 3 (12.5%), post-radiotherapy in 2 (8.3%), other in 2 (8.3%), and unknown in 1 patient (4.2%). The presentation of the aneurysm, 9 (37.5%) TECAA and 8 (33.3%) FECAA patients had symptoms due to thromboembolism and 5 had rupture (1 TECAA and 4 FECAA). Overall, 14 (58.3%) TECAA pts and 10 (41.6) FECAA had acute presentation. 17 (70.8%) and 14 (58.3%) underwent open surgery, 5 (20.8%) and 9 (37.5%) had endovascular intervention, and 2 (8.3%) and 1 (4.2%) had a hybrid procedure, for TECAA and FECAA group, respectively. Concerning thirty-day results, one patient in each group had a stroke (4.2 vs. 4.2%; P=NS), there were 2 (8.4%) TIA in TECAA and 1 (4.2%) in FECAA, and 1 death in TECAA due to stroke, and two in FECAA group due to hemorrhage (12,6 %). During follow-up, no new cerebrovascular events were detected in the TECAA groups. In the FECAA group, 6 additional patients died, due to hemorrhage (n=2), acute myocardial infarction (n=1), gastrointestinal hemorrhage (n=2) and ischemic stroke (n=1) for an overall, late mortality of patients with FECCAs of 33.3% (8/24). **CONCLUSION:** This study found that all treatment options were effective and patients with true ECAAs did well. There was, however, significantly higher 30 day and late mortality of patients with FECAAs, mostly due to associated malignancy and co-morbidities. These findings highlight the need for careful patient selection and tailored management strategies in this subgroup. Prospective registries are needed for better differentiation.

VASCULAR

USE OF EXTERNAL POLYTETRAFLUOROETHYLENE REINFORCEMENT OF VARICOSE GREAT SAPHENOUS VEIN IN DISTAL BYPASS SURGERY

Miguel Queiros, João Marcelo Cabral, Henrique Almeida, Duarte Rego, Rui Machado

[1] Unidade Local de Saúde de Santo António

Keywords: *Distal bypass, Varicose great saphenous vein, Popliteal aneurysm*

INTRODUCTION: Great saphenous vein (GSV) has long been considered the conduit of choice for infrainguinal bypass surgery. However, coexisting chronic venous disease may produce significant varicose degeneration in veins intended for harvest. In such cases, aneurysmal degeneration, wall thinning, and diminished durability become potential complications. External reinforcement using standard polytetrafluoroethylene (PTFE) prostheses has been proposed to enable the use of dilated or varicose veins for peripheral bypass grafts. **CASE REPORT:** A 48 year old man, smoker, with no other relevant medical comorbidities, presented with three months of progressively worsening intermittent claudication in the right leg. On examination, the femoral pulse was palpable, but the popliteal, posterior tibial, and dorsalis pedis pulses were absent. Doppler ultrasound showed a occluded aneurysm in the third portion of the popliteal artery with 2.0 cm of diameter. Diagnostic angiography revealed occlusion of the popliteal artery, peroneal artery, and posterior tibial artery; only the anterior tibial artery remained patent in the leg. Both the posterior tibial and the pedal arteries were patent in the foot. No other aortic or peripheral aneurysms were detected. Preoperative duplex scanning identified a large varicose GSV in both legs, measuring 9–10 mm in diameter. To exclude the aneurysm, a bypass from the superficial femoral artery to the anterior tibial artery was performed using the varicose GSV. To prevent aneurysmal degeneration post grafting, the full length of the harvested vein was externally reinforced with an 8 mm PTFE graft. At one year follow up, the reinforced GSV remained non aneurysmal, there was no evidence of anastomotic aneurysm, and dorsalis pedis pulse was present. **DISCUSSION:** In this young patient a durable bypass was essential. Reinforcement of the GSV with an 8 mm PTFE graft prevented aneurysmal degeneration and was not associated with infection, thrombosis, or graft failure in the one year follow-up. This supports that external PTFE reinforcement in appropriately selected patients can preserve graft integrity and patency. **CONCLUSION:** Varicose degeneration of the great saphenous vein poses a risk for aneurysmal change and compromised long term patency when used as an arterial bypass conduit. This case report shows that external reinforcement using PTFE prosthesis is a viable strategy in these cases.

VASCULAR

BREAKING THE NUTCRACKER: A CASE-BASED REVIEW OF DIAGNOSIS AND SURGICAL TREATMENT

Roberto Cunha, Marta Machado, Francisco Basílio, Ricardo Gouveia, Vítor Martins, Alexandra Canedo

[1] Hospital do Divino Espirito Santo de Ponta Delgada
[2] ULS Gaia e Espinho

Keywords: *Nutcracker syndrome, Left renal vein transposition, Venous hypertension*

INTRODUCTION: Nutcracker syndrome (NCS) refers to symptomatic compression of the left renal vein (LRV), typically between the aorta and superior mesenteric artery (SMA), causing LRV hypertension. Posterior NCS, involving a retroaortic LRV compressed between the aorta and vertebral column, is less common. The condition is underdiagnosed and affects individuals of all ages, with nonspecific symptoms such as haematuria, proteinuria, and left flank or pelvic pain, often mimicking other pelvic pathologies. We report a case of symptomatic anterior NCS managed surgically after failed conservative therapy. **OBJECTIVES:** To describe a case of anterior NCS treated with LRV transposition and patch angioplasty, emphasizing the diagnostic process, surgical technique, and postoperative outcomes. **MATERIALS AND METHODS:** A 49-year-old woman with persistent left flank pain, dysmenorrhea, and weight loss (BMI 15.8 kg/m^2) was referred to vascular surgery after urologic and gynecologic evaluations. Imaging revealed uterine fibroids, LRV compression with a 28º aortomesenteric angle, ovarian vein ectasia, and a velocity ratio >4 on Doppler ultrasound. Despite nutritional support and weight gain over six months, symptoms persisted. Surgical LRV transposition with bovine pericardial patch angioplasty was performed. **RESULTS:** Postoperatively, the patient experienced complete symptom resolution. Doppler ultrasound on day six confirmed LRV patency. She was discharged on rivaroxaban and aspirin. Serial follow-ups showed continued patency. Due to ongoing dysmenorrhea, anticoagulation was stopped, and antiplatelet therapy maintained. No emergency visits or symptom recurrence were reported during six months of follow-up. **CONCLUSIONS:** NCS can severely impair quality of life. Diagnosis relies on clinical suspicion and multimodal imaging, including Doppler ultrasound, CT angiography, and venography. Surgical intervention is recommended in adults with persistent symptoms after conservative management. LRV transposition with patch angioplasty is effective and safe, especially in underweight patients. While endovascular stenting has been used, it carries notable risks and lacks specific device approval. Standardized protocols for diagnosis, treatment selection, and follow-up are still needed. This case contributes to the limited literature on NCS and reinforces the importance of tailored, multidisciplinary management strategies.

VASCULAR

KNOWLEDGE, USE, AND BARRIERS IN DYSLIPIDEMIA MANAGEMENT – A CROSS-SECTIONAL SURVEY OF CLINICIANS

António José Mesquita Lousada, João Manuel Palmeira da Rocha Neves

[1] Department of Biomedicine – Unit of Anatomy, Faculty of Medicine of University of Porto, Porto, Portugal
[2] RISE-Health, Departamento de Biomedicina, Faculdade de Medicina, Universidade do Porto, Porto, Portugal

Keywords: *Dyslipidaemia*

INTRODUCTION: Achieving LDL-C targets is central to ASCVD prevention, yet real-world implementation varies widely across settings, including vascular pathways where residual risk remains high. **OBJECTIVES:** To characterise clinicians' knowledge, practice patterns, and perceived barriers in dyslipidaemia assessment and treatment, with subgroup analyses by specialty and clinical setting. **METODOLOGY:** A descriptive, cross-sectional, web-based survey (Google Forms) was conducted of physicians in Primary Care, Cardiology, Endocrinology, Internal Medicine and Vascular Surgery across 10 countries (2025). The questionnaire covered use of SCORE2/variants, LDL-C targets, apoB/non-HDL-C/Lp(a), imaging for risk reclassification (carotid/femoral ultrasound; CAC), therapy intensification, and access to novel agents (PCSK9, inclisiran, bempedoic acid). Outcomes were summarised descriptively and stratified by specialty/setting. **RESULTS:** There were analysed 95 responses (10 countries; 83% Portugal). Routine SCORE2 use was 53% and LDL-C targets were reportedly applied routinely by 77%; therapy was intensified when off-target in 89%. Advanced biomarkers were underused (18% measured at least once; 27% used in decisions); in a vignette with LDL-C at target but elevated Lp(a)/apoB, 44% would intensify. Imaging for risk reclassification was used at least occasionally by 56%. Familiarity with PCSK9/inclisiran/bempedoic acid was 44%, but access was limited/none in 82% (main barrier: cost/reimbursement 47%). Decision-support tools were considered useful by 89%. **CONCLUSIONS:** In this international sample, clinicians showed heterogeneous use of risk tools and advanced biomarkers and limited access to novel agents; targeted education, embedded decision-support, and streamlined access pathways may improve LDL-C goal attainment and prevention, noting limited generalisability due to convenience sampling and country imbalance.

VASCULAR

EMERGENT HYBRID REVASCULARIZATION IN SUPRARENAL CORAL REEF AORTA

Miguel Queiros, João Marcelo Cabral, Andreia Pinelo, Inês Antunes, Rui Machado

[1] Unidade Local de Saúde de Santo António

Keywords: *Coral reef aorta, acute mesenteric ischemia*

INTRODUCTION: Coral Reef Aorta (CRA) is a rare, severe form of atherosclerotic disease characterized by extensive intraluminal calcifications involving the thoracoabdominal aorta and its branches. It may present with visceral or renal hypoperfusion, thromboembolism, hypertension, lower limb ischemia, or in extreme cases, acute multi organ dysfunction. In emergent cases, endovascular or hybrid approaches allow for a less invasive and rapid treatment when compared to open surgery, which improves patient survival. Case **PRESENTATION:** A 66 year old woman with a medical history of resistant hypertension and bilateral severe lower limb claudication presented to the emergency department with acute upper abdominal pain. On examination, she had severe hypertension (190/110 mmHg)and upper quadrant abdominal tenderness. Laboratory studies revealed marked leukocytosis and elevated transaminases. Computed tomography angiography (CTA) showed a suprarenal coral reef aorta, subocclusive stenosis of the celiac trunk, a long atherosclerotic ostial occlusion of the superior mesenteric artery (SMA). There was no obvious radiologic evidence of visceral ischemia. Despite medical management, abdominal pain persisted, and laboratory markers of hepatic dysfunction worsened. The patient developed refractory hypertension despite intravenous beta blockers, which precipitated acute pulmonary edema and respiratory failure. Emergent revascularization was undertaken. Via left axillary artery access, diagnostic angiography confirmed subocclusion of the celiac artery and occlusion of the SMA. A left axillo femoral bypass was constructed to secure inflow for a potential iliac visceral bypass and to improve retrograde perfusion of the renal arteries. Revascularization of the celiac trunk was successfully achieved using a 6 mm covered stent. Laparoscopy was performed and no visceral ischemia was observed. Postoperatively, the patient's abdominal pain resolved completely. Blood pressure normalized without requirement for antihypertensive agents. Respiratory status improved markedly with resolution of pulmonary edema. No complications regarding renal function or intestinal ischemia occurred. **CONCLUSION:** Coral reef aorta can present acutely with life threatening visceral and cardiopulmonary complications. In such settings, hybrid revascularization combining endovascular visceral artery stenting with extra anatomic bypass offer a lower risk and effective treatment.

VASCULAR

REINFECTION INCIDENCE FOLLOWING SURGICAL INTERVENTION FOR INFECTED AORTOBIFEMORAL BYPASS: A META-ANALYSIS

Marcio Brazuna, Marta Goncalves-Costa, Leonardo Araujo Andrade, José Paulo Andrade, Joao Rocha-Neves

[1] Faculty of Medicine and Biomedical Sience of University of Algarve, Faro, Portugal
[2] RISE@Health, Departament of Biomedicine – Unit of Anatomy, Faculty of Medicine of University of Porto, Porto, Portugal

Keywords: *Vascular Graft Infection; Biofilms; Nosocomial infection*

INTRODUCTION: Infection of vascular grafts after aortic revascularization surgery is a serious complication with high morbidity and mortality. This systematic review and meta-analysis aims to determine reinfection incidence in patients undergoing surgical intervention for infected aortic bypass grafts and identify key risk factors in the literature. **MATERIALS AND METHODS:** This systematic review and meta-analysis followed PRISMA guidelines. Three electronic databases, PubMed/MEDLINE, Scopus, and Web of Science were used to search studies published after January 1, 2000, that assessed reinfection rates following surgical intervention for infected aortic bypass grafts. Random-effects meta-analysis was performed to calculate pooled incidence of major outcomes. **RESULTS:** Our systematic review included 30 studies with a total of 2,341 patients. Overall reinfection rate was 12.7% (95% CI: 8.6%–16.9%). In terms of morbidity 34.1% had acute kidney injury, 23.8% needed amputation, and 29.4% developed acute limb ischemia. The 30-day mortality rate was 27.8% (95% CI: 13.2%–42.4%). The medical approach to treatment varied significantly, however, the majority involved total removal of the infected prosthesis. The main microorganisms isolated in primary infections were mostly Staphylococcus and Enterococcus species, with a notable representation of gram-negative bacteria. **CONCLUSION:** Reinfection rates after surgical treatment of infected aortic bypass grafts were relatively high and constitute a challenge of high clinical impact. This is further demonstrated by the high 30-day mortality rate. The significant variation in treatment approaches observed above also highlights the lack of formalized management protocols. Further studies are needed to determine the best surgical approach and patient-related risk factors to optimize outcomes in this difficult population.

VASCULAR

THE IMPACT OF CAROTID ENDARTERECTOMY ON OCULAR ELECTROPHYSIOLOGY AND VISUAL FUNCTION: A SYSTEMATIC REVIEW

Ana Sofia Moreira, André Ferreira, João Rocha-Neves, Maria Antónia Melo

[1] FMUP
[2] ULS Santo António
[3] ULS Alto Ave
[4] ICBAS

Keywords: *Electrophysiology, Carotid stenosis, Carotid endarterectomy*

OBJECTIVE: To conduct a systematic review and meta-synthesis of the available evidence on the effects of carotid endarterectomy (CEA) on ocular electrophysiology and other ophthalmic parameters. **METHODS:** A systematic literature search was performed across MEDLINE, Scopus, and Web of Knowledge, yielding 276 references. Following a screening and de-duplication process, four full-text studies were selected for detailed analysis. The studies were analyzed for their methodologies, patient demographics, and key outcomes related to electroretinography (ERG), visual evoked potentials (VEP), perimetry, and other clinical parameters. The findings were qualitatively synthesized to identify consistent trends, contradictions, and areas for future research. **RESULTS:** The review included four observational studies encompassing a total of 115 patients who underwent CEA for carotid artery stenosis. A consistent and statistically significant improvement in full-field ERG wave amplitudes was a notable finding across studies that performed this test, suggesting enhanced function of both outer and inner retinal layers. This effect was observed in both the ipsilateral and contralateral eyes, indicating a systemic or collateral circulatory benefit. Conversely, findings for VEP and pattern ERG were less uniform; some studies reported significant improvements in latency and amplitude, while others found no statistically significant changes. Perimetry (visual field testing) generally showed improvement, with an increase in mean sensitivity and a decrease in mean defect. **CONCLUSIONS:** Carotid endarterectomy is consistently associated with an objective improvement in retinal function, as evidenced by enhanced full-field ERG amplitudes. The collective evidence supports the hypothesis that restoring ocular blood flow through CEA can enhance visual function, providing a strong rationale for its role in preventing vision-related morbidity, even in neurologically asymptomatic patients. The limitations of small sample sizes and heterogeneous methodologies underscore the need for larger, standardized studies with long-term follow-up to validate these findings and elucidate the precise mechanisms of action.

VASCULAR

IL-6 AND SURGICAL OUTCOMES IN CAROTID ENDARTERECTOMY: A SYSTEMATIC REVIEW AND META-ANALYSIS

Maria Antónia Melo, Marcio Brazuna, Mariana Fragão Marques, João Rocha Neves,

[1] Faculty of Medicine of University of Porto, Porto, Portugal
[2] Faculty of Medicine and Biomedical Sience of University of Algarve, Faro, Portugal
[3] RISE@Health, Departament of Biomedicine – Unit of Anatomy, Faculty of Medicine of University of Porto, Porto, Portugal
[4] Department of Angiology and Vascular Surgery, Unidade Local de Saúde do Alto Ave, Guimarães, Portugal

Keywords: *Carotid Artery Diseases, Atherosclerosis, Cytokines*

OBJECTIVE: Carotid endarterectomy (CEA) is a standard intervention for preventing ischemic stroke in patients with significant carotid atherosclerosis. Over recent decades, numerous studies have investigated the clinical profile, perioperative safety, and outcomes of CEA. However, considerable heterogeneity persists regarding patient demographics, comorbidity burden, and prognosis. Synthesizing these data is essential to clarify which patients undergo CEA, their underlying risks, and the expected outcomes. Objectives: This systematic review aimed to (1) summarize demographic and clinical characteristics of patients undergoing CEA; (2) evaluate the prevalence of major cardiovascular risk factors; and (3) synthesize evidence on perioperative complications and long-term outcomes, including myocardial infarction (MI), stroke, major adverse cardiovascular events (MACE), and all-cause mortality. **MATERIALS AND METHODS:** We systematically reviewed 14 studies published between 2007 and 2025, totaling 1,560 patients. Study designs included prospective and retrospective cohorts, randomized trials, and cross-sectional analyses, conducted across multiple European centers, China, and the United States. Extracted data covered demographics, risk factors, carotid territory symptoms, perioperative complications, and long-term outcomes. **RESULTS:** The mean age ranged from 65–72 years, with men representing 65–83% of patients. Hypertension (61–96%), dyslipidemia (47–95%), and diabetes mellitus (18–39%) were frequent, while smoking history varied between 20% and >80%. Symptomatic carotid disease was present in 34–100% of cases. Long-term follow-up data, although scarce, indicated notable cardiovascular risk. Persson et al. reported at 5.2 years: 9.6% MI, 17.8% stroke, 25% MACE, and 17.8% mortality. Bountouris et al. observed at 2 years: 5.4% MI, 4.1% stroke, 20.3% MACE, and 6.8% mortality. Perioperative complications were infrequent, limited to cognitive dysfunction (≤3.9%) and surgical hematoma (≤5.9%). **CONCLUSIONS:** CEA patients are typically elderly men with a high burden of cardiovascular risk factors, especially hypertension and dyslipidemia. Available long-term evidence reveals persistent risks of vascular events and mortality, underscoring the importance of perioperative optimization and secondary prevention. Further multicenter prospective studies with standardized reporting are needed to refine prognostic estimates after CEA.

VASCULAR

POLYVASCULAR DISEASE IN AORTOILIAC ATHEROSCLEROSIS: A MARKER OF SYSTEMIC CARDIOVASCULAR RISK – COHORT STUDY

João Quesado, Lara Romana Dias, João Rocha-Neves

[1] Escola de Medicina da Universidade do Minho
[2] Department of Angiology and Vascular Surgery, Unidade Local de Saúde de Sao Joao, Porto, Portugal
[3] Department of Surgery and Physiology, Faculdade de Medicina da Universidade do Porto, Porto, Portugal
[4] Palliative Care Support Team Gaia – Health Local Unit Gaia and Espinho, Vila Nova de Gaia, Portugal

Keywords: *Aortoiliac disease; survival analysis, Multivessel disease*

OBJECTIVE: Aortoiliac occlusive disease (AIOD) is a variant of peripheral artery disease (PAD), that compromises the blood flow to the infrarenal aorta and iliac arteries, increasing the risk of ischemic complications in the lower limbs and pelvis. Aortoiliac revascularization can be used in cases of chronic limb threatening ischemia (CLTI). Polyvascular disease (PVD) is the involvement of 2 or more vascular regions affected by atherosclerosis, commonly resulting in coronary artery disease (CAD), cerebrovascular disease (CVD) and lower extremity peripheral artery disease(PAD). This study aims to evaluate the role of PVD in predicting long-term major cardiovascular events(MACE) and major lower limb amputation(MLLA) in patients submitted to aortoiliac revascularization for PAD. Methods:From 2013 to 2024, patients who underwent aortoiliac revascularization due to TransAtlantic Inter-Society Consensus (TASC) type D lesions from two centres were included in a prospective cohort. The division of patients was made into three groups, according to the existence of isolated PAD (control group), a second group with PAD associated with CAD or CVD, which was named Polyvascular Disease=2 arterial beds (PVD1), and the third group included the patients who had CVD, CAD, and PAD which was called Polyvascular Disease >2 arterial beds (PVD2).The patients were prospectively included before the intervention were included and demographic, comorbidities and postoperative outcomes were assessed. The primary outcome was the incidence of long-term MACE and MLLA. Secondary outcomes included acute myocardial infarction (AMI), major adverse limb events (MALE), stroke, and acute heart failure (AHF).Results: The cohort included 180 patients, with a median follow up of 80 [95% CI 51-103] months, with a with a mean age of 62.47±9.0 years. There were 104 (57.7%) in the control group, 53 (29.4%) in the PVD1 and 23 (12.8%) with 3 arterial beds affected(PVD2). After multivariate analyses both MACE and MLLA had as independent risk factors PVD (aHR 1.418, 95% CI 1.046–1.921; p=0.024; aHR 1.442, 95% CI 1.067–1.949; p=0.017). Chronic kidney disease (CKD) was an independent risk factor for MACE (aHR 2.423, 95% CI 1.307–4.492; p=0.005). The Kaplan-Meier survival analysis demonstrated significant associations of multivessel disease with long-term risk of acute myocardial infarction (AMI) (logrank p=0.012), acute heart failure(AHF) (Logrank p=0.003), MACE (logrank p=0.019), Stroke (logrank p.

VASCULAR

PEDAL ACCELERATION TIME AS A PREDICTOR OF WOUND CLOSURE IN PERIPHERAL ARTERY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Mariana Rosado, João Rocha-Neves, Eduardo Silva

[1] Faculdade de Medicina da Universidade do Minho
[2] Department of Biomedicine – Unit of Anatomy, Faculty of Medicine of University of Porto, Porto, Portugal
[3] RISE-Health, Departamento de Biomedicina, Faculdade de Medicina, Universidade do Porto, Porto, Portugal
[4] ULS Coimbra - Serviço de Angiologia e Cirurgia vascular

Keywords: *wound management; foot ulcer, ultrasonography doppler; limb salvage, diabetic foot, ankle-brachial index, Chronic Limb Threatning ishchemia*

BACKGROUND: Wound closure in Peripheral Artery Disease (PAD), particularly for patients presenting with ulceration, gangrene or diabetic foot complications, remains a significant clinical challenge. Accurate assessment of limb perfusion is crucial in guiding management, yet commonly used diagnostic tools, such as the ankle-brachial index (ABI) and transcutaneous oxygen pressure (TcPO2), have significant limitations, especially in patients with arterial calcification or incompressible vessels. Pedal Acceleration Time (PAT), measured with duplex ultrasound as the interval from the onset to the peak of arterial systole, has emerged as a promising, non-invasive parameter for evaluating perfusion and predicting wound healing in chronic limb-threatening ischemia (CLTI). However, its diagnostic and prognostic performance has not been comprehensively synthesized. Therefore, the aim of this systematic review with meta-analysis is to evaluate the diagnostic and prognostic accuracy of PAT for assessing lower-limb ischemia in patients with CLTI, in comparison with established perfusion tools such as ABI. A secondary objective was to examine the prognostic value of PAT in predicting wound closure, thereby clarifying its potential role as a complementary modality for perfusion assessment. **MATERIALS AND METHODS:** Three electronic databases MEDLINE, Scopus, and Web of Science were systematically searched to identify studies evaluating the relationship between PAT values and wound closure in patients with PAD. The incidence of wound closure and the correlation between PAT and ABI values were pooled in accordance with PRISMA-DTA Guidelines. Study quality was assessed using the National Heart, Lung, and Blood Institute (NHLBI) Study Quality Assessment Tool for observational cohort and cross-sectional designs. **RESULTS:** Seventeen studies were included, encompassing a total of 1749 patients. Of these, eight were observational cross-sectional studies, two were retrospective observational studies, two were prospective observational studies, one was a case control study, and the remaining were cohort studies. Overall, PAT was a clinically valuable adjunct in the assessment of limb perfusion in PAD and CLI. The pooled diagnostic indices sensitivity 0.72 (95% CI 0.68-0.76), specificity 0.84 (95% CI 0.79-0.88), positive likelihood ratio 4.38 (95% CI 3.35-5.73), negative likelihood ratio 0.25 (95% CI 0.19-0.33), and diagnostic odds ratio 14.85 (95% C| 10.02-22.01) indicate that PAT provides robust discrimination of clinically significant lower-limb ischemia. Due to insufficient data, pooled analysis of PAT's prognostic value for wound closure was not feasible. **CONCLUSION:** PAT showed good diagnostic accuracy for clinically significant lower-limb ischemia and helped stratify wound-healing and limb salvage in PAD and CLI. Lower values were linked to higher ABI, whereas prolonged times indicated higher risk of non-healing and major amputation. These results support PAT as a useful duplex-based complement to existing perfusion tests and justify large multicenter studies to define its optimal role in clinical pathways.

VASCULAR

RENAL ARTERY STENTING FOR RENAL MALPERFUSION SYNDROME FOLLOWING FET REPAIR FOR ACUTE AORTIC DISSECTION

Gonçalo Araújo, Ricardo Correia, Helena Fidalgo, Adriana Figueiredo, Carolina Tavares, Inês Gueifão

[1] Hospital de Santa Marta

Keywords: *Aortic Dissection; renal stenting; malperfusion*

INTRODUCTION: The authors report a case of renal malperfusion after FET repair for non-A,non-B aortic dissection **CASE DESCRIPTION:** A 67-year-old male presented with lumbar pain,melena, vomiting, and right foot paresthesias. CT angiography revealed a non-A, non-B aortic dissection with an entry tear at the brachiocephalic trunk and occlusion of the right CIA. The true lumen (TL) was compressed, with absent contrast in the right kidney and obstruction of the CT and SMA. On admission, blood pressure and heart rate were controlled with labetalol and isosorbide dinitrate. Lactates peaked at 5.7 mmol/L, and signs of right foot acute ischemia were noted.FET surgery was performed, and the patient was transferred to the ICU. Postoperatively, the patient was anuric and creatinine increased to 5.3 mg/dL. Follow-up CT angiography showed expansion of the TL, diffuse hypoperfusion in the right kidney and new hypodense areas in the left kidney, with the left renal artery originating from the FL. Given these findings, urgent left renal artery stenting was proposed.After access via the left CFA and catheterization of the TL, aortography revealed no significant lesions in the renal arteries. However, aortorenal systolic arterial pressure gradient (left renal artery) was 20%.Stenting of the left renal artery with balloon-expandable BMS was performed after fenestration through right CFA with a 0,035" hydrophilic guide wire inside and angled direccional 6,5Fr sheath. Additionally stenting of the right CIA (BMS) was also completed.Postoperatively, the patient remained anuric with worsening azotemia. Therefore, continuous renal replacement therapy (CRRT) was initiated. On day 3, CRRT was interrupted and intermittent hemodialysis was continued for two weeks.This approach resulted in gradual recovery of urine output and improvement in azotemia. The patient was transferred to the general ward four weeks after admission and discharged clinically improved, with spontaneous diuresis and no further need for dialysis five days post-transfer. **CONCLUSION:** This case highlights the critical role of endovascular intervention in the management of malperfusion syndromes.A key technical aspect of this case was the successful catheterization of the true lumen,followed by aortic fenestration and deployment of a balloon-expandable BMS to the renal artery. This case highlights the value of pressure gradient assessment in guiding intervention, especially when the angiographic findings may appear subtle.

VASCULAR

HOW DOES CALCIFICATION SEVERITY IMPACT ENDOVASCULAR TREATMENT OUTCOMES ON FEMORO POPLITEAL LESIONS?

Gonçalo Araújo, Ricardo Correia, Helena Fidalgo, Adriana Figueiredo, Carolina Tavares, Inês Gueifão

[1] Hospital de Santa Marta

Keywords: *arterial calcification; endovascular treatment; chronic limb threatening ischemia*

INTRODUCTION: Peripheral arterial calcification commonly occurs in the femoro-popliteal (FP) region, but its effect on endovascular treatment (EVT) outcomes is not well understood. This study aims to assess the influence of FP calcification severity on patient outcomes after EVT and to analyze the EVT steps based on calcification severity. **METHODS:** Retrospective, single-center, comparative study. From January 2023 to January 2025, all patients with PAD who underwent EVT by a single operator as a first limb revascularization procedure for FP lesions were considered. The calcification pattern was assessed through a qualitative fluoroscopic and angiographic evaluation. According to the degree of calcification, the patients were grouped into: patients with mild to moderate calcification (MC) and patients with severe calcification (SC). Both groups were compared regarding the primary endpoints: rates of reintervention, amputation and overall survival. We also analyzed the differences in EVT steps. **RESULTS:** The study included 95 patients (median follow-up: 9 months), of which 10% (N=9) presented with intermittent claudication, 25% (N=24) with rest pain and 64% (N=61) with ulcers or gangrene in the foot. MC group included 72.6% (N=69) of the patients and SV group included 27.4 % (N=26) of the patients. The median FP GLASS classification was 4 in both groups. No statistically significant differences were found between groups in rates of reintervention (p=.97), amputation (p=.86) and overall survival (p=.45) at 12 months of follow-up. Reintervention rates in MC and SV group were 12% (N=5) and 11% (N=2) at 12 months, respectively. At 12 months of follow-up, there were 4 major amputations (8%) and 6 deaths (9%) in MC group and 2 major amputations (8%) and 1 death (6%) in SV group. EVT techniques differed significantly by calcification severity. Higher rates of subintimal cross-lesion (p

VASCULAR

WHAT IS TISSUE PROTEOMICS TELLING US ABOUT ABDOMINAL AORTIC ANEURYSM? A SYSTEMATIC REVIEW

Telmo Baltazar, Fábio Trindade, Rita Nogueira-Ferreira, Adelino Leite-Moreira, Marina Dias-Neto

[1] RISE-Health, Department of Surgery and Physiology, Faculty of Medicine of the University of Porto, Porto, Portugal
[2] Department of Angiology and Vascular Surgery, Unidade Local de Saúde São João, Porto, Portugal

Keywords: *Abdominal aortic aneurysm, Biomarker, Proteomics*

INTRODUCTION: Mass spectrometry (MS)-based untargeted proteomics holds potential for elucidating the molecular mechanisms underlying abdominal aortic aneurysm (AAA) pathobiology. Profiling the aortic tissue proteomic landscape in AAA could reveal surrogate biomarkers, which can help us track disease progression. Aim: To systematically review untargeted MS-based studies that identify proteins with biomarker potential in AAA, with the goal of stratifying patients and assessing prognosis. **METHODOLOGY:** A systematic review was conducted in accordance with PRISMA guidelines, encompassing literature published up to July 2024. Eligible studies explored untargeted proteomics to identify potential AAA-related biomarkers and were grouped by primary (presence of AAA) and secondary (disease severity, e.g., growth rate) outcomes. Identification of dysregulated biological processes and pathways, involving differentially expressed proteins between groups, was performed through functional enrichment analyses (FEA) (Gene Ontology, Reactome). **RESULTS AND DISCUSSION:** Of 315 reports retrieved, 58 underwent full-text screening and, ultimately, 19 met inclusion criteria. Studies were either cross-sectional (n=15) or longitudinal (n= 4), collectively encompassing samples from 309 individuals, and reporting differential expression of 289 proteins. FEA regarding the primary outcome revealed that AAA is characterized by dysregulated lipid metabolism (APOA1, APOE), maladaptive ECM remodeling (DCN, TNC), VSMC dysfunction, and chronic inflammation, contributing to aortic wall fragility. Upregulation of coagulation (PF4, FGA, FGB, FGG), complement activation (CFB), and neutrophil-driven responses (LTF) highlighted a pro-thrombotic, pro-inflammatory environment in AAA, compared with controls. Moreover, larger or fast-growing AAAs exhibited signatures of heightened proteolysis, oxidative stress, and impaired protein repair. Interestingly, plasma/serum proteomic profiles mirrored many of the tissue-level dysregulations (DCN, FGs, TF, COL14A1, VIM), suggesting systemic reflection of pathology. **CONCLUSION:** AAA development emerges as a complex interplay of damaging mechanisms (e.g., ECM degradation, coagulation, inflammation) and weakened protective responses (e.g., proteasome function, VSMC repair, antioxidant defense). Targeting these interconnected pathways could provide a means of stratifying patients by aortic wall expansion or aneurysm growth, ultimately reducing the risk of rupture.

VASCULAR

PSOAS MUSCLE AREA AS A PROGNOSTIC MARKER IN AORTIC REVASCULARIZATION FOR AORTOILIAC OCCLUSIVE DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

João Fernandes Carvalho, João Rocha-Neves

[1] Faculty of Medicine, University of Porto, Portugal
[2] Biomedicine Department – Unit of Anatomy, Faculty of Medicine, University of Porto, Portugal

Keywords: *Survival, Sarcopenia*

INTRODUCTION: Sarcopenia has emerged as a key determinant of adverse outcomes in cardiovascular disease. Computed tomography-derived psoas muscle area is a simple and reproducible imaging surrogate of sarcopenia, but its prognostic value in patients with peripheral arterial disease (PAD) undergoing lower-limb revascularization remains incompletely defined. This systematic review and meta-analysis aimed to evaluate the association between reduced psoas muscle area and postoperative mortality in PAD patients. **METHODS:** A systematic search of MEDLINE, Scopus, and Web of Science was performed from January 2000 to August 2025. Observational studies evaluating psoas muscle area as a prognostic marker in adult patients with PAD undergoing invasive revascularization were included. Study quality was assessed using the National Heart, Lung, and Blood Institute (NHLBI) tool, and certainty of evidence was graded using GRADE. Random-effects meta-analyses were conducted to estimate pooled risk ratios (RRs) for 30-day and 1-year mortality. **RESULTS:** Seven retrospective cohort studies comprising 2,290 patients were included. Definitions of sarcopenia and imaging methodologies varied across studies. Reduced psoas muscle area was not significantly associated with 30-day mortality (RR 2.45; 95% CI 0.58-10.36; 1^a = 38.3%). In contrast, sarcopenia was strongly associated with increased 1-year mortality (RR 2.37; 95% CI 1.51-3.73; 1 = 43.4%). Funnel plot analysis did not suggest significant publication bias. Reporting of limb-related outcomes was heterogeneous, precluding pooled analysis. **CONCLUSIONS:** Reduced psoas muscle area is a robust predictor of increased 1-year mortality in patients with PAD undergoing lower-limb revascularization. While short-term mortality associations remain inconclusive, psoas morphometry represents a simple and clinically meaningful tool for preoperative risk stratification. Future prospective studies with standardized sarcopenia definitions are warranted to validate these findings and inform targeted perioperative and rehabilitative interventions.