

**SUPPLEMENT**

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ANESTHESIOLOGY



# R2CHA2DS2-VA PREDICTS THE CARDIOVASCULAR RISK AFTER CAROTID ENDARTERECTOMY

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**Keywords:** Carotid Endarterectomy, Cardiovascular Disease, Survival Analysis, Carotid Stenosis, MACE, R2CHA2DS2-VA

## INTRODUCTION

R2CHA2DS2-VA score has been used to predict short and long-term outcomes in many cardiovascular diseases.

## AIMS

This study aims to validate the R2CHA2DS2-VA score as a long-term major adverse cardiac event (MACE) predictor after carotid endarterectomy (CEA). Secondary outcomes were also assessed regarding the incidence of all-cause mortality, acute myocardial infarction (AMI), major adverse limb events (MALE), and acute heart failure (AHF).

## METHODS

From January 2012 to December 2021, patients (n=205) from a Portuguese tertiary care and referral center that underwent CEA with regional anesthesia (RA) for carotid stenosis

were selected from a previously collected prospective database, and a post-hoc analysis was performed. Demographics and comorbidities were registered. Clinical adverse events were assessed 30-days after the procedure and in the subsequent long-term surveillance period. Statistical analysis was performed by the Kaplan-Meier method and Cox proportional hazards regression.

## RESULTS & CONCLUSIONS

Of the patients enrolled, 78.5% were males with a mean age of  $70.44 \pm 8.9$  years. Higher scores of R2CHA2DS2-VA were associated with long-term MACE (adjusted Hazard Ratio (aHR) 1.390; 95% Confidence Interval (CI) 1.173-1.647) and mortality (aHR 1.295; 95% CI 1.08-1.545).

This study demonstrated the potential of the R2CHA2DS2-VA score to predict long-term outcomes such as AMI, AHF, MACE, and all-cause mortality in a population of patients submitted to carotid endarterectomy.



# CAROTID ENDARTERECTOMY IN A PATIENT WITH SEVERE THROMBOCYTOPENIA: BALANCING BENEFIT AND RISK

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**Keywords:** Carotid endarterectomy, Severe thrombocytopenia.

## INTRODUCTION

The perioperative management of patients proposed for carotid endarterectomy is crucial for minimizing risk and complications associated with the procedure. Thrombocytopenia is associated with a higher rate of bleeding events and also cardiac complications, unplanned intubations, thrombosis and surgical incisional infections.

## AIMS

We report a case of a patient with >80% symptomatic carotid stenosis presented to endarterectomy in the presence of severe thrombocytopenia (<50000/uL).

## METHODS

Male patient, 77 years old, mRankin 1, ASA 4. Medical history: dyslipidemia, smoker, non-metastatic prostatic adenocarcinoma and myelodysplastic syndrome with bicytopenia (Hb 9.1g/dL, Platelets 32000/uL). Admitted with ischemic stroke in the territory supplied by the left middle cerebral artery and right hemiparesis. During etiology investigation a left carotid stenosis of 80-89% was found with indication for endarterectomy. Preoperative treatment with acetylsalicylic acid was given until the day before surgery.

A multidisciplinary team composed by Vascular Surgery, Anesthesiology, Hematology, Neurology and Internal Medicine decided to proceed to endarterectomy after optimization of platelet count. The patient received a platelet pool in the operation room before the beginning of surgery.

The patient was anesthetized under general anesthesia and endarterectomy of carotid bifurcation was performed. Before carotid clamp a bolus of 4000 U.I. of non-fractional heparin was given and was reverted with 2100 U.I. of protamine after clamp removal. The procedure was concluded without complications and the patient was transferred to Intensive Care Unit (ICU) under invasive mechanical ventilation. After surgery we aimed for platelet count >50000/uL with indication to transfuse again if needed. In order to achieve our platelet count goal, the patient received a pool of platelets on day 2 and day 5. He was discharged from ICU on day 5 post-surgery without any bleeding event. The patient maintains a rehabilitation program with no de novo neurologic events..

## RESULTS & CONCLUSIONS

Severe thrombocytopenia increases the risk of performing carotid endarterectomy, requiring closed monitoring and preparation before, during and after the procedure. Since the patient had >80% symptomatic carotid stenosis, putting him at risk of new strokes, a decision had to be made and risk-benefit analysis favored surgery. There are several factors which might have contributed to the success of this case: the multidisciplinary team that defined an elucidative plan, the experience of the vascular surgeon's team and the reversion of heparin effects with the protamine bolus.

To the best of our knowledge this is the first case report of endarterectomy in a patient with severe thrombocytopenia (<50000/uL).



# ANESTHETIC CONSIDERATIONS IN THE APPROACH OF LAPAROSCOPIC ESOPHAGEAL SURGERY: CASE REPORT OF AN INTRAOPERATIVE PNEUMOTHORAX

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**Keywords:** laparoscopy, esophageal surgery, mechanical ventilation, pleural perforation, intra-operative pneumothorax

## INTRODUCTION

Intraoperative pneumothorax is a rare but potentially fatal complication during general anesthesia. History of lung disease, barotrauma, laparoscopic surgery and positive pressure ventilation increase the risk of developing this complication. Its diagnosis during surgery can be difficult because signs are nonspecific.

## AIMS

We report a case of a patient with intraoperative pneumothorax during laparoscopic esophageal surgery and its diagnosis, treatment and clinical implications.

## METHODS

We report a case of a 25-year-old male, ASA 1, proposed for mediastinal cyst removal via abdominal laparoscopic surgery for an esophageal duplication cyst at the posterior mediastinum (12x10 cm), in an inpatient setting. The patient underwent a combined anesthetic technique – thoracic epidural and balanced general anesthesia under invasive mechanical ventilation with a simple endotracheal tube. Before anesthetic induction, surgeons were asked about the need for selective intubation, but they did not find it necessary. During surgery, the patient began with tachycar-

dia and low oxygen saturation, increase in peak pressure and difficulty in ventilation. The diagnosis of pneumothorax was made clinically through pulmonary auscultation and through the visualization by laparoscopy of a right parietal pleura perforation. Supportive treatment was started immediately through manual bag ventilation using 100% oxygen. Definitive treatment was performed afterwards by placing a right chest tube intra-operatively. After stabilizing the patient, the surgery was completed. The patient was extubated and transferred to a level 2 intensive care. There was a favorable clinical evolution and the pneumothorax resolved on the 4th postoperative day.

## RESULTS & CONCLUSIONS

With this case we emphasize that intraoperative pneumothorax is a complication that, although rare, must be taken into account, especially in laparoscopic esophageal surgery with abdominal approach, which is expected to be technically difficult. Correct anesthetic planning is important, especially with regard to mechanical ventilation and assessment of the need for intubation and selective ventilation. A high index of suspicion is required for early diagnosis and treatment. Good communication with the surgical team and use of the available different diagnostic tools, such as pulmonary ultrasound, can help in the management of these cases.

