



PREOPERATIVE ANAESTHETIC MANAGEMENT OF RUPTURED SINUS OF VALSALVA ANEURYSM DRAINING INTO THE RIGHT ATRIUM UNDERGOING DEVICE CLOSURE

Anaesthesiology

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ABSTRACT

Ruptured sinus of Valsalva aneurysm (RSOV) is a rare cardiac anomaly associated with significant haemodynamic disturbances and congestive heart failure. We report the perioperative anaesthetic management of a 26-year-old male diagnosed with RSOV draining into the right atrium who underwent device closure. Intraoperative transoesophageal echocardiography (TEE) played an important role in visualization of the defect and confirmation of successful device deployment. Careful preoperative optimization, haemodynamic monitoring and vigilant perioperative management resulted in successful outcome.

KEYWORDS

Rsov, Right Atrium, Device Closure, Anaesthesia, Tee

INTRODUCTION

Sinus of Valsalva aneurysm is a rare congenital or acquired cardiac abnormality. Rupture commonly occurs into right-sided cardiac chambers causing left-to-right shunting, right heart volume overload and congestive cardiac failure. Anaesthetic management is challenging due to altered haemodynamic, risk of arrhythmias and perioperative instability. We report successful perioperative management of a patient with RSOV to right atrium undergoing device closure.

CASE REPORT

A 26-year-old male weighing 46.8 kg presented with complaints of fever, cough, breathlessness and chest pain from the past one month. On examination, pulse rate was 82/min, blood pressure was 130/80 mmHg and SpO₂ was 98% on room air. Cardiovascular examination revealed systolic murmur with normal S1S2. Respiratory system examination showed bilateral air entry present. ECG showed sinus rhythm with incomplete right bundle branch block. Chest radiograph showed cardiomegaly with pulmonary vascular prominence.

Two-dimensional echocardiography revealed ruptured sinus of Valsalva draining into the right atrium with dilated right atrium and trivial tricuspid regurgitation. Left ventricular ejection fraction was 59% with adequate biventricular systolic function. CT findings suggested abnormal communication from the non-coronary sinus to right atrium measuring approximately 9 mm above the tricuspid valve.

After obtaining informed high-risk consent, the patient was shifted to the cardiac catheterization laboratory. Standard ASA monitors including electrocardiography, pulse oximetry, and non-invasive blood pressure monitoring were attached. Premedication was administered with intravenous midazolam 0.03 mg/kg and fentanyl 2 mcg/kg. General anaesthesia was induced with intravenous etomidate 0.3 mg/kg. Neuromuscular blockade was achieved using intravenous atracurium 0.5 mg/kg, following which the patient was intubated with an 8.0 mm ID cuffed endotracheal tube.

A TEE probe was inserted for intraoperative visualization and guidance during device deployment. Anaesthesia was maintained with oxygen, air, Sevoflurane, and intermittent atracurium. Care was taken to avoid sudden decreases in systemic vascular resistance, tachycardia, and fluid overload. Device closure was successfully performed under TEE guidance. Post-procedure TEE confirmed satisfactory device placement without significant residual shunt. The patient was reversed with intravenous neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg/kg and extubated on table in stable condition.

DISCUSSION

RSOV is an uncommon cardiac lesion resulting in continuous left-to-right shunting and right heart volume overload. Patients may present with dyspnoea, chest pain, palpitations and features of congestive heart failure. Anaesthetic goals include maintenance of haemodynamic stability, avoidance of increased shunt flow,

prevention of arrhythmias and careful fluid management. TEE plays an important role during device closure procedures as it helps assess defect anatomy, guide device deployment and detect residual shunt in real time.

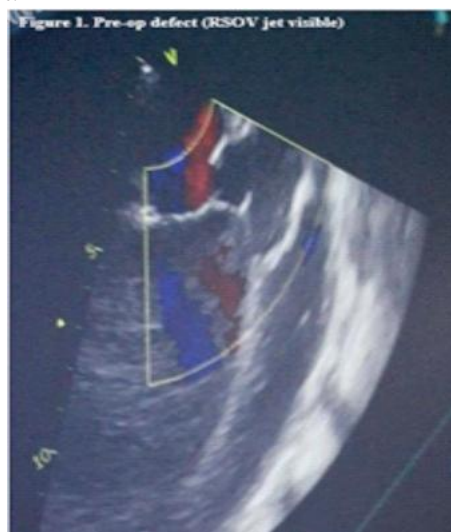


Figure 1. Pre-op defect (RSOV jet visible)



Figure 2. Device Deployment

Figure 3. Post-closure (defect closed)



CONCLUSION

RSOV to right atrium is a rare cardiac lesion with significant anaesthetic implications. Successful perioperative management requires detailed preoperative assessment, understanding of shunt physiology, intraoperative TEE guidance and vigilant haemodynamic monitoring. Timely intervention and a multidisciplinary team approach can lead to favourable outcome.

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