

Endoscopic port access resection of a massive atrial myxoma

Johan van der Merwe and Filip Casselman

The Department of Cardiovascular and Thoracic Surgery,
OLV Clinic, Aalst, Belgium

Address for correspondence:

Johan van der Merwe
Department of Cardiovascular and Thoracic Surgery
OLV Clinic
Moorselbaan 164
9300, Aalst
Belgium

Email:

johanvdmer@gmail.com

INTRODUCTION

Atrial myxoma (AM) is the most common benign cardiac neoplasm, originating from multipotent mesenchymal cells and commonly presents in women between the third and sixth decades of life.⁽¹⁾ Large AM may result in ventricular inflow obstruction⁽²⁻³⁾ and the safety of conventional sternotomy resection by single- or bi-atrial access, is well described.⁽⁴⁻⁶⁾ We are currently witnessing an ongoing paradigm shift towards minimally invasive cardiac surgery (MICS), particularly in the first world, perhaps less so in Africa. The first South African MICS programme was initiated in 2011 and specialised centres that provide comprehensive minimally invasive- and catheter-based cardiovascular services are evolving. We have performed more than 3 000 EPAS procedures at our institution since February 1997 and have previously reported on our experience with intra-cardiac oncological surgery.⁽⁷⁾ In this report, we describe the successful resection of a massive obstructive AM in an 81-year-old patient, which is to our knowledge, the largest documented AM ever resected by either robotic or endoscopic cardiac surgery.

CASE REPORT

Clinical- and trans-thoracic echocardiographic (TTE) imaging review of an 81-year-old female identified a massive left atrial mass that originated from the intra-atrial septum and partially obstructed the mitral valve and left ventricular inflow (Figure 1). She presented with progressive New York Heart Association (NYHA) Class III symptoms and systolic pulmonary artery pressure (sPAP) of 65mm of mercury (mmHg). Additional investigations included coronary artery catheterisation, thoracic- and aorta-iliac axis computerised tomography and pulmonary function tests. Surgical excision was proposed by our multi-disciplinary team and the patient elected the option of EPAS with a predicted EuroSCORE II of 3.4%.

ABSTRACT

We are witnessing an ongoing worldwide paradigm shift from conventional sternotomy access towards minimally invasive cardiac surgery (MICS). Endoscopic port access surgery (EPAS) is well established for the safe and durable resection of atrial myxoma (AM) and considered, by experienced surgeons to be a good MICS training platform once the initial EPAS learning curves are mastered. We report on the successful EPAS resection of an 8.5cm obstructive left AM in an 81-year-old patient, which is to our knowledge, the largest AM ever resected by robotic, or endoscopic, cardiac surgery. Post-operative recovery was uneventful and the patient was discharged home on the fifth post-operative day. Clinical and echocardiographic follow-up at 12 months confirmed an excellent functional recovery and the absence of residual or recurrent, tumour. This case aims to provide insights into the advantages and limitations of this approach. SAHeart 2016;13:302-303

We routinely utilise double lumen endotracheal intubation and established a 3 - 4cm antero-lateral working port over the fourth intercostal space. Peripheral cardiopulmonary bypass (CPB) was established over trans-esophageal echocardiographic

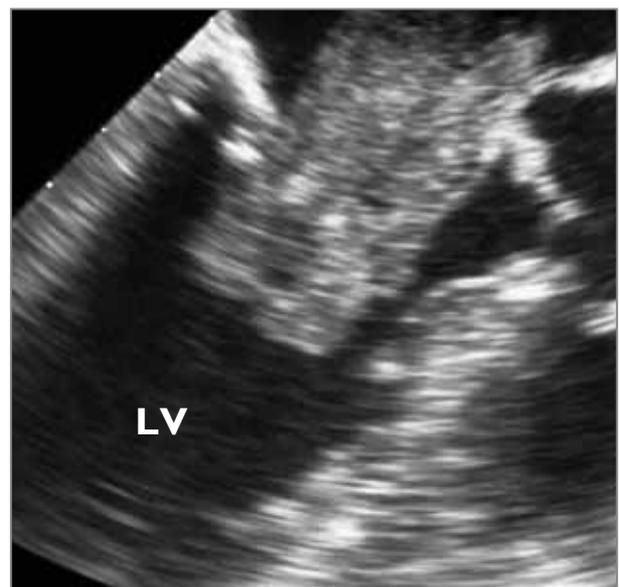


FIGURE 1: Trans-esophageal echocardiographic (TEE) images of a massive left atrial mass which obstructed left ventricle (LV) inflow.

(TEE) guided guidewires through the right internal jugular vein (16F, Optisite™, Edwards Lifesciences, Irvine, California, USA), right femoral vein (25F, Quickdraw™, Edwards Lifesciences, Irvine, California, USA) and right femoral artery (23F, Endoretum™, Edwards Lifesciences, Irvine, California, USA). An endo-aortic balloon (IntraClude™, Edwards Lifesciences, Irvine, California, USA) was used for aortic occlusion and cold antegrade crystalloid cardioplegia delivery. Cardioplegic arrest was uneventfully achieved and subsequent left atriotomy revealed the massive obstructive septal neoplasm. The risk of fragmentation prohibited the use of our usual endoscopic left atrial retractor (Figure 2A) and visualisation was ascertained with traction sutures. A broad septal resection around the tumour base was performed with long shafted instruments without tumour manipulation or intra-atrial septum perforation (Figure 2B). The endocardial defect was sutured and subsequent systematic mitral valve analysis uneventful. Further endoscopic inspection of the ventricular cavity confirmed no distal fragmentation. De-airing was ensured by flooding the operative field with CO₂ and antegrade endo-aortic balloon venting under TEE guidance. CPB and ischaemic times were 115 and 76 minutes respectively. Discontinuation of mechanical respiratory support was achieved within 6 hours post-operatively and discharge from intensive care occurred after 12 hours. In-hospital TTE confirmed normal atrioventricular valve, chamber and ventricular function with no septal defect. Rapid clinical recovery warranted home discharge on the fifth post-operative day. NYHA class I clinical status was achieved after 6 weeks and remained unchanged at 12 month follow-up. Histological examination of the intact tumour confirmed the typical findings of an AM and resection margins free of neoplastic tissue (Figure 2C). Echocardiographic review at 12 month follow-up confirmed the absence of residual or recurrent atrial septal tumour and sPAP of 30mmHg.

DISCUSSION

The oncological principles and resection techniques of AM by conventional single or bi-atrial sternotomy approaches are well described.⁽⁴⁻⁶⁾ We initiated our EPAS programme in 1997 and reported on the safety and durability of our approach in cardiac oncological surgery.⁽⁷⁾ The targeted endoscopic left atrium and

tumour visualisation minimise any unintentional cardiac manipulation, tumour fragmentation and risk of embolisation. Left atriotomy suture retraction substituted routine atrial retractor placement and provided excellent exposure for intact tumour resection and atrial septal reconstruction. Patient recovery was swift and resulted in complete resolution of pre-operative symptomatology.

CONCLUSION

Massive AM should not deter referring physicians and surgeons from offering patients the full range of benefits associated with MICS in experienced centres. Small, pedunculated and uncomplicated atrial myxoma can serve as an EPAS training platform once the initial technical principles of endoscopic surgery are mastered.

DISCLOSURES

This report was approved by our institutional ethics committee and all authors agreed to the manuscript as written.

Conflict of interest: none declared.

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FIGURE 2: Targeted endoscopic visualisation of the massive atrial myxoma (A). Broad excision of the tumour base with long shafted instruments (B). Pathological examination of an intact 8.5 × 4.2 × 2.5cm massive atrial myxoma (C).