

Totally Endoscopic Ascending Aorta Replacement: Technique and Mid-term Outcomes

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Objectives

- **Minimally invasive techniques are becoming increasingly popular**
- **Very few data about less invasive Ascending Aorta Replacement (AAR) are available**
- **The aim of this study is to describe our totally endoscopic technique to perform AAR and to analyze operative and mid-term outcomes**

Methods

- **We retrospectively reviewed all patients underwent totally endoscopic AAR at our institution from 2016 through 2023**
- **Baseline characteristics, intra- and post-operative data, follow-up information were analyzed**

Surgical Technique

- A 3-4 cm right anterior mini-thoracotomy through the II or III intercostal space was achieved as main working port
- Three additional 5-mm mini-ports for the introduction of a 30-degree thoracoscope, aortic clamp and vent line were prepared
- Cardio-pulmonary bypass (CPB) was achieved through a femoro-femoral cannulation

Surgical Technique



Figure 1. Right anterior mini-thoracotomy (3-4 cm) as main working port; three smaller ports for aortic clamp, 30-degree thoracoscope, vent line.

Results: Baseline Characteristics

- **Study Population: 33 patients (19 males, 58%)**
- **31 patients (94%) pre-operatively on NYHA class I or II**
- **Median Euroscore II was 1.83% [IQR, 1.8]**
- **Median ascending aorta diameter was 56 mm [IQR, 8]**
- **Median pre-operative LVEF was 61% [IQR, 8]**

Results: Intra-operative Data/1

- **A total of 33 patients (19 males, 58%) underwent endoscopic AAR**
- **Median age was 60 years [IQR, 15]**
- **Isolated AAR was performed in 6 cases (18%)**
- **Concomitant procedure was done in 27 cases (82%):**
 - **Aortic valve replacement in 23 cases (70%)**
 - **Aortic valve plasty in 3 cases (9%)**
 - **Mitral valve repair in 1 case (3%)**

Results: Intra-operative Data/2

- **One case (3%) needed conversion to full sternotomy due to uncontrolled bleeding**
- **Median CPB time was 195 minutes [IQR, 58]**
- **Median cross-clamping time was 143 minutes [IQR, 35]**

Results: Post-operative Data

- Median ICU stay was 22 hours [IQR, 30]
- Stroke occurred in 1 case (3%)
- Permanent pace-maker was implanted in 1 patient (3%)
- No patients died during hospitalization
- Pre-discharge median LVEF was 60% [IQR, 5]

Results: Follow Up

- Median follow up was 34 months [IQR, 22]
- Survival at 1 year and 2 years was 100%
- One patient (3%) died after 41 months
- At last follow up, 25 patients (76%) were on NYHA class I
- No vascular prosthesis failure was reported
- No major complications

Conclusions

- **In selected patients, totally endoscopic AAR is feasible**
- **Advantages of this approach (very small skin incision, magnification of intra-operative images, faster recovery) are confirmed**
- **The absence of mortality and the low rate of post-procedural complications along with very good mid-term results encourage us to continue with this approach**

Thank you for your attention!

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