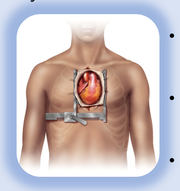
Flattening the Learning curve: Propensity Score Matched Analysis of First 50 Minimally Invasive Mitral Valve repairs vs Full Sternotomy

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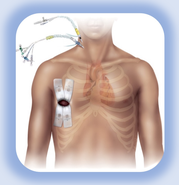
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INTRODUCTION

In the past two decades, the interest in minimally invasive mitral valve repair (MIMVr) has grown worldwide due to the reported benefits of less surgical trauma, less transfusions, less post-operative complications, faster recovery, and higher patient satisfaction(1,2). Despite this, the adoption of this technique remains low in the United Kingdom due to the steep learning curve. Previous literature suggests that a surgeon needs to perform 75-125 operations before achieving optimum results; 50 operations/year to maintain these results(3).



- 30.5 cm median incision.
- Between sternal notch and xiphoid process.
- Direct access.



- 5 cm lateral incision
- In 4th intercoastal space.
- 2 port-accesses.
- Video-assisted view.

Fig 1. Full sternotomy vs minimally invasive mitral valve repair

AIMS

We retrospectively analysed the initial 50 cases of our established MIMVR programme to evaluate its safety and effectiveness, and also compare the outcomes to propensity matched full sternotomies cohort.

Methods

Study design
- Service evaluation of mitral valve programme offered by **Royal Sussex County Hospital**.

Patient selection
- **254 patients** who underwent isolated mitral valve repair between **2016 and 2020.**

Data collection
- Retrospective data collection.
- Data harvested from hospital internal data base (Panda) & MetaVision.

Statistical analysis
- FSMVr and MIMVr were propensity score matched via Matchit package
- Independent t-test, Mann-Whitney U-test and and Mcnemar's test.

PATIENT SELECTION

Initial Clinical evaluation

- BMI< 30
- Isolated Mitral valve dysfunction
- Posterior leaflet lesions

Pre-operative TOE

- Ensure no additional valve pathology
- Assess mechanism and severity of mitral valve dysfunction

Pre-operative CT



- Intercostal space: optimal incision point
- Coronary artery calcification
- Distance from incision point to mitral valve, Distance 2nd ICS to aorta
- Iliofemoral vessels: diameter, calcification, mural thrombus, dissection flaps, tortuosity
- Aberrant anatomy
- Chest wall: deformities
- Mitral annular calcification
- Left circumflex artery: Distance from mitral valve
- Aorta: Diameter, calcification, mural thrombus, dissection flap
- Incidental findings

KEY FINDINGS

- 100% repair rate.
- 30-day mortality: 0% v 2.2% (p>0.9)
- New-onset stroke: 2.2% v 0% (p>0.9)
- ↓ Length of stay (5[4,8] vs 7[6,9] days, p<0.01]
- ↓ RBC, Cryoprecipitate and platelet transfusions [p > 0.05 for all].
- No sig difference in freedom from at least moderate MR at 1-year

DISCUSSION

The programme has now been successfully set up, with rates of adverse events comparable to those of high-volume centres (Figure 2). The key to setting up a successful MMIMVr programme is (A)Fellowship in high-volume centre (B)Specified mitral valve surgeons (C)Good Proctorship (D)Appropriate patient selection (E)Consistent team present in all parts of training.

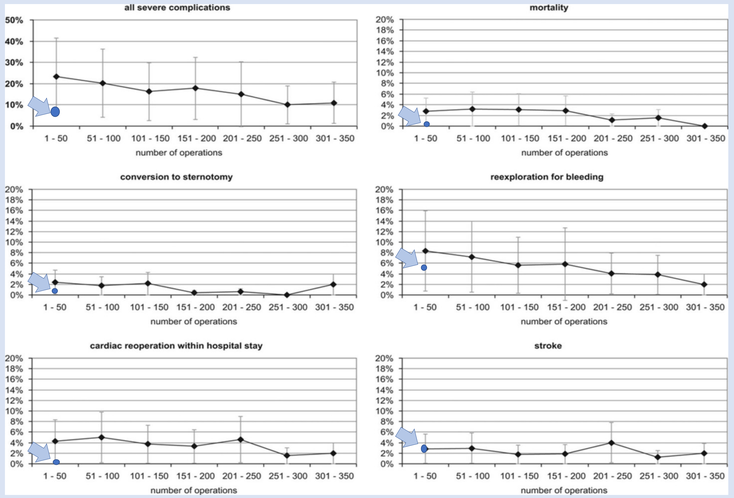


Figure 2: Average development of selected adverse events according to total number of operations performed per surgeon (Holzey 2013) in comparison to our data [blue dot]

CONCLUSION

We have demonstrated that it is possible to set up a MIMVr programme at a small centre with results comparable to FSMVr with a much shorter learning curve than previously described.

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