

# MINI STERNOTOMY VS. CONVENTIONAL STERNOTOMY FOR COMPLEX AORTIC SURGERY

Omar A. Jarral, Stevan Pupovac,  
Kenenna Onyebeke, Adam Kiridly, Chad  
Kliger, Kush Dholakia, Nirav Patel, S.  
Jacob Scheinerman, Alan Hartman,  
Derek Brinster

Northwell Cardiovascular Institute

AATS Aortic Symposium 2024



**Lenox Hill Hospital**  
Northwell Health®

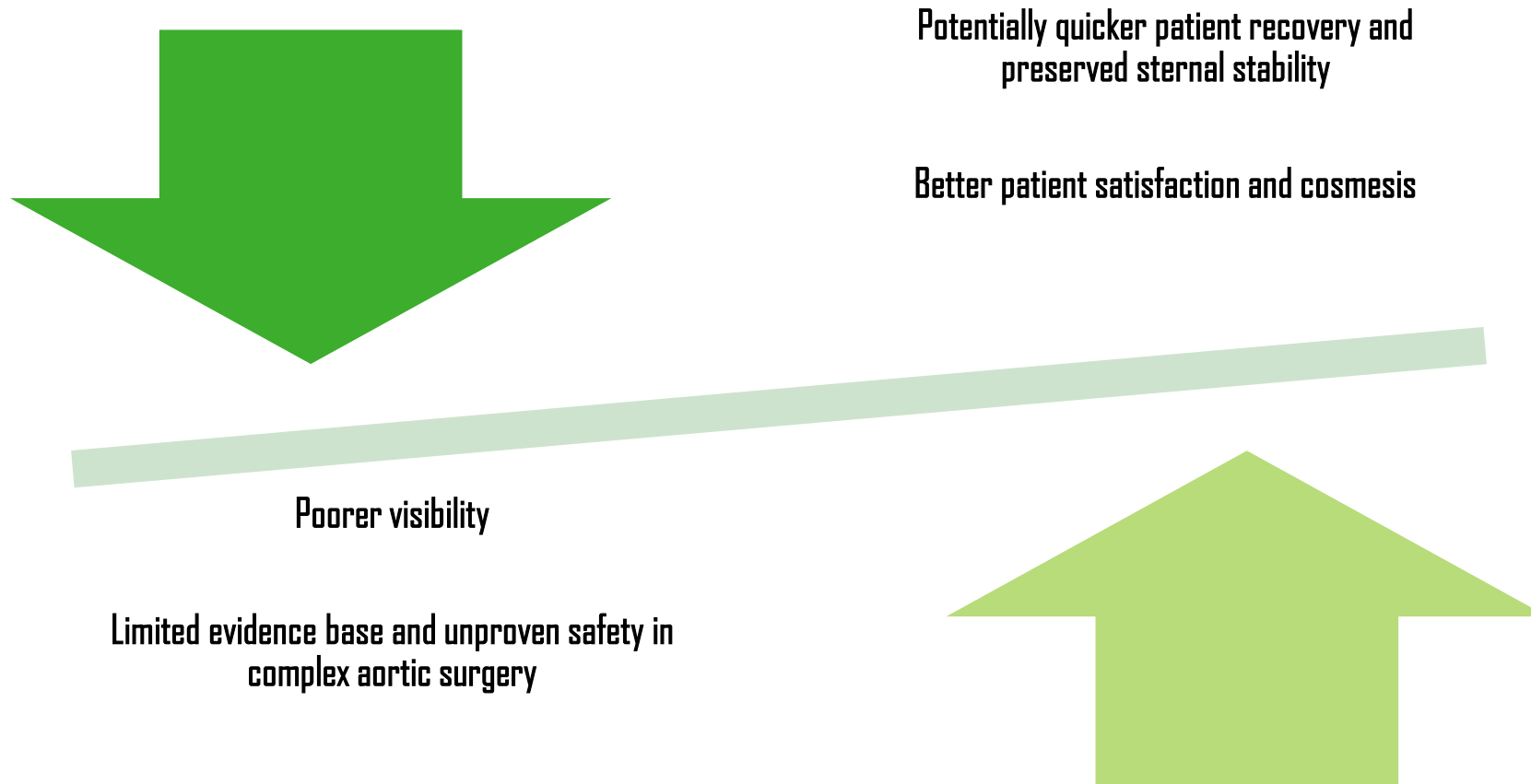
# BACKGROUND

Over the last twenty years, mini-sternotomy isolated aortic valve replacement has demonstrated outcomes which are comparable to the sternotomy approach in multiple studies worldwide

Over the last five years, there has been growing interest in performing complex aortic surgery through this approach

There is currently limited evidence for this, and larger studies are needed to establish the safety of mini-sternotomy when performing proximal aortic surgery

# MINI-STERNOTOMY FOR AORTIC SURGERY



# STUDY OBJECTIVE

To assess our institutional outcomes for complex aortic surgery through a mini-sternotomy approach and compare these to those done through a conventional sternotomy

# STUDY METHODS

Our institutional aortic database was used to retrospectively obtain patient demographics, clinical characteristics, and in-hospital outcomes for all patients undergoing elective proximal aortic surgery between 2015-2021.

Independent samples t-test, McNemar's and Chi-square tests were used to compare baseline characteristics between groups.

In view of expected differences in baseline characteristics, multi-variable logistic regression was used to explore the influence of clinically relevant patient and operative characteristics on outcomes.

Propensity score adjustment was used to further assess the influence of surgical approach on outcomes

Exclusions: Redo-surgery, chronic dissections, total arch replacement

# RESULTS SUMMARY: BASELINE CHARACTERISTICS

Between 2015-2021, a total of 547 patients met the inclusion criteria and underwent elective proximal aortic surgery. **Of these, 74 patients (13.5%) had a mini sternotomy.**

The mean age of the cohort was 61.6 ( $\pm 14.5$ ) years, and 121 (22.1%) were female.

When comparing baseline patient characteristics: **the mini group had significantly more females (32.4%, n=24 vs. 20.5%, n=97), BAV's (45.9%, n=34 vs. 30.6%, n=145), and a lower proportion with PVD (25.7%, n=19 vs 46.3%, n=219).**

# RESULTS SUMMARY: OPERATIVE CHARACTERISTICS

In terms of operative characteristics (mini vs. conventional):

73 (13.3%, n=29 vs. 44) underwent isolated ascending aorta (AA) replacement

17 (3.1%, n=4 vs 13) underwent AV repair and AA replacement

198 (36.2%, n=35 vs. 163) underwent AV and AA replacement

175 (32%, n=1 vs. 174) underwent root replacement

84 (15.4%, n=5 vs. 79) underwent VSRR.

307 patients (56.1%, n=70 vs. 237) required a concomitant arch procedure.

**The sternotomy group underwent significantly more composite root and VSRR (53.4% vs. 8.1%), and the mini group underwent significantly more arch procedures (94.6% vs. 50.1%).**

# RESULTS SUMMARY: OUTCOMES

Unadjusted outcomes were comparable between the mini and conventional group for the following outcomes:

30-day mortality (2.8% vs. 1.3%)

DSWI (2.8% vs. 1.1%)

Sepsis (4.1% vs. 2.1%)

CVA (2.8% vs. 2.1%)

ARF (2.8% vs. 1.7%)

Post-op length of stay ( $8.8 \pm 5.9$  vs.  $7.9 \pm 5.1$  days)

Ventilation time ( $40.3 \pm 103.7$  vs  $27.2 \pm 85.0$  hours)



# RESULTS SUMMARY: OUTCOMES

**Re-op for bleeding (6.8% vs. 0.8%,  $p < 0.001$ ) and products transfused ( $9.6 \pm 7.1$  vs.  $6.4 \pm 7.4$  units,  $p < 0.001$ ) were significantly higher in the mini group.**

On multivariable logistic regression and propensity score adjustment, the mini approach was not predictive of a composite outcome of death, CVA, ARF, or re-op for bleeding.

# CONCLUSIONS

Our results demonstrate that the mini-sternotomy approach is safe and effective for performing complex aortic surgery in selected patients

The mini-sternotomy approach was associated with a higher rate of re-operation for bleeding and blood product transfusion, which may be due to the higher proportion of concomitant arch procedures performed in this group or may be indicative of it being a more challenging approach to achieve good haemostasis.

Further large institutional series are required to help further establish outcomes for this procedure.

**THANK YOU**



**Lenox Hill Hospital**  
Northwell Health®