

Introducing The Biaxillary Access: Cabg With Concomitant Valve Surgery Using Novel Technology

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Objective

To evaluate the anatomical feasibility and procedural workflow of a minimally invasive biaxillary access strategy for concomitant coronary artery bypass grafting and valve surgery in a human cadaver model.

Patients and Method

This study was performed in nine Thiel/ethanol-fixed human cadavers.

Concomitant coronary artery bypass grafting and valve procedures were carried out using a minimally invasive biaxillary access strategy.

The assessment focused on:

- anatomical exposure
- internal thoracic artery conduit length
- graft harvesting
- anastomosis times
- valve implantation positioning

Postprocedural evaluation was performed by direct macroscopic inspection and three-dimensional computed tomography imaging.

Positioning

The cadaver was positioned supine with both arms elevated and externally rotated in a “spear-throwing” position.

Small left and right axillary incisions enabled bilateral access, and a subxiphoid incision was used for sternal elevation.

This positioning was critical to optimize exposure and instrument handling during the biaxillary minimally invasive workflow.

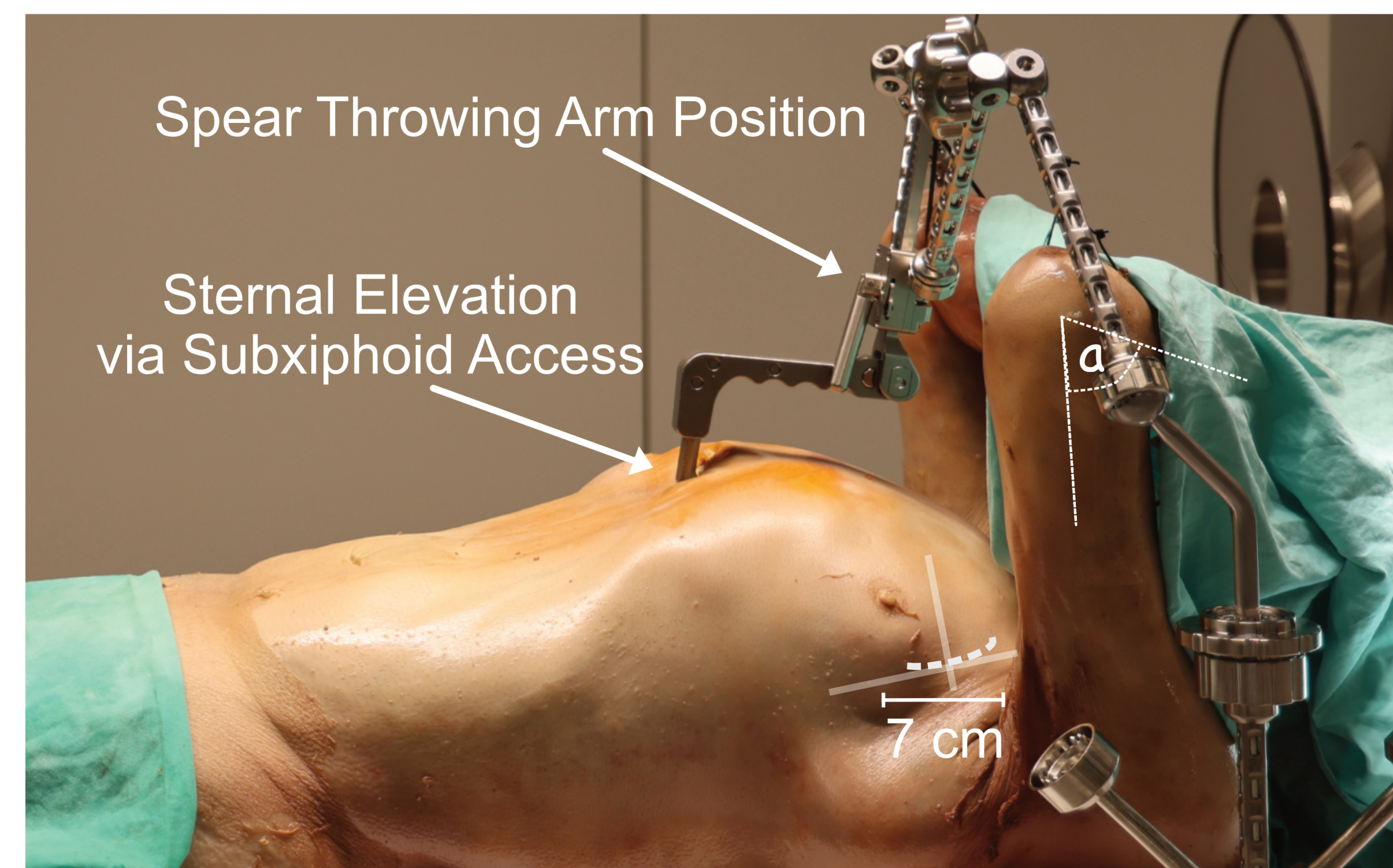


Figure 1. Patient positioning and biaxillary access setup. Supine positioning with both arms elevated and externally rotated in a “spear-throwing” position. Bilateral axillary incisions were used for left and right access, with an additional subxiphoid incision for sternal elevation.

Results

All planned procedures were completed in all nine cadavers. Mean left and right internal thoracic artery lengths were 18.1 ± 1.8 cm and 18.9 ± 1.9 cm, respectively.

The average bilateral internal thoracic artery harvesting time was 52.0 ± 17.6 minutes, and the average anastomosis time was 46.6 ± 12.6 minutes.

Postprocedural 3D CT imaging and macroscopic inspection confirmed appropriate graft positioning and valve seating in all specimens.

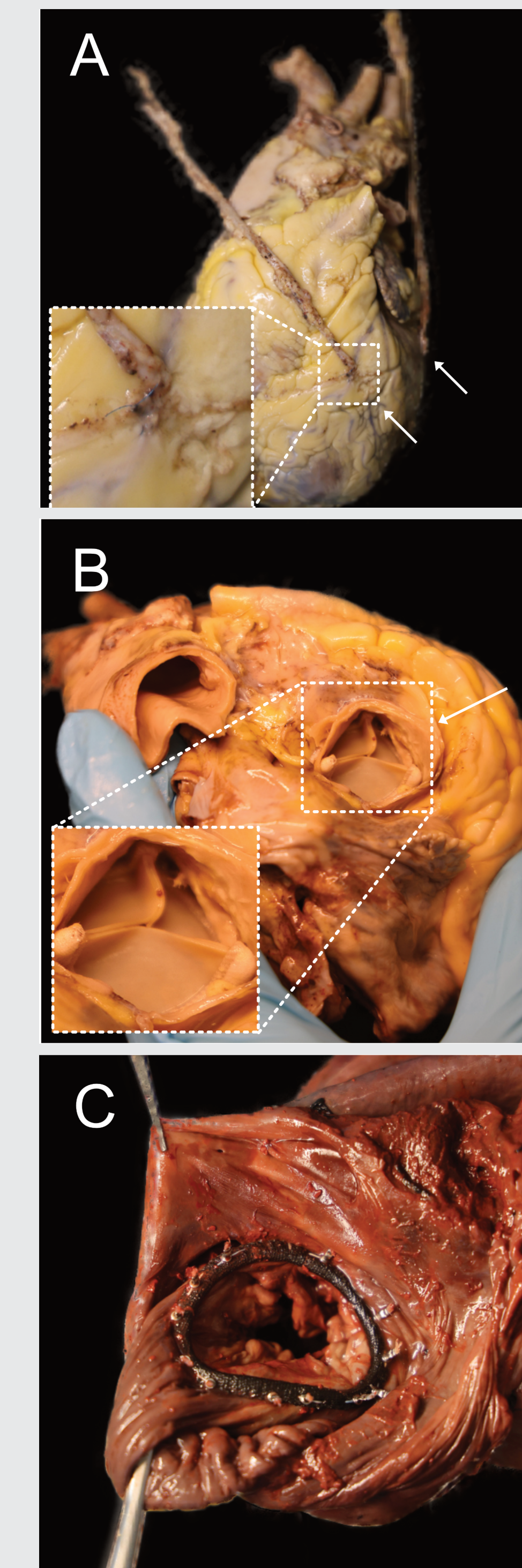


Figure 2. Macroscopic analysis after biaxillary access procedures. Representative views of (A) coronary anastomosis, (B) aortic valve, and (C) mitral valve assessment in the cadaveric model.

Conclusion

This cadaveric pilot study suggests that a minimally invasive biaxillary access strategy may provide adequate anatomical exposure and procedural workflow for concomitant CABG and valve surgery under experimental conditions.

These findings should be interpreted as preliminary and do not establish clinical safety or efficacy. Further technical refinement, reproducibility testing, and

References

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