

Combined Robotic Right Upper Lobectomy And Mitral Valve Repair

Nicholas Ray, MS, Danny Ramzy, MD, Robert Hetz, MD. UTHealth at Houston McGovern, Houston, TX, USA.

Background

We report a **rare** and **unique combined** minimally invasive surgery of robotic mitral valve repair and robotic right upper lobectomy.

Case Presentation

We present a 63-year-old female with a past medical history of coronary artery disease with a drug-eluting stent to the left anterior descending artery four years prior who complains of **worsening shortness of breath and decreased aerobic capacity** for a year.

Transesophageal revealed **severe mitral valve regurgitation**. A surgical planning CT chest revealed a **1.9 x 1.4 cm nodule** in the right upper lobe, and an IR biopsy showed **adenocarcinoma**.

Operative Findings

Competent mitral valve with 42 mm annuloplasty band inserted.

Adenocarcinoma in situ, non-mucinous (2 x 2 x 1 cm), with negative bronchial and vascular margins. No tumor is present in level 2R, 4, 9, 10, 11 fissure, 11 sump, and 12 sump lymph nodes.

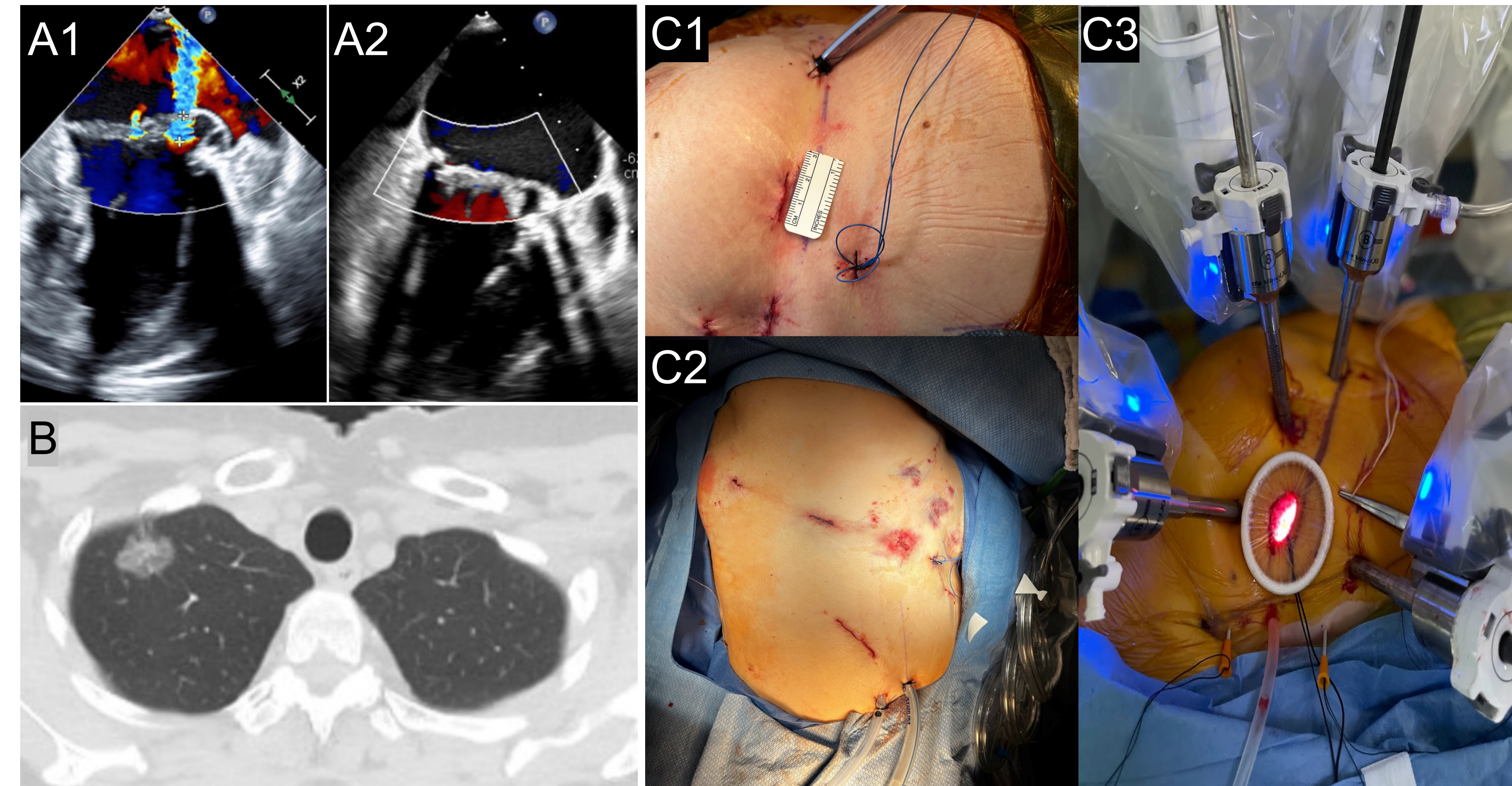


Figure A: Pre-operative echocardiogram reveals severe mitral valve regurgitation with P1 prolapse. The effective regurgitant orifice is 0.28 cm². (Figure A1)
Post-operative echocardiogram reveals competent mitral valve. (Figure A2)

Figure B: Pre-operative chest CT reveals a 1.9 x 1.4 cm nodule in the right upper lobe. An IR-guided biopsy revealed adenocarcinoma.

Figure C: The thoracic surgery used four working ports in the 8th intercostal space (ICS) and a 12 mm assistant port in the 10th ICS. (Figure 2C)

The cardiac surgery used an 8 cm camera port in the 4th ICS, an atrial retractor in the 5th ICS, 8 mm working ports in the 3rd and 6th ICS, and a 2 cm working port in the 4th ICS. (Figures 2A and 2C).

Operative Technique

A robotic mitral valve repair and a robotic right upper lobectomy were performed sequentially.

The steps of a robotic mitral valve repair:

- Access **cardiopulmonary bypass** through percutaneous groin cannulation and create the port sites.
- Access the mitral valve mitral valve through the left atrium via **Sondergaard's groove**.
- **Repair** the mitral valve and insert a 42 mm **annuloplasty band**.
- Finally, close the left **atriotomy**.

The steps of a robotic right upper lobectomy:

- Dissect the **inferior pulmonary ligament** and lymph node stations.
- Identify and ligate the **posterior ascending artery**, upper lobe **bronchus**, and upper lobe **vein**.
- Complete the **anterior fissure** and remove the specimen.
- Finally, ensure homeostasis and **close** the port sites.

Conclusion

A combined procedure for cardiac and thoracic surgery can shorten the time of lung resection and reduce the cost of two separate operations. A minimally invasive approach provides the potential advantages of decreased patient trauma and faster recovery.



SCAN ME