

Minimally Invasive Approach For Left Atrial Masses Resection

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Background

Minimally invasive surgery has become the preferred approach for mitral valve disease. However, there is limited data on using minithoracotomy for removing left atrial masses. This study aims to evaluate the outcomes of minimally invasive techniques for cardiac mass resection.

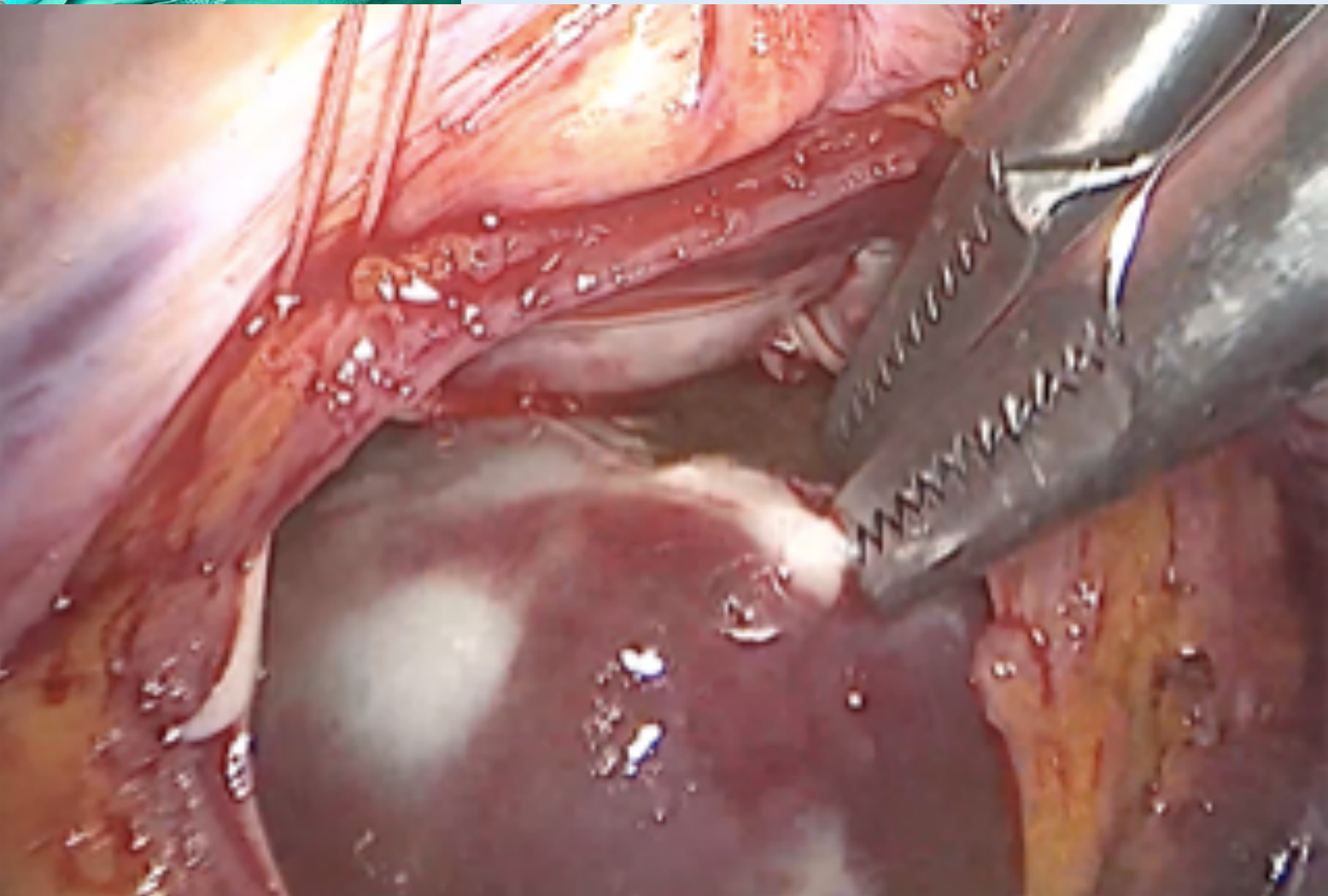
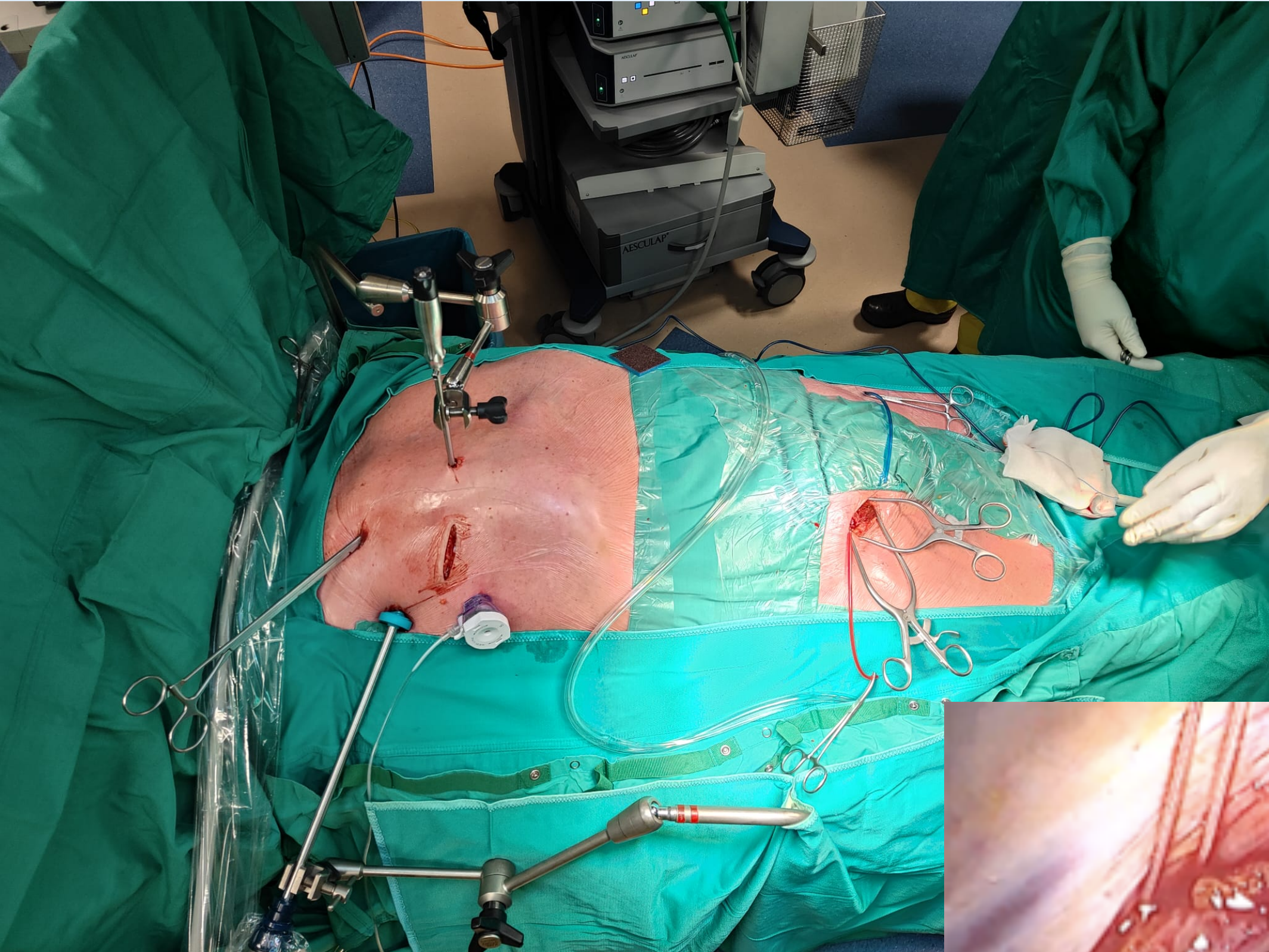
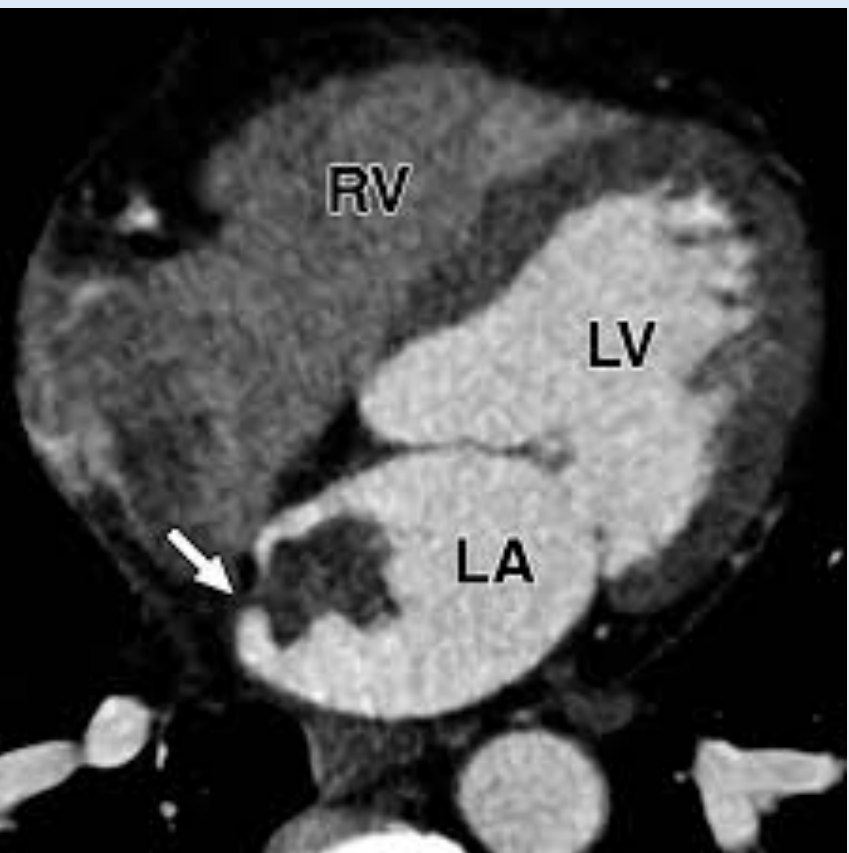
Methods

We retrospectively analyzed 41 patients who underwent right minithoracotomy for resection of left atrial masses between January 2010 and November 2024. The study cohort comprised 24 female patients (58.5%) with a median age of 65 years (range: 56-72 years). The median EuroSCORE II was 1.18 (range: 0.86-1.61), indicating a low surgical risk profile. Two patients (4.9%) underwent redo procedures.

Pre-operative characteristics

N	41
Age median (Q1-Q3)	65 (56-872)
Female sex	24 (58.5)
BMI median (Q1-Q3)	25.26 [22.58, 27.24]
Hypertension	21 (51.2)
Diabetes	5 (12.2)
Dyslipidemia	17 (41.5)
Smoking	14 (34.1)
COPD	3 (7.3)
Preoperative Atrial Fibrillation	3 (7.3)
Preoperative pacemaker	1 (2.4)
Left ventricle Ejection Fraction median (Q1-Q3)	60.00 [55.00, 64.00]
Previous TIA	1 (2.4)
Plasma creatinine (mg/dl) median (Q1-Q3)	0.81 [0.73, 1.00]
Previous cardiac surgery	2 (4.9)
Euroscore Logistic (%) median (Q1-Q3)	3.73 [2.08, 4.65]
Euroscore II (%) median (Q1-Q3)	1.18 [0.86, 1.61]
Urgency or Emergency surgery	20 (48.8)
Tumor Area median (Q1-Q3)	4.58 (2.95, 10.69)

Nearly half of the patients (48.8%) required **urgent or emergency surgery**. Median tumor area was **4.58 cm²**



Surgical approach

Results

Median CPB time and median cross-clamp time were 67 and 42 minutes respectively. Postoperatively, the median drainage output in the first 24 hours was 225 ml (IQR 150-325) and 15 patients (36.6%) required blood transfusions. One patient (2.4%) developed acute renal failure requiring postoperative dialysis and two patients (4.9%) experienced neurological complications. Median intensive care unit stay was 2 days and median hospital stay was 7 days respectively.

No in-hospital mortality was reported and no conversion to full sternotomy or re-exploration for bleeding was necessary

Operative data and In-hospital outcomes

N	41
CPB time median (Q1-Q3)	67.00 [52.00, 83.00]
Aortic cross-clamp time median (Q1-Q3)	42.00 [33.75, 49.50]
In-hospital mortality	0 (0)
Conversion to full sternotomy	0 (0)
Postoperative stroke	2 (4.9)
New onset atrial fibrillation	4 (9.8)
Permanent pacemaker implantation	0 (0)
RBC transfusions	15 (36.6)
Re-thoracotomy for bleeding	0 (0)
Chest drain output in 24/hours median (Q1-Q3)	250.00 [150.00, 325.00]
Dialysis	1 (2.4)
Ventilation time median (Q1-Q3)	5.00 [3.00, 7.00]
Prolonged mechanical ventilation	3 (7.3)
Sepsis	0 (0)
ICU length of stay median (Q1-Q3)	2.00 [1.00, 2.00]
In-hospital length of stay median (Q1-Q3)	7.00 [6.00, 7.00]

No more strokes have been observed since 2015 since we implemented **video-assisted endoscopy** for enhanced visualization of cardiac cavities and potential tumor fragments.

After a median follow-up of 6.8 years, no recurrences of atrial masses were observed.

Conclusions

Minimally invasive surgery for left atrial mass resection offers significant advantages, including reduced surgical trauma, shorter operative times, and decreased blood loss. Our findings demonstrate that this approach is safe, reproducible, and effective with a low recurrence rate.