

# MINIMALLY INVASIVE SURGERY FOR THE EXCISION OF CARDIAC MYXOMA. A COMPARATIVE STUDY OF A LATIN AMERICAN EXPERIENCE. LIMA PERÚ

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## BACKGROUND

- Cardiac myxoma is the most common primary tumor of the heart (75% in the left atrium).
- It is traditionally resected via median sternotomy.
- The minimally invasive technique is proposed as a less traumatic alternative.

## OBJECTIVES

- To compare clinical outcomes between two surgical approaches for the resection of cardiac myxomas:
- Full sternotomy (FS)
  - Minithoracotomy (MT)

## STUDY PERIOD

- January 2010 to December 2023.
- 85 patients with diagnosis of cardiac myxoma underwent surgery by FS or MT
- Perioperative and follow-up mortality and major complications, and other clinical variables.

FIGURE 1



4th ICE right side MT

FIGURE 2



TEE shows LA Myxoma

FIGURE 3



Inguinal cannulation and direct vision

FIGURE 4



Specimen obtained from LA

# RESULTS

Table 1. Baseline Characteristics

|                               | Sternotomy<br>(n=65) | Mini-thoracotomy<br>(n=20) | p value           |
|-------------------------------|----------------------|----------------------------|-------------------|
| Age-----mean (SD)             | 55.42 (15.3)         | 57.9 (14.5)                | 0.52 <sup>a</sup> |
| Women----n(%)                 | 47 (72)              | 12 (60)                    | 0.2 <sup>b</sup>  |
| Risk factors----n(%)          |                      |                            |                   |
| Hypertension                  | 16 (24.6)            | 5(25)                      | 0.97 <sup>b</sup> |
| Diabetes                      | 6 (9.2)              | 0(0)                       | 0.16 <sup>b</sup> |
| Clinical presentation----n(%) |                      |                            |                   |
| Asymptomatic                  | 5 (7.7)              | 2(10)                      | 0.74 <sup>b</sup> |
| Dyspnoea NYHA II              | 21 (32.3)            | 9(45)                      | 0.29 <sup>b</sup> |
| Dyspnoea NYHA III             | 27 (41.5)            | 5(25)                      | 0.18 <sup>b</sup> |
| Dyspnoea NYHA IV              | 1(1.5)               | 1(5)                       | 0.37 <sup>b</sup> |
| Atrial Fibrillation           | 6 (9.2)              | 3(15)                      | 0.46 <sup>b</sup> |
| Angina                        | 8(12.3)              | 3(15)                      | 0.75 <sup>b</sup> |
| Stroke                        | 12(18.5)             | 5(25)                      | 0.52 <sup>b</sup> |
| Syncope                       | 7(10.8)              | 5(25)                      | 0.11 <sup>b</sup> |
| Echocardiography              |                      |                            |                   |
| LVEF(%)-----mean (SD)         | 59.58 (7.57)         | 61.6 (7.53)                | 0.30 <sup>c</sup> |
| RVLFS-----mean (SD)           | 47.65 (6.66)         | 49.2 (7.19)                | 0.37 <sup>c</sup> |
| SMR----n(%)                   | 5(7.7)               | 0(0)                       | 0.2 <sup>b</sup>  |
| STR----n(%)                   | 5 (7.7)              | 1(5)                       | 0.68 <sup>b</sup> |
| Localization----n(%)          |                      |                            |                   |
| Left Atrium                   | 50(76.9)             | 15(75)                     | 0.86 <sup>b</sup> |
| Right Atrium                  | 8(12.3)              | 2(10)                      | 0.78 <sup>b</sup> |
| Both Atrium                   | 2(3.1)               | 0(0)                       | 0.43 <sup>b</sup> |
| Left Ventricle                | 2(3.1)               | 1(5)                       | 0.68 <sup>b</sup> |
| Right Ventricle               | 3(4.6)               | 2(10)                      | 0.37 <sup>b</sup> |
| STS score---median(IQR)       | 0.89 (0.77-1.37)     | 0.915(0.70-1.2)            | 0.47 <sup>c</sup> |

a: t Student test, b: X<sup>2</sup> test, c: Wilcoxon rank-sum test (Mann–Whitney), LVEF: Left ventricle ejection fraction, RVLFS: Right ventricle longitudinal fractional shortening, SMR: Severe mitral regurgitation, STR: Severe tricuspid regurgitation, STS: Society of thoracic surgeons, SD: Standard deviation, IQR: Interquartile range.

Table 3. Follow-up

|                                 | Sternotomy<br>(n=65) | Mini-thoracotomy<br>(n=20) | p value             |
|---------------------------------|----------------------|----------------------------|---------------------|
| Follow up (months)--median(IQR) | 80 (30-120)          | 68 (25-109)                | 0.0004 <sup>a</sup> |
| Major complications----n(%)     |                      |                            |                     |
| All mortality                   | 2 (3.1)              | 1(5)                       | 0.68 <sup>b</sup>   |
| Stroke                          | 2(3.1)               | 0(0)                       | 0.427 <sup>b</sup>  |
| Myocardial Infarction           | 0(0)                 | 0(0)                       |                     |
| Permanent Pacemaker             | 1(1.5)               | 0(0)                       | 0.58 <sup>b</sup>   |
| Recurrence                      | 4(6.2)               | 0(0)                       | 0.25 <sup>b</sup>   |
| All complications               | 9(13.8)              | 1(5)                       | 0.28 <sup>b</sup>   |

a: Wilcoxon rank-sum test (Mann–Whitney), b: X<sup>2</sup> test

Table 2. Intraoperative and Immediate Postoperative Evolution

|                                       | Sternotomy<br>(n=65) | Mini-thoracotomy<br>(n=20) | p value             |
|---------------------------------------|----------------------|----------------------------|---------------------|
| EC Time (min)-----median(IQR)         | 73 (53-86)           | 65.5 (59-72)               | 0.18 <sup>a</sup>   |
| X-Cross Time(min)-----median(IQR)     | 51 (26-67)           | 30.5 (24-35.5)             | 0.02 <sup>a</sup>   |
| Associate Procedure----n(%)           |                      |                            |                     |
| Mitral Valve Repair                   | 9 (13.8)             | 1(5)                       | 0.28 <sup>b</sup>   |
| Tricuspid Valve Repair                | 11(16.9)             | 1(5)                       | 0.18 <sup>b</sup>   |
| Atrioseptoplasty                      | 8(12.3)              | 1(5)                       | 0.35 <sup>b</sup>   |
| CABG                                  | 2(3.1)               | 0(0)                       | 0.42 <sup>b</sup>   |
| Intraop. Bleeding (ml) --median(IQR)  | 420 (360-500)        | 275 (200-425)              | 0.0003 <sup>a</sup> |
| Immediate Postoperative Evolution     |                      |                            |                     |
| ICU time (days) -----median(IQR)      | 3(2-3)               | 2(1-2)                     | 0.000 <sup>a</sup>  |
| Major Complications-----n(%)          |                      |                            |                     |
| Perioperative AMI                     | 0(0)                 | 0(0)                       |                     |
| Stroke                                | 2(3.1)               | 0(0)                       | 0.43 <sup>b</sup>   |
| Intraoperative Mortality              | 1(1.5)               | 0(0)                       | 0.58 <sup>b</sup>   |
| Permanent AVB                         | 1(1.5)               | 0(0)                       | 0.58 <sup>b</sup>   |
| Other complications-----n(%)          |                      |                            |                     |
| New onset AF                          | 6(9.2)               | 1(5)                       | 0.54 <sup>b</sup>   |
| Redo for Bleeding                     | 0(0)                 | 0(0)                       |                     |
| Mediastinitis                         | 0(0)                 | 0(0)                       |                     |
| SSSI                                  | 2(3.1)               | 0(0)                       | 0.43 <sup>b</sup>   |
| Postop. Bleeding (ml)-----median(IQR) | 400(350-460)         | 220(185-275)               | 0.000 <sup>a</sup>  |

a: Wilcoxon rank-sum test (Mann–Whitney), b: X<sup>2</sup> test, EC: Extracorporeal, CABG: Coronary Artery Bypass Grafting, ICU: Intensive Care Unit, AF: Atrial Fibrillation, AVB: Atrio-Ventricular Block, SSSI: Superficial Surgical Site Infection.

## CONCLUSION

There was no difference in major complications at 30 days; however, 01 patient in FS group died for cardiogenic shock on the first postoperative day

Major adverse events: no significant differences

### ADVANTAGES OF MT:

- ↓ Intraoperative and postoperative blood loss
- ↓ Reduction in hospitalization and ICU stay
- ↓ X-cross clamp times

Minithoracotomy is a safe and effective alternative for myxoma resection, with benefits for postoperative recovery and without compromising patient safety.