

Introduction

- Subcutaneous implantable cardioverter-defibrillators (S-ICDs) treat life-threatening arrhythmias without intravascular leads
- Standard placement: between **latissimus dorsi (LDM)** and **serratus anterior (SAM)** in the mid-axillary region
- Current guidelines lack precise anatomical measurements for safe and reproducible placement
- Variation in LDM anatomy may complicate generator positioning
- The **long thoracic nerve (LTN)** is at risk during dissection → injury may cause winged scapula

Aims and Objectives

- Aim:**
Define anatomical landmarks to improve safety and accuracy of S-ICD implantation
- Objectives:**
 - Quantify the position of the anterior LDM border
 - Relate LDM position to chest wall size
 - Map the course of the LTN relative to surgical space

Methods

- Cadaveric dissection study (n = 18)
 - 12 female, 6 male
 - Mean age: 79.6 years
- Measurements:**
 - Distance from posterior thorax to anterior LDM border (A)
 - Anterior–posterior chest diameter (B)
 - Calculated ratio: A/B
 - LTN position relative to LDM at ribs 4–6
 - Entry point of LTN into SAM recorded
- Rationale:**
Standardizing measurements relative to chest size improves surgical applicability

Results

- Mean distance to anterior LDM border: **7.6 cm** (5.5–10.8 cm)
- Mean chest diameter: **21.5 cm** (18.6–24.8 cm)
- A/B ratio: **0.35 ± 0.1** (0.27–0.45)
- No significant sex differences observed
- LTN Course:**
 - Anterior to LDM at 4th rib
 - Posterior to LDM at 5th and 6th ribs
- LTN Entry into SAM:**
 - 4th rib: 6.6%
 - 5th rib: 46.6%
 - 6th rib: 46.6%
 - No LTN observed superficial to LDM below 6th rib

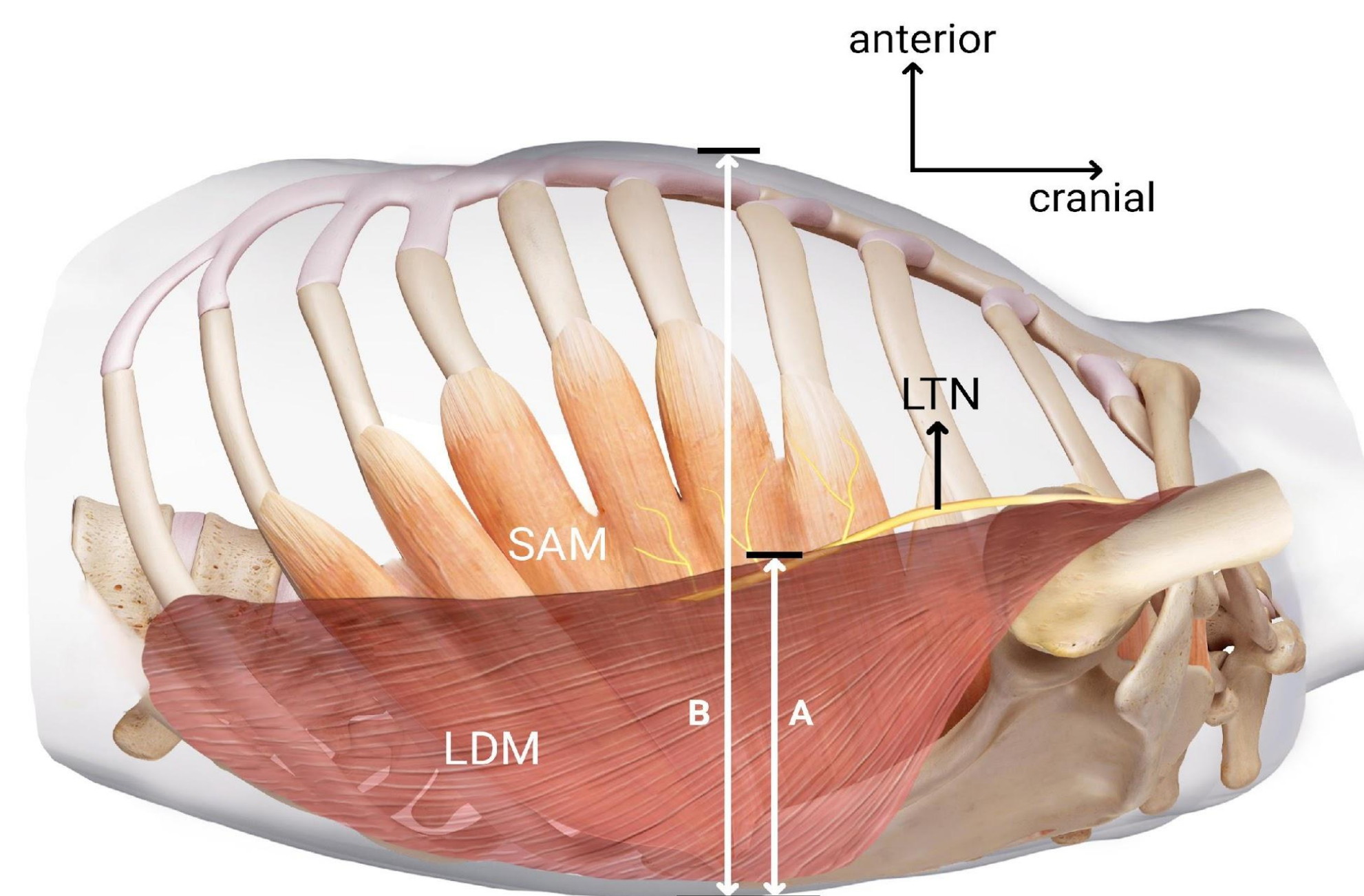


Figure 1: The location of the LDM's anterior border was identified by averaging measurements taken from the back to the anterior border of the LDM at the fifth and seventh rib levels.(A)
The anterior-posterior width of the chest wall was measured (B) The ratio of A–B (=A/B) was averaged.



Figure 2: Image displays The S-ICD placed Between the LDM and SAM in a donor

Conclusions

- The anterior border of the LDM is **highly variable** and typically lies posterior to the mid-axillary line
- Reliance on standard surface landmarks may lead to suboptimal device placement
- The LTN lies in close proximity and must be carefully avoided
- Clinical Relevance:**
 - Supports more individualized surgical planning
 - Helps reduce risk of nerve injury and improve outcomes
- Limitations:**
 - Cadaver-based study (may not fully reflect live tissue dynamics)
 - Older donor population
- Future Directions:**
 - Imaging-based validation in living patients
 - Correlation with procedural outcomes

References

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