

Introduction

The Latarjet procedure treats anterior shoulder instability by transferring the coracoid process to the anterior glenoid. The short head of the biceps brachii and coracobrachialis originate from the coracoid and serve as key surgical landmarks. Anatomical variations in the coracobrachialis and long head of the biceps tendon are well described, including multi-headed muscle configurations and aberrant tendon origins.¹⁻² This study describes a novel bilateral coracobrachialis variant and its implications for musculocutaneous nerve injury risk.

Methods

- **Study Design:** Routine academic cadaveric dissection of an adult female whole-body donor
- **Specimen:** 1 adult female whole-body donor, bilateral upper extremity dissection
- **Measurements:**
 - CB lengths, widths, and circumferences (bilateral)
 - Origins, insertions, and fiber arrangement
 - MCN course from CP to CB entry point
 - Angle of MCN insertion relative to CB (bilateral)

Results

		Left	Right
Coracobrachialis	Length (mm)	Superficial head: 135.5 Deep head (ant): 80 Deep head (post): 145.0	150.9
	Width (mm)	Superficial head: 9.5 Deep head (ant): 9.7 Deep head (post): 15.6	21.1
	Circumference (mm)	Superficial head: 29.8 Deep head (ant): 28.3 Deep head (post): 41.2	44.7
Musculocutaneous nerve	Insertion: coracoid process → CB (mm)	114.9	47.6
	Angle of insertion	160°	141°

Table 1: Morphologic measurements of the left and right coracobrachialis, including length, width, circumference, and musculocutaneous nerve entry characteristics.

Key Findings:

- Left CB: 3-headed with distal MCN entry (115 mm from CP)
- Right CB: 1-headed with proximal MCN entry (47 mm)
- More distal MCN location may reduce nerve injury risk in Latarjet
- Novelty:
 - Unique combination of a 3-headed CB with dual deep divisions + distal MCN entry
 - First description of MCN piercing distal one-third of CB

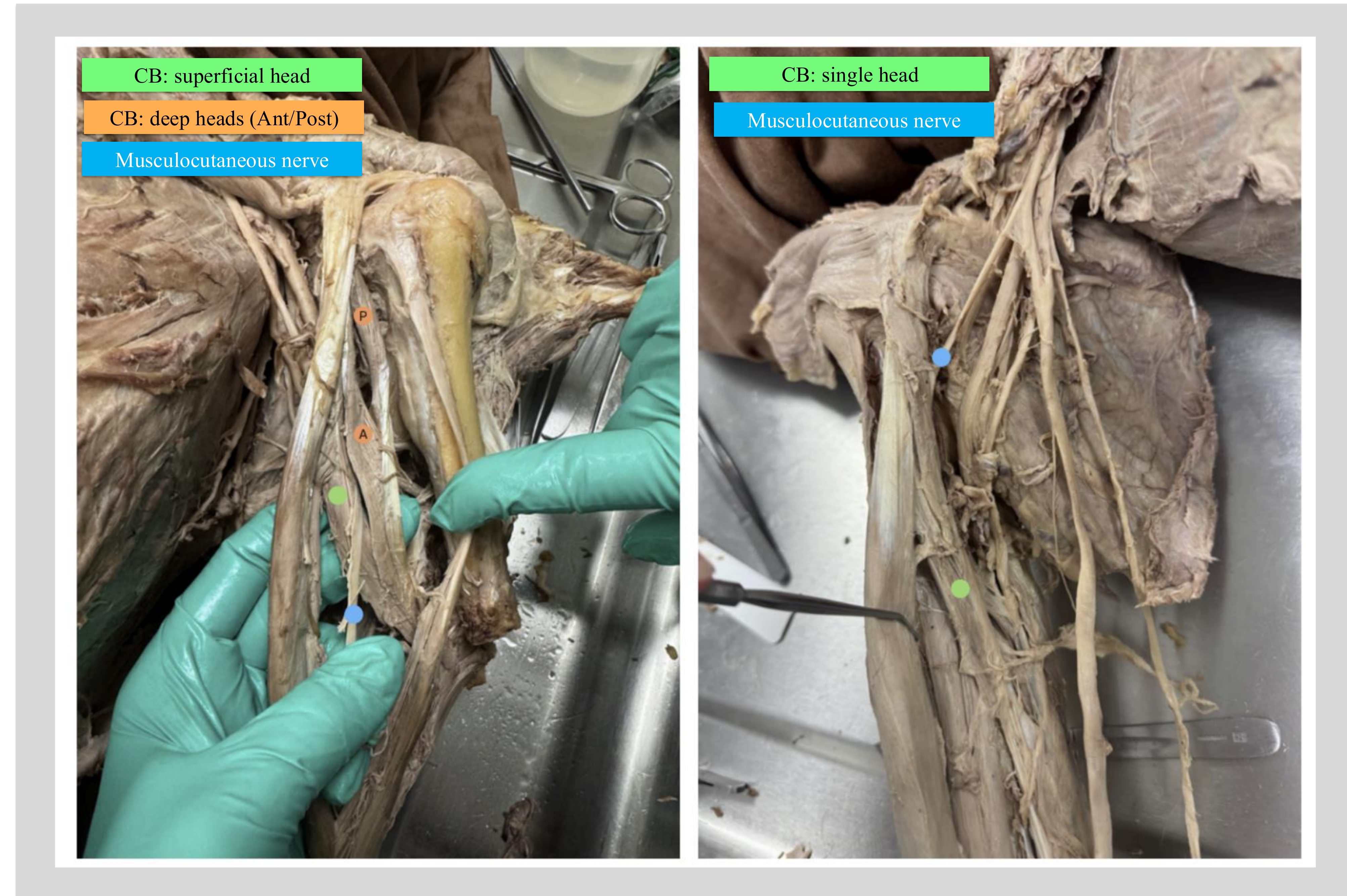


Figure 1: Left anterior arm demonstrating a three-headed coracobrachialis with a superficial head and a deep head composed of anterior and posterior divisions. The musculocutaneous nerve is shown piercing the distal one-third of the muscle between the superficial and deep heads.

Figure 2: Right anterior arm demonstrating a single-headed coracobrachialis. The musculocutaneous nerve is shown piercing the proximal one-third of the muscle along its medial aspect.

Conclusion

Anatomic Findings

- Bilateral CB variation not previously described in the literature
- Three-headed CBs are uncommon (22%); one-headed CBs are rarer (11%)
- MCN passage between superficial and deep heads is common in multi-headed CBs; left-sided MCN entry at lower 1/3 of CB has no prior documented description
- Average CP-to-MCN distance is 5.6 cm (±2 cm); donor's left side was 11.5 cm — nearly double the mean

Clinical Implications

- Distal MCN entry (11.5 cm vs ~5.6 cm avg) may reduce traction and iatrogenic injury risk
- Altered nerve trajectory (↑ angle of insertion) may reduce tension during coracoid transfer
- Variant CB morphology may change surgical landmarks
- Surgeons should consider intraoperative nerve identification and protection strategies

Discussion

This case demonstrates a previously undescribed bilateral coracobrachialis variant with significant asymmetry in musculocutaneous nerve course and muscle morphology. The musculocutaneous nerve typically pierces the coracobrachialis but may vary in its course depending on muscle configuration.³ The increased distance from the coracoid process to nerve entry on the left suggests a potential reduction in nerve traction and iatrogenic injury risk during the Latarjet procedure. During coracoid transfer, the musculocutaneous nerve is susceptible to traction and positional changes, making its anatomical course clinically significant.⁴⁻⁵ Recognition of such variations is essential for optimizing surgical planning and improving patient outcomes.

References

1. Kumar VP, Satku K, Balasubramaniam P. The long head of biceps brachii tendon: variations in origin and course. *Clin Anat.* 2007;20(2):182-186.
2. Vangsness CT Jr, Jorgenson SS, Watson T, Johnson DL. The origin of the long head of the biceps from the scapula and glenoid labrum: an anatomical study of 100 shoulders. *J Bone Joint Surg Br.* 1994;76(6):951-954.
3. El-Naggar MM, Al-Saggaf S, Al-Saggaf H, Al-Saggaf A. Variations of the coracobrachialis muscle and its relationship with the musculocutaneous nerve. *Surg Radiol Anat.* 2001;23(5):291-295.
4. Young AA, Maia R, Berhouet J, Walch G. Open Latarjet procedure for management of bone loss in anterior instability of the glenohumeral joint. *J Shoulder Elbow Surg.* 2011;20(2 Suppl):S61-S69.
5. Lafosse L, Lejeune E, Bouchard A, Kakuda C, Gobezie R, Kochhar T. The arthroscopic Latarjet procedure for the treatment of anterior shoulder instability. *Arthroscopy.* 2007;23(11):1242.e1-1242.e5.

Acknowledgements:

- Thank you to the whole body donation program, the donors, and the donor families for making the advancement of medical research possible
- Thanks to the conference for the opportunity to present this work
- [Institution] for funding support