

Arthroscopic Anatomy of the Median Nerve and Brachial Artery at the Elbow

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DISCLOSURE OF
INTEREST

I (and my coauthor) have
nothing to disclose.

OBJECTIVES

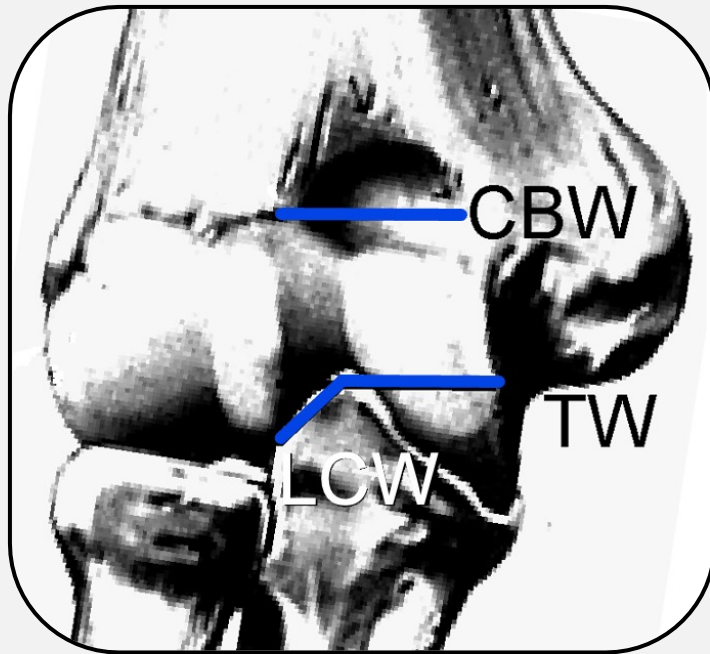
To study the anatomy of the anterior neurovascular bundle at the elbow joint with respect to bony anatomy that is readily visible during elbow arthroscopy

To recommend safe zones for arthroscopic procedures of the anterior elbow compartment

MATERIALS AND METHODS

- Anatomical dissection study
 - 35 bilateral cadaveric elbows (n=70)
 - Digital calipers used for measurements
- We studied the anatomy of the median nerve and brachial artery with respect to the following bony landmarks
 - 1) Base of the coronoid fossa
 - 2) Medial and lateral trochlea ridges at the medial epicondyle's inferior plane
 - 3) Lateral rim of the coronoid process

MATERIALS AND METHODS



- Bony landmark measurements taken:
 - Width of the coronoid fossa base (CBW)
 - Distance between the medial and lateral trochlea ridges at the inferior plane of the medial epicondyle (TW)
 - Lateral coronoid process ridge width (LCW)

MATERIALS AND METHODS

- Measurements taken continued:
 - The diameter of the median nerve/brachial artery neurovascular bundle at the level of each featured bony landmark
 - The distance from the margins of the neurovascular bundle to each bony landmark

RESULTS

Table 1: Average width of each bony landmark

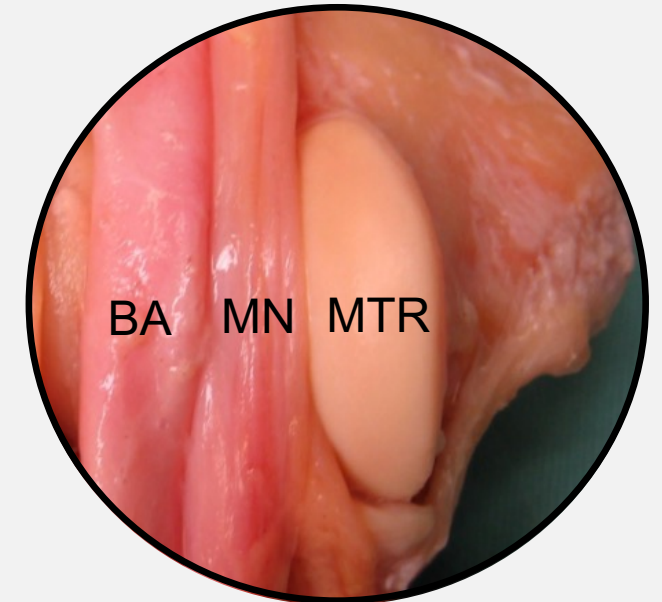
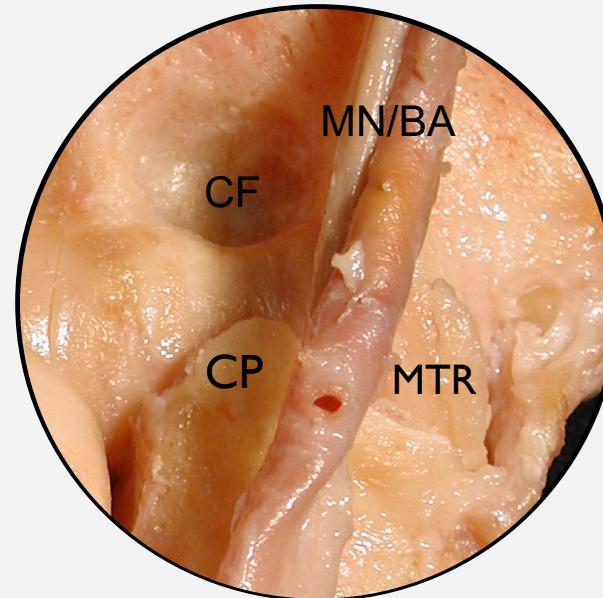
Bony Landmark	Width (mm)
Coronoid Fossa Base	14.3 (13.9 – 14.6)
Trochlea Ridge	22.5 (21.6 – 22.9)
Lateral Coronoid Ridge	7.4 (7.1 – 7.6)

Table 2: Average diameter of the neurovascular bundle at each bony landmark level

	Coronoid Fossa Base	Trochlea	Coronoid Process
Neurovascular Bundle Diameter (mm)	8.6 (8.2 – 8.9)	8.4 (7.9 – 8.6)	8.3 (8.0 – 8.5)

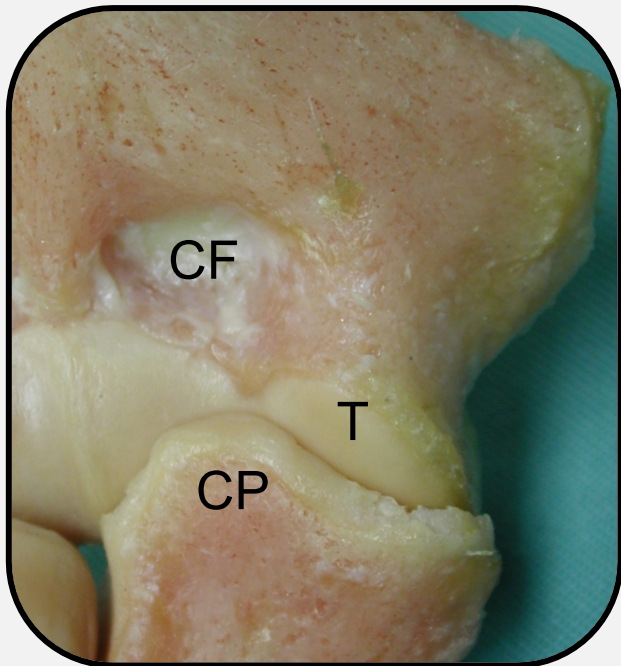
RESULTS

- The neurovascular bundle was located
 - 1.6 mm (range 1.4-1.9 mm) medial to the coronoid fossa base
 - 2.4 mm (range 2.1-2.9 mm) lateral to the medial trochlea ridge
 - 2.2 mm (range 1.9-2.5 mm) medial to the tip of the coronoid process



Anterior view of the right elbow. BA = brachial artery, MN = median nerve, CF = coronoid fossa base, CP = coronoid process, MTR = medial trochlea ridge

CONCLUSION

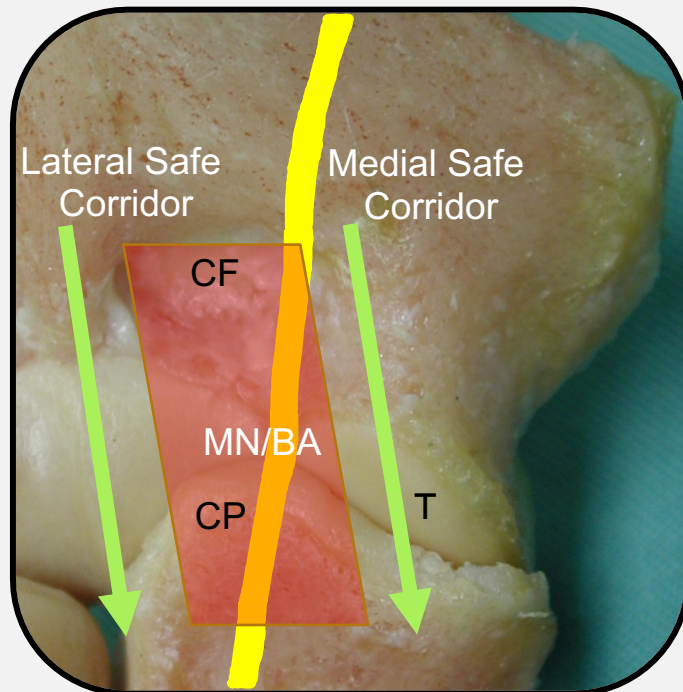


- Anatomical landmarks of importance:
 - Coronoid fossa (CF)
 - Trochlea (T)
 - Coronoid process tip (CP)

CONCLUSION

- Our data supports that the following corridors, medial and lateral to the neurovascular bundle, are safe when incising the capsule in the medial compartment of the elbow
 - Medial safe corridor: laterally bounded by the coronoid fossa's medial boundary and the medial trochlea ridge's medial face
 - Lateral safe corridor: medially bounded by the coronoid fossa's lateral border, the trochlea groove, and the apex of the coronoid process

CONCLUSION



- Safe corridors are shown with green arrows
- The red box represents the zone where the median nerve and brachial artery are located
 - Working in this area requires special care

SIGNIFICANCE OF THE FINDINGS

- The medial and lateral safe corridors discussed represent areas that were safe to incise the anterior capsule in 70 consecutive cadaveric elbows, without risk of an iatrogenic injury to the adjacent neurovasculature
- We recommend utilizing these safe corridors, bounded by the featured bony landmarks, to minimize injury to the median nerve in arthroscopic procedures of the anterior elbow

QUESTIONS?

Please send questions to:

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