

Editorial Commentary: Safety in Anteromedial Elbow Portal Placement? Go North!



Robert U. Hartzler, M.D., M.S.

Abstract: Since iatrogenic injury to surrounding structures is more likely in the elbow than in the other major joints, many studies have examined the relationship of elbow arthroscopy portals to the at-risk anatomy. In accessing the anterior compartment of the elbow from the medial side, the brachial artery and median, ulnar, and medial antebrachial cutaneous nerves are at risk. Factors that improve the safety of this approach include the use of a proximal versus distal anteromedial portal, a distended versus and nondistended joint, and a flexed versus extended elbow position, all of which result in an approximate margin of safety of 2 cm from the deep at-risk structures.

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In “Safety of Anteromedial Portals in Elbow Arthroscopy: A Systematic Review of Cadaveric Studies,” Cushing, Finley, O’Brien, Savoie, Myers, and Medvedev report on a topic that is near and dear to the hearts of elbow arthroscopists: the proximity of the major neurologic and vascular structures to these portals.¹ For many of us, an anteromedial portal is routinely created first² when accessing the anterior compartment and is therefore made using only palpation to guide placement. The arthroscopist also makes this portal knowing that many structures are potentially at risk: the brachial artery and median, ulnar, and medial antebrachial cutaneous nerves. My elbow arthroscopy experience has yielded a similar rate of temporary nerve palsy as has been reported in the literature (2.5%),³ yet neurovascular injury cannot be put far out of my mind during portal placement and instrumentation of the elbow. It’s no surprise that this has been the subject of the 10 included studies using over 100 cadaver specimens!

The authors duly note several frustrating problems with this literature. First, 5 separate definitions were used in defining the proximal and distal anteromedial

portals. Only 2 of the studies included my preferred anteromedial portal, the one placed 2 cm proximal to the medial epicondyle, and those 2 studies did not specify the anterior positioning. The cadaver preservation techniques, scope diameters, and measurement techniques were inconsistent between studies.

With those limitations in mind, I found several points of keen interest in this systematic review with regard to portal placement. First, the medial antebrachial cutaneous nerve is the highest risk structure when placing either proximal or distal anteromedial portals with the range of the distance to the nerve including 0 mm in many of the studies. Therefore, the knife should only incise the skin when making this portal, and it seems prudent to use a no. 15 blade scalpel (instead of a no. 11 blade) for this purpose.

Second, joint distention and elbow flexion improve the safety margin of anteromedial portals, the anterior soft tissues being 3 to 8 mm further away from the portal tracts in this state. Since many elbow arthroscopies are done for stiffness, this improved safety margin in cadavers likely represents the best-case scenario for distention as a safety intervention. For those of us who routinely perform arthroscopy of the posterior compartment prior to the anterior compartment, the joint is already distended when creating the anterior portals. But for surgeons who start anterior, saline distention carries little risk and seems wise to attempt.

Third, the only clear advantage seen with regard to safety of a *distal* anteromedial portal is a wider margin from the ulnar nerve (22 vs 18 mm). Although this might seem helpful, the proximal portal is also made

Baylor College of Medicine

The author reports the following potential conflicts of interest or sources of funding: R.H. is a consultant for Arthrex and receives textbook royalties from Wolters-Kluwer. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).

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0749-8063/19504/\$36.00

<https://doi.org/10.1016/j.arthro.2019.04.016>

with the medial intramuscular septum as a landmark. This structure is usually easily palpable, even after performing arthroscopy of the posterior compartment. By palpating the septum prior to skin incision and during insertion of the scope sheath, the surgeon has an extra margin of safety in avoiding the ulnar nerve in making a *proximal* versus *distal* anteromedial portal. Since the proximal anteromedial portal is further from the median nerve (18 vs 13 mm) and equidistant from the brachial artery (2 cm) compared with the distal portal, the former should be considered the safest overall to establish based on palpable landmarks.

Safety in portal creation is the overarching theme of this study. However, elbow arthroscopists know that being overly cautious can lead to poor portal placement—particularly too posterior positioning of anterior portals—which can dramatically limit access to the joint. An interesting study from the same institution in 2017 reported on the safety of modified *anterolateral* elbow arthroscopy portals.² The authors found that proximal and direct *anterolateral* portals made 2 cm

anterior to the lateral epicondyle provided an adequate safety margin in relation to the radial nerve.² Those readers keeping up with the Arthroscopy Journal Podcast (<https://www.arthroscopyjournal.org/podcast-archive-2019>) know that one of the senior authors on the current paper (F.H.S.) has hinted that we can expect a similar cadaver study on the safety of more anteriorly placed *medial* portals as well. Does this systematic review serve as a backdrop for that future offering? I, for one, will be staying tuned.

References

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