

## **Cadaveric exploration of the relationship between posterior arthroscopic shoulder portals and the axillary nerve.**

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### **Introduction**

The axillary nerve originates from the posterior cord of the brachial plexus, moving posteriorly. Variation can be observed upon exiting the quadrangular space to supply the deltoid and teres minor. The axillary nerves' close association with the posterior lateral aspect of the shoulder puts it at risk of injury with trochar insertion. Some studies have identified the anatomy of the posterior shoulder, but many fail to fully explain safety of the axillary nerve when performing arthroscopic surgery.

### **Methods**

Fifty-two shoulders from twenty-six formalin-embalmed cadavers were dissected on the Joplin campus of Kansas City University. Prior to dissection, researchers simulated the placement of four portals on the posterolateral aspect of the shoulder in accordance with descriptions from the American Academy of Orthopaedic Surgeons. Portal placement was simulated by sticking a needle through the skin until a pop was felt, indicating introduction into the glenohumeral cavity. Following dissection of the posterior shoulder, axillary nerve variations were classified using the system set forth by Leechavengvongs et al. Measurements were collected from the body landmarks to the portal and axillary nerve branches using ImageJ.

### **Results**

The distance between posterior portal and axillary nerve was the largest. The axillary nerve ran far inferior to the axillary pouch portal. The posterolateral portal was the second closest, as the portal's and axillary nerve's standard deviation came within 1 cm of one another. The average distance between the posteroinferior portal and axillary nerve was 5mm.

### **Discussion**

The close proximity of less than one millimeter apart between the posteroinferior portal and axillary nerve put it at risk of injury. The greatest distance was observed between the posterior portal and the axillary nerve, thus indicating that this is the safest portal placement.

### **Conclusion**

The posterior inferior portal should be used with extreme caution.

### **References**

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