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Creating a Simple Drill Stop for Clavicle Plating

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Background

Plate osteosynthesis is frequently used in the treatment of clavicle fractures. Over-drilling poses a risk to the subclavian neurovascular bundle. Radiological and cadaveric studies have defined safe zones for clavicle drilling, with the medial third most intimately related [1,2]. At mid-clavicle, the subclavian vein and artery are approximately 12.45 mm (5 to 26.1) and 17.02 mm (5.4 to 26.8) from the clavicle respectively [3]. To our knowledge, no manufacturer has produced a drill stop to protect these structures. We describe the novel use of a needle sheath to prevent over-drilling in clavicle plating.

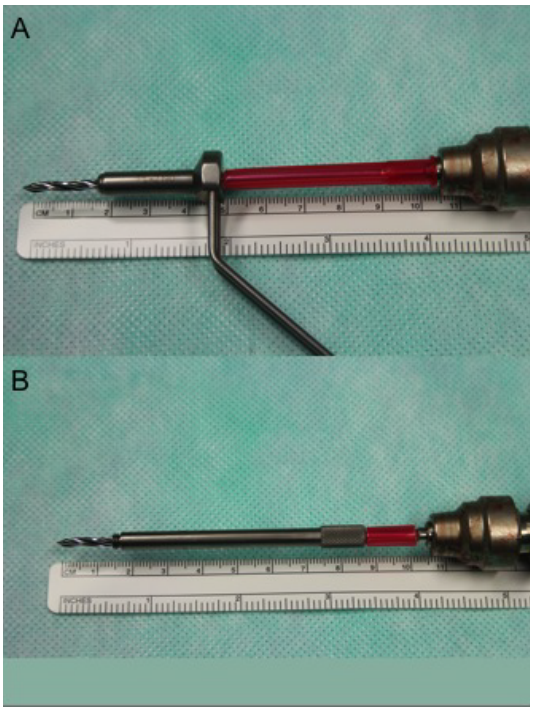

Figure 1: Needle sheath positioned above A) free-hand and B) locked drill guides allowing a maximum of 20 mm of drill to protrude through.

Technique

The plastic sheath of any needle is cut at the distal end to allow a 2.5 mm drill bit to pass through. With 16 mm screws commonly used mid-shaft and the smallest distance to the neurovascular bundle being 5 mm, the sheath is cut to prevent the drill protruding over 20 mm from the drill guide (Figure 1). This is achieved by putting the drill through the guide with 20 mm protruding distally and measuring drill length above the guide – this is the sheath length required. One needs two sheaths as the free-hand and locking drill guides are of differing lengths. When ready for use, the drill stop can simply be slid over the appropriate drill bit prior to drilling.

Discussion

We have described a simple and reproducible safeguard to allow junior surgeons to drill safely and learn the feel of drilling through the clavicle. Ideally, one stops drilling at penetration of the far cortex.

References

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