



# Arthroscopic Ulnar Nerve Decompression

# 76

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## Introduction

Patients who have conditions amenable to arthroscopic treatment, such as osteoarthritis of the elbow, rheumatoid arthritis, hemophilic arthropathy, synovitis, or other conditions, may have concomitant cubital tunnel syndrome. Additionally, it is likely that compression of the ulnar nerve at the elbow will be exacerbated following the soft tissue swelling inherent following elbow arthroscopy. Rehabilitation protocols that promote prolonged flexion and extension or repetitive cycling of elbow motion, particularly when the elbow is anesthetized by regional block, may also render the ulnar nerve vulnerable to neuritis. Although it is reasonable to make a separate medial incision to decompress the nerve either before or after the arthroscopic portion of the procedure, in some cases it is also equally reasonable to decompress the nerve arthroscopically as part of the surgical procedure. This is particularly the case in the setting of a requirement to release the posteromedial capsule, which will expose the ulnar nerve and render it especially amenable to decompression.

## Indications

Indications for ulnar nerve decompression via arthroscopy include evidence of ulnar nerve compression at the elbow, typically in the setting of another concomitant reason for elbow arthroscopy. Arthroscopic ulnar nerve decompression

is not our preferred technique for ulnar nerve decompression absent other arthroscopic indications.

Patients undergoing arthroscopy in general undergo a thorough neurological assessment. In addition to a good history, the results of provocative maneuvers with respect to the ulnar nerve, including Tinel's testing, cubital tunnel compression testing, and elbow flexion test, are recorded. Likewise, sensory examination, including two-point discrimination, and motor testing, such as assessment of ability to cross fingers, Wartenbergs, and strength of the first dorsal interosseous muscle, are assessed. Electrodiagnostic testing is often obtained, although it may be "normal" even in the setting of reproducible symptoms. Recent data suggest ultrasound may also be a good way to document objective evidence of ulnar nerve compression.

Most surgeons favor ulnar nerve decompression in the presence of patients who clearly demonstrate evidence of cubital tunnel syndrome by history and exam (even in the absence of objective findings on electrodiagnostic testing).

However, who undergoes ulnar nerve treatment prophylactically, without pre-extant symptoms, is a matter of ongoing discussion [1].

## Contraindications

Contraindications include a subluxating ulnar nerve that may require transposition; these patients are generally better served by an open procedure. Additional contraindications include lack of surgeon familiarity or facility with arthroscopy.

Patients with medial incisions or scarring may also be better suited to an open procedure. Finally, the procedure resects the posteromedial capsule deep to the ulnar nerve, allowing the ulnar nerve to translate toward the joint and increasing the space available to the nerve medially, rather than removing the more superficial fibers of tissues that may compress the nerve. Therefore, patients with severe ulnar neuropathy

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may be considered to have an open procedure to address these structures.

### Technique in Detail

The authors prefer a lateral decubitus position for elbow arthroscopy, using a dedicated arm holder. The arm is prepared and draped from fingertips to axilla, and a sterile tourniquet is applied (Fig. 76.1). Arthroscopy proceeds, according to the primary pathology that needs to be addressed. Typically, these authors prefer to start arthroscopy in the anterior or posterior portion of the joint, depending on the pathology to be addressed (Figs. 76.2 and 76.3). If most of the work is required in the anterior joint, arthroscopy starts there; if most of the work is required in the posterior portion of the joint, arthroscopy starts in that portion. For the posterior arthroscopy and for ulnar nerve decompression, a direct posterior working portal and a posterolateral portal are established in the usual fashion (Fig. 76.4).

The direct posterior portal is made approximately 3 cm proximal to the tip of the olecranon, centrally,



**Fig. 76.1** Patient placed in the lateral decubitus position for elbow arthroscopy



**Fig. 76.2** Patient draped for elbow arthroscopy, the anterolateral portal is noted with the retractor. This is the typical starting portal for inspection of the anterior joint



**Fig. 76.3** The anteromedial portal is indicated with the probe; this is the typical starting portal on the medial side of the elbow. The ulnar nerve is marked with a dotted line



**Fig. 76.4** View of the posterior portals, the ulnar nerve is identified by the probe. The direct posterior portal and posterolateral portals are seen more lateral





**Fig. 76.5** The direct posterior portal is marked with a probe. The posterolateral portal is seen just lateral

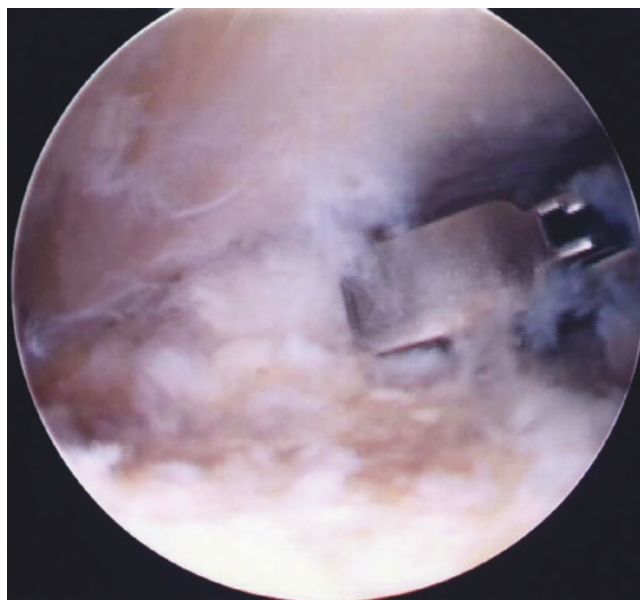
through the triceps down to the olecranon fossa (Fig. 76.5). Shaving is necessary to remove fat and fibrous debris in order to gain a space for visualization. A radiofrequency probe may be used to facilitate this and to remove synovial tissue.

The posterolateral viewing portal is made approximately 1 cm proximal and lateral to the olecranon tip.

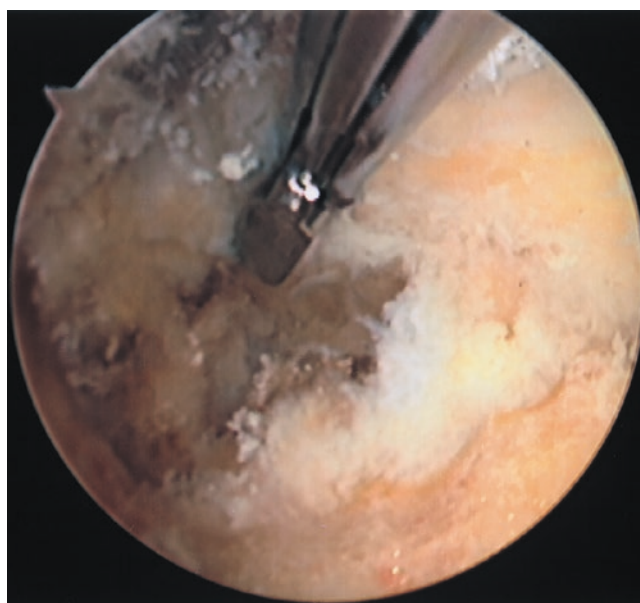
Direct visualization, after shaving away debris, is possible across the olecranon fossa and into the medial gutter of the joint. Under direct visualization, the shaver is used to follow into the medial gutter and to carefully expose the posteromedial aspect of the joint, the posteromedial capsule, and the medial gutter. A proximal accessory portal can also be used for placement of a blunt retractor to facilitate exposure.

Once adequate exposure of the posteromedial capsule is achieved, an arthroscopic biter is brought in to carefully and serially resect the posteromedial capsule, beginning a few cm proximal to the medial epicondylar region (Figs. 76.6 and 76.7). This continues distally down the medial gutter, until the level of the posterior portion of the anterior band of the MCL. In addition to a biter, careful use of a radiofrequency probe can be used to release the posteromedial capsule. The ulnar nerve may be visualized in the soft tissue adjacent to the resected joint capsule and is inspected to assure adequate decompression (Figs. 76.8, 76.9, and 76.10).

Following completion of the procedure, the portals are sutured and a sterile dressing applied. Postoperative rehabilitation is primarily determined by the primary procedure for which the arthroscopy is being done. Typically, full active motion is allowed on postoperative day two.



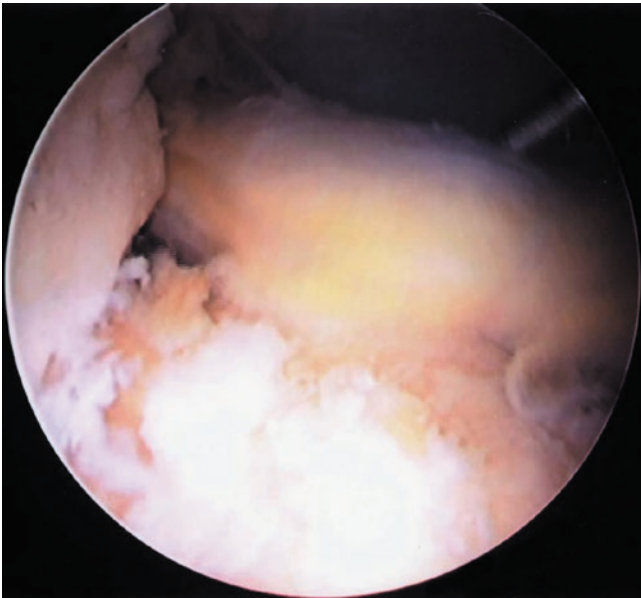
**Fig. 76.6** Arthroscopic biter seen resecting the posteromedial capsule



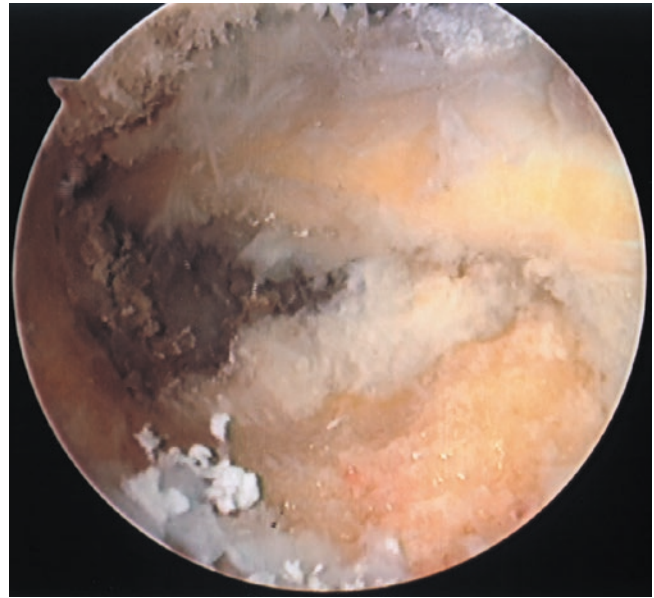
**Fig. 76.7** Arthroscopic biter removing the posteromedial capsule, the ulnar nerve can be seen just to the right of the biter

### Tips and Tricks

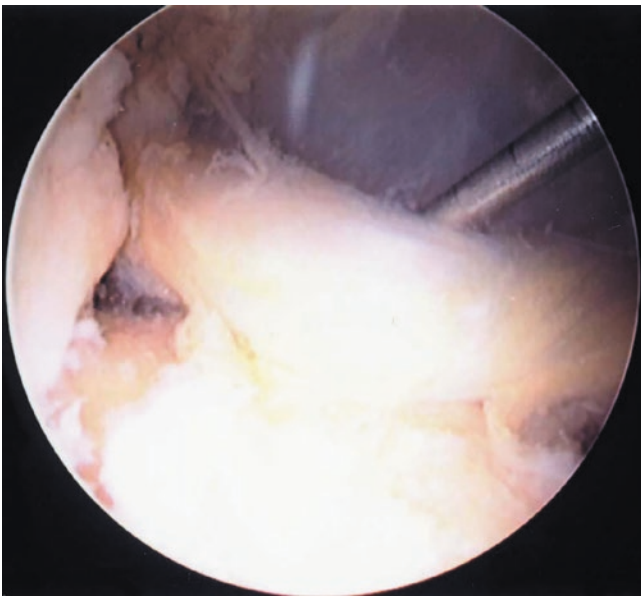
Avoid use of the arthroscopic shaver in the posterior aspect of the joint after the posteromedial capsule has been released, and the ulnar nerve is exposed to avoid inadvertent injury to



**Fig. 76.8** After decompression of the ulnar nerve, the probe is seen pulling the nerve into the joint



**Fig. 76.10** Ulnar nerve is seen after decompression. In this case, an additional arthroscopic medial epicondylectomy was performed



**Fig. 76.9** The ulnar nerve has been decompressed, and the probe is seen holding the ulnar nerve free

the nerve. Using the direct posterior portal as the working portal and the posterolateral portal as the viewing portal is a good combination to allow resection of the posteromedial capsule.

## Conclusion

Arthroscopic ulnar nerve decompression is an option for patients with mild to moderate ulnar nerve symptoms who are undergoing elbow arthroscopy for other reasons. Given that a simple in situ decompression can easily be done with a small incision, minimal simple and inexpensive equipment, easy setup and recovery, and tourniquet time of less than 10–15 min in most cases, we do not favor this procedure for patients who lack other concomitant indications for elbow arthroscopy. Most patients do well following the procedure, despite the anatomy of the procedure, which addresses deep structures which may contribute to ulnar nerve compression, rather than the more superficial structures [2].

## References

1. Williams BG, Sotereanos DG, Baratz ME, Jarrett CD, Venouziou AI, Miller MC. The contracted elbow: is ulnar nerve release necessary? *J Shoulder Elb Surg.* 2012 Dec;21(12):1632–6. <https://doi.org/10.1016/j.jse.2012.04.007>. Epub 2012 Jun 26. PMID: 22743068.
2. Kovachevich R, Steinmann SP. Arthroscopic ulnar nerve decompression in the setting of elbow osteoarthritis. *J Hand Surg Am.* 2012 Apr;37(4):663–8. <https://doi.org/10.1016/j.jhssa.2012.01.003>. Epub 2012 Mar 3. PMID: 22386545.