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Arthroscopic tennis elbow release

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Introduction

Lateral epicondylitis is one of the most common pain syndromes of the upper extremity.¹ Approximately 90% of patients are successfully treated non-operatively but 10% may require surgical intervention due to residual symptoms impeding the patient's daily lifestyle activities.² Different surgical procedures have been described but there is no consensus on the best surgical option.⁵ Many authors advocate the arthroscopic treatment of lateral epicondylitis.^{4–8} This article will explain and review the current literature regarding this procedure and the potential benefits of this technique.

Arthroscopic tennis elbow release technique

The elbow joint is distended with 50ml of saline, which displaces the brachial artery and the median nerve anteriorly. This may further reduce the risk of injury to these neurovascular structures. Two standard arthroscopic portals are typically used. The proximal anteromedial portal is approximately 2cm proximal and 2cm anterior to the medial epicondyle and the proximal lateral portal is approximately 2cm proximal and 2cm anterior to the lateral epicondyle in the 'soft spot'. The relationship of extensor carpi radialis brevis (ECRB), extensor carpi radialis longus (ECRL) and capsule and instruments during elbow arthroscopy is shown in Figure 1. Cadaveric studies have verified the safety of these portal placements and safe zones for debridement.⁹

Using the proximal anteromedial portal, the undersurface of the ECRB tendon can be visualised. Baker *et al* (2000) described a classification system for the condition of the capsule: type 1 is an intact capsule; type 2 demonstrates a linear capsule rupture; and finally, type 3 shows a complete tear.⁴ The capsule is removed from the intra-articular aspect revealing the ECRB tendon, which can be followed up to its insertion on the lateral epicondyle. The ECRB is separated from the proximal origin to the border of the lateral intermuscular. Debridement of the pathological fibres is performed above the equator of the radial head (Figure 2). This prevents potential iatrogenic injury to the lateral ulnar collateral ligament and potential rotator instability of the elbow.¹⁰ Drilling or shaving of the lateral epicondyle is usually performed to stimulate a healing response although the benefits of decortication remain controversial.¹¹

Arthroscopic release allows for inspection of the elbow joint. The primary pathology of the lateral epicondyle may be

associated with intra-articular abnormalities. Studies show this may range from 19% to 69% of cases.^{4,6} Intra-articular pathology may include synovitis or synovial thickening, loose bodies or chondral defects.⁴ The presence of a hypertrophic capsular fold that impinges on the radial head and may interpose in the radiocapitellar joint can also be identified.¹² These can be easily managed with standard arthroscopic techniques.

Additional repair techniques include plication of the remaining ECRB to the overlying ECRL using an anchor in the anterior aspect of the lateral epicondyle or using absorbable sutures with a simple needle retriever technique.⁸ Management of lateral collateral ligament damage can also be addressed during arthroscopic tennis elbow surgery.⁸

The posterior elbow may also be inspected and posterolateral synovectomy or excision of meniscoid tissue may be performed. Closure of the portals is important to prevent possible sinus formation.

Outcomes of arthroscopic tennis elbow release

Currently studies that compare arthroscopic release for lateral epicondylitis with other treatment modalities are retrospective and non-randomised. Peart *et al* (2004) compared 29 arthroscopic releases with 46 open procedures.⁷ The overall post-operative outcomes were similar. However, for the arthroscopic group the time to return to work was 1.7 months compared with 2.5 months for the open group.

Szabo *et al* (2006) compared the open Nirschl procedure, percutaneous release and arthroscopic release for lateral epicondylitis.¹⁵ The mean follow-up was 48 months. There was no difference among the group for pre and post-operative Andrews–Carson elbow scores, visual analogue pain score, complication rate, recurrence or failure rates. 44% required treatment of intra-articular abnormalities, most commonly being a synovial plica. Of note, four patients underwent open on one side followed by arthroscopic release on the other and all were more satisfied with the arthroscopic procedure.

Owens *et al* performed arthroscopic release on 12 patients with a mean follow-up of 24 months.⁶ The patients' mean post-operative pain analogue score at rest was 0.58, for activities of daily living (ADL) was 1.58, and for work and sports was 3.25. 93% of patients reported feeling much better at 24 months. The mean time to unrestricted work in this military population was 6 days although the majority had desk jobs.

Figure 1 Outline of relevant anatomy and position of the instruments (reproduced with permission)

Figure 2 Defect in extensor carpi radialis brevis (arrow) (reproduced with permission)

In another study by Jerosch and Schunck (2006) 20 patients underwent arthroscopic release and were followed-up for a mean of 1.8 years.⁵ The Mayo function index increased from 5.2 to 10.9. It also reported a decrease in subjective pain scores from 5 to 0.5 at rest, 6.5 to 1 with ADL and 7.3 to 1.2 with sports and work. The mean time for return to work was 3.2 weeks.

Cohen and Romeo (2001) compared 15 arthroscopic releases with 15 open procedures.¹⁴ No difference in outcome was reported but the mean time for the arthroscopic group to return to work was 35 days and 66 days for open surgery. A similar trend of a more rapid return to work was shown by Stapleton and Baker (1996) but it also showed that the cost was 23% greater for arthroscopic surgery than for the open procedure and the tourniquet time was 3 times longer.¹⁵

Baker *et al* (2000) performed 42 arthroscopic procedures and reported a 95% improvement after 34 months' follow-up.⁴ In a further follow-up of 30 of these patients at a mean of 130 months, the average visual analogue pain score was 0 at rest, for ADL was 1 and for work and sports was 1.9.¹⁰ The mean functional score according to the Mayo Clinic index was 11.6 out of a possible 12 points. This study showed that the long-term results of arthroscopic release do not deteriorate with time.

Conclusion

Arthroscopic tennis elbow release has a high success rate similar to other operative treatments.¹¹ This technique allows access to the pathological lesion of the ERCB and ability to address any co-existent intra-articular pathology. The open technique would violate the extensor aponeurosis to gain intra-articular visualisation, which may contribute to post-operative morbidity. The percutaneous release lengthens the ERCB tendon but does not remove diseased tissue or treat any intra-articular abnormalities.¹⁵ The small incisions involved with the arthroscopic release and the intra-articular synovectomy may decrease post-operative pain. This would allow for early rehabilitation and a potentially better

outcome. This safe, reliable and reproducible technique has been shown to produce good short and long-term results with rapid return to pre-morbid activities and work.

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