Arthroscopic capsular release for contracture of the wrist - a new technique

Gregory I. Bain, MBBS, FRACS.
Rik Verhellen, MD, Orthopaedic Fellow.
Modbury Public Hospital, Adelaide, South Australia, Australia.
Royal Adelaide Hospital, Adelaide, South Australia, Australia.
University of Adelaide, Adelaide, South Australia, Australia.

INTRODUCTION

Following trauma or surgery to the wrist, stiffness of the wrist is common. Open radio-carpal and DRUJ capsular releases have been reported. Arthrosopic release has been successfully used for contracture of the knee, shoulder and elbow, but has not been reported in the wrist. Cadaveric studies have been performed to assess the safety of arthroscopic capsulotomy in the shoulder, but not in the wrist. The purposes of this paper are to:

1. To present a technique of arthroscopic capsular release of the wrist,
2. To assess the proximity of the neurovascular structures to the volar capsule.

ANATOMICAL STUDY

The distance of the neurovascular structures from the radio-carpal capsule joint was measured on 10 transverse MRI images and two cadaveric wrist transverse sections. The results are presented in Fig 1 and Table 1.

OPERATIVE TECHNIQUE

Surgical technique

A diagnostic radiocarpal and midcarpal arthroscopy and debridement was performed with the hand suspended using a 2.7 or 1.9mm scope. With the arthroscope in the 3-4 portal a hooked electrocautery probe was introduced from the 6R portal and advanced as far radially as possible. The ulno-triquetral and ulnocarpal ligaments were left intact (Fig 2). The cautery was used to cut the volar capsule and was withdrawn to the ulnar side. The electrocautery device was then switched to the 1-2 portal. The capsule was cut until extra-carpal fat and FCR tendon were visualised. The section of the volar capsule included the short and long radiolunate ligament complexes alone can prevent ulnar translation of the radius. Both patients were satisfied with the outcome and able to return to their previous occupations. There were no neuromuscular complications. There was no clinical or radiological evidence of carpal instability at 6 months following surgery (Fig 6).

CASES

Two patients were treated by arthroscopic capsular release for stiffness of the wrist refractory to conservative management. In both cases the restricted range of motion was due to capsular contracture. The measurements for pain (VAS 0-10), range of motion and grip strength are presented in Fig 3-5.

Class 1:
A 23-year-old man who had an excision of a large right lunatotriquetral ganglion cyst and bone grafting from the ipsilateral distal radius metaphysis. His post-operative management consisted of 6 weeks of cast followed by mobilisation. Despite intensive physiotherapy, the wrist remained stiff, 9 months after surgery.

Class 2:
The second patient was a 35-year-old woman who sustained an intra-articular distal radial fracture, which was treated by closed reduction and percutaneous K-wires. Five months following removal of the cast and extensive physiotherapy, the wrist remained stiff. Radiographs showed no intra-articular incongruity and no ulnar angulation of the radius. Both patients were satisfied with the outcome and able to return to their previous occupations. There were no neuromuscular complications. There was no clinical or radiological evidence of carpal instability at 6 months following surgery (Fig 6).

CONCLUSION

Arthroscopic capsular release is technically feasible, safe and provides a significant improvement in range of motion using a minimally invasive technique.

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References: