ARTHROSCOPIC SYNOVECTOMY OF THE ELBOW FOR RHEUMATOID ARTHRITIS

A PROSPECTIVE STUDY

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The short-term assessment of 14 arthroscopic synovectomies of the elbow in 11 patients with rheumatoid arthritis showed that 93% achieved a short-term rating of excellent or good on the Mayo Elbow Performance Score. At the most recent assessment at an average of 42 months, however, only 57% maintained excellent or good results; four had required total elbow replacement.

Although rehabilitation is facilitated by an arthroscopic procedure the results deteriorate more rapidly than after open synovectomy. This may be due to the limitations of the arthroscopic technique and is consistent with experience of the similar procedure in the knee. Recognition of the short-term gain and the potential for serious nerve injury should be considered when offering arthroscopic synovectomy.

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Involvement of the elbow will usually occur in 20% to 25% of patients with rheumatoid arthritis within five years of onset of the disease. While total elbow arthroplasty has been successful in providing pain relief and functional improvement in advanced disease, synovectomy has been the traditional treatment for earlier stages of involvement after conservative measures have failed.

Progress in the development of drugs which modify the disease and greater confidence with joint replacement have decreased the numbers requiring synovectomy. Arthroscopic techniques have been recommended although the potential for nerve injury is well recognised. There have been no reports dealing with the long-term risk and benefit of this procedure, and we therefore present our experience.

PATIENTS AND METHODS

Between 1988 and 1992, we performed 14 arthroscopic synovectomies of the elbow for rheumatoid arthritis in 11 consecutive patients. During this time, no synovectomy was performed by arthrotomy. There were three men and eight women. Nine patients were right-handed and two left-handed. The preoperative diagnoses included seropositive polyarticular rheumatoid arthritis in nine elbows, juvenile rheumatoid arthritis in three, and seronegative rheumatoid arthritis in two. The average duration of the disease was 8.6 years (1 to 15) with medical treatment undertaken for an average of 7.9 years (1 to 15). Only one patient with one affected elbow was on steroid treatment at the time of synovectomy. The average duration of elbow pain before operation was 29 months (3 months to 9 years). No patient had had previous surgery to the elbow.

For inclusion in the study all patients were required to be less than 65 years of age, to have a pain severity score of moderate or severe, an arc of flexion of at least 45° and radiological changes of Mayo grade III or less.

Operative technique. The technique of diagnostic arthroscopy has been described previously. The specific features of the debridement are shown and illustrated in Figure 1. The debriding instrument is a 4 mm reciprocating device with vacuum control to draw the tissue into its teeth. As each portal is established, extreme caution is necessary to avoid damage to the nearby vessels and nerves since the radial nerve may be only 2 mm from the capsule in some patients. An 18-gauge needle helps to determine the optimum site for the portal. The tip of the resector must be in view at all times and closed immediately if muscle fibres are seen.

When the operation is completed the neurovascular status is checked after which the patient is given an axillary block and placed in a continuous passive-motion machine. The block is discontinued after 48 hours. The patient is encouraged to move the joint and is discharged on the second or third day to carry on with daily activities. Physiotherapy is not given.

The patients were reviewed after three months and yearly
thereafter for complications and by the Mayo Elbow Performance Score (MEPS) which evaluates pain, motion and the activities of daily living. The final follow-up was defined by the last review performed or at the time of any subsequent surgery to the elbow. No patient was lost to follow-up.

RESULTS

The average time for follow-up was 42 months (24 months to 7 years).

Pain. All patients reported an improvement in pain, with ten elbows advancing by two grades. Before operation, pain had
been graded as moderate in 12 and severe in two elbows. After three months eight had none and six only mild pain. At the final follow-up only five elbows were painfree; four had mild, four moderate and one severe pain.

Movement. Before surgery the mean arc of flexion had been 91° (45 to 130) and of rotation 111° (40 to 160). After operation the arc of flexion averaged 98° (75 to 120) and rotation 120° (20 to 145). Flexion improved in six elbows, remained the same in seven and decreased in one. Rotation improved in four elbows, remained the same in eight and decreased in two.

Function. At the first postoperative visit the mean MEPS improved from 58 to 88 (65 to 95), with eight excellent, five good, one fair and no poor results. At the latest assessment the MEPS averaged 78 (45 to 95). Eight patients (eight elbows) had deteriorated and only 57% had maintained excellent or good results. The average time free from pain was 35 months (two months to seven years).

Complications. Transient neurapraxia of the ulnar and radial nerves occurred in one case each. In both, nerve function recovered completely by three months. No deep infection or problems with wound healing occurred. Four patients (four elbows) subsequently had total arthroplasty for pain.

DISCUSSION

The results of open synovectomy of the elbow for rheumatoid arthritis have been well described in several recent studies. 7,8,14-18 Most report that 90% of the patients achieve relief of pain for up to three years. The results, however, deteriorate with time with an overall success rate of 75% to 80% at five years 19 and of 67% at ten years. 20

Our experience with arthroscopic synovectomy has shown comparable short-term success, but the results tend to deteriorate rapidly. In one patient, initial improvement in pain lasted for only three months, after which the symptoms recurred necessitating total elbow arthroplasty. A recent comparative study of open versus arthroscopic synovectomy of the knee reported similar findings. 21 Pain had recurred in 73% of 37 knees treated arthroscopically at just over five years with freedom from symptoms for only 18 months. The difference in the duration of improvement compared with arthroscopy of the knee was highly significant (p < 0.01). Our joint results with the elbow are comparable.

Theoretically, a more complete synovectomy should be achieved arthroscopically with better visualisation of all compartments of the elbow, but a major disadvantage is the risk of neurovascular injury. In our series two cases of transient nerve palsy occurred although recovery was complete within three months. The senior author (BFM) is aware of three instances of direct nerve resection occurring at the time of elbow synovectomy. With increased experience and expertise the risks may be minimised, but there is marked individual variation in the distances of the nerves from the capsule, and in some instances the radial nerve is only 2 to 3 mm from the debriding instrument. 10,13,22

The surgeon must consider whether the shorter period of benefit observed after arthroscopic synovectomy is justified by the advantage of less morbidity and a shorter hospital stay, given the concern of potential nerve injury. Currently, we perform arthroscopic synovectomy if the patient is under 50 years of age with more than 90° of movement and radiological changes of grade III or less, after six months of treatment with anti-inflammatory agents have failed.

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REFERENCES