ARTHROSCOPIC RESECTION OF DORSAL WRIST GANGLIA AND TREATMENT OF RECURRENCES

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From 1995 to 1998, 30 patients with dorsal wrist ganglia and four with recurrent dorsal ganglia underwent arthroscopic resection. At a mean follow-up of 16 months, no complications were seen, but minimal pain persisted in three patients. Two recurrences were seen after arthroscopic resection of primary ganglia.

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The arthroscopic resection of dorsal ganglia of the wrist is a new technique which was first described by Osterman and Raphael (1995). We describe our experience of arthroscopic resection of both primary and recurrent dorsal ganglia of the wrist.

PATIENTS AND METHODS

From 1995 to 1998, 43 patients underwent arthroscopic resection of dorsal ganglia of the wrist at our two centres. Nine wrists were converted to open surgery and excluded from the present study. Therefore, 34 patients (24 women and ten men; 32 right and two left handed) underwent arthroscopic resection, 15 on the right and 19 on the left wrist. Three of the patients had recurrences after open surgery and one had a recurrence after earlier arthroscopic treatment.

Pain, grip strength, wrist motion and appearance of the ganglion were assessed pre- and postoperatively. Return to daily activities, return to work and patient satisfaction were also included in the postoperative assessment.

Technique

The wrist arthroscopy was done using the technique suggested by Osterman and Raphael (1995).

Distraction was applied by finger traps attached to the index, middle and ring fingers and countertraction of 3–4 kg at the arm. Axillary block or general anaesthesia was used with a tourniquet to allow good visualization of the joint.

Two portals were used as standard access to the radiocarpal joint. A 1.9 mm or 2.7 mm arthroscope was firstly placed in the 3-4 portal to examine the joint overall. Frequently, this portal did not permit clear visualization of the ganglion stalk and dorsal capsule, and therefore it was necessary to move the arthroscope to the 4-5, 1-2 or 6-R portals. Once the scapholunate ligament was localized, the arthroscope was then directed dorsally to visualize the ganglion or its stalk. Osterman and Raphael (1995) reported that the stalk of the ganglion was identified arthroscopically in 61% of patients and we identified it in 79% of cases. The probe was then introduced through the 3-4 portal to palpate the scapholunate ligament and dorsal capsule to determine the consistency of the ligament and the stalk of the ganglion. Osterman and Raphael (1995) suggested introducing an 18-gauge needle into the ganglion and through the stalk, but we did not use this technique. A 2.0 mm or 2.9 mm full-radius shaver or end cutting resector was used to excise a 1 cm diameter area of the dorsal capsule and the stalk. The capsular resection was halted when the extensor tendons were visualized and care was taken not to damage them. Sometimes an intraligamentous ganglion was found and resected, taking care not to damage the scapholunate ligament. On occasion, midcarpal joint arthroscopy through the radial and ulnar midcarpal portals was necessary to localize the ganglion and identify its stalk. When there was doubt about the complete arthroscopic resection of the ganglion, we converted to an open procedure.

Arthroscopic treatment of recurrent ganglia after open surgery was more difficult as thick scar was usually found in the dorsal space between the scapholunate ligament and the capsule. This scar might also be responsible for wrist stiffness and was an indication for arthroscopic arthrolysis. During arthrolysis with the full-radius resector, the dorsal capsule was excised more extensively than normally (1.5 cm diameter) and the ganglion stalk was resected. Great care was taken to not damage the extensor tendons or other structures that might be adherent to the scar. Arthroscopic resection of a ganglion recurrence after arthroscopy followed the same steps but was less difficult as there was less scarring.

At the end of the procedure, the portals were closed by a single stitch or steri-strip, and we occasionally left them open to allow drainage of the fluid. It was not necessary to rest the wrist on a palmar splint, although we did so in the treatment of recurrences after open surgery when an extensive arthrolysis was required. The patients followed a rehabilitation protocol that included mobilization of the wrist twice a day and the splint was removed after 1 week. Physiotherapy was then continued for 2 weeks more. The patient was advised to avoid strenuous work for at least 3 weeks after arthroscopy.

RESULTS

Preoperative clinical data of cases with primary dorsal wrist ganglia showed presence of pain in 29 of the 30 cases, decreased wrist movements in 11 and decreased grip strength in two. All patients with recurrences had wrist pain, but decrease of both wrist movements and grip strength was present in three. Only one ganglion was occult and not immediately obvious.

At arthroscopy, demonstration of the ganglion stalk was possible only in 27 cases. In two cases a small ganglion was found intraarticularly. In the other cases the ganglion and stalk were not visible. All the ganglia arose from the dorsal portion of the scapholunate ligament but in five cases the ganglion was not found through the radiocarpal joint and therefore midcarpal joint arthroscopy was performed. In one of these cases, the ganglion was small and arose from the midcarpal joint. Tourniquet time for arthroscopic surgery had a mean duration of 33 minutes (range, 20–50): in cases of recurrences the mean time was 41 minutes (range, 15–50).

Thirty-four patients were evaluated with a mean follow-up of 16 months (range, 1–35), using the same protocol for both centres (Tables 1 and 2). No complications were demonstrated, but in eight cases a dorsal swelling due to the arthroscopy liquid was noted during the first postoperative visit and was aspirated. Two ganglia recurred, one of which was again treated by arthroscopy, which was successful. The second recurrence only caused minimal pain and further treatment was declined. Three patients with a relatively short follow-up had persistant minimal pain. The patients with recurrent ganglia experienced postoperative pain for a longer period.

All the patients were satisfied with the exception of the one with the recurrence who refused re-operation.

Table 1—Results of arthroscopic treatment of primary dorsal wrist ganglia in 30 patients

		Mean (SD)	*Range*
Age	(years)	29 (9)	13–51
Duration of ganglion	(months)	23 (34)	1–120
Preop. wrist flexion	(degrees)	69 (7)	55–80
Preop. wrist extension	(degrees)	68 (7)	50–80
Preop. grip strength	(kg)	22 (8)	12–41
Tourniquet time	(minutes)	33 (8)	20–50
Follow-up	(months)	17 (9)	1–33
Postop. wrist flexion	(degrees)	68 (8)	51–85
Postop. wrist extension	(degrees)	67 (8)	50–80
Postop. grip strength	(kg)	22 (8)	13–42
Return to ADL	(days)	8 (5)	3–20
Return to work	(days)	16 (13)	3–60

Table 2—Results of arthroscopic treatment of recurrent dorsal wrist ganglia in four patients

		Mean (SD)	*Range*
Age	(years)	31 (12)	20–52
Preop. wrist flexion	(degrees)	55 (11)	40–70
Preop. wrist extension	(degrees)	65 (9)	60–80
Preop. grip strength	(kg)	22 (12)	11–42
Tourniquet time	(months)	41 (15)	15–50
Follow-up	(months)	10 (15)	1–35
Postop. wrist flexion	(degrees)	60 (12)	40–70
Postop. wrist extension	(degrees)	70 (6)	65–80
Postop. grip strength	(kg)	22 (13)	11–43
Return to ADL	(days)	8 (2)	6–10
Return to work	(days)	20 (10)	10–30

DISCUSSION

The arthroscopic treatment of a dorsal wrist ganglion is a good alternative to open surgery (Fontes, 1997; Geissler, 1998; Osterman and Raphael, 1995; Pederzini et al., 1995). However, it is a difficult procedure and adequate experience in basic arthroscopy of the wrist is recommended as several portals may have to be used. Dorsal ganglia of the wrist usually originate from the dorsal portion of the scapholunate ligament (Angelides and Wallace, 1976), at or just distal to the dorsal folds of the radiocarpal capsule (Fontes, 1997). In our series, the stalk was observed at this site 27 of the 34 cases, and small ganglia were occasionally only visible through the midcarpal joint. When the stalk of the ganglion cannot be seen, we recommend that the capsule is debrided at the normal site of origin of the stalk. Since the stalk cannot be seen, it is advisable to remove the tissue at the base of the ganglion en bloc (Osterman and Raphael, 1995).

In case of difficulty, arthroscopy was abandoned and open surgery was performed. In our study, nine of 43 cases required conversion to an open procedure and it is thus important to warn the patient of the possible need for open surgery.

Our results are similar to those reported previously (Table 3). Complications after open surgery are rare, but scaphoid subluxation (Crawford and Taleisnik, 1983) and chronic scapholunate instability due to ligament injury (Duncan and Lewis, 1988) have been reported. Wrist stiffness due to capsuloplasty or prolonged immobilization may also occur. Other complications include hypertrophic scarring, painful neuroma and infection; none of these occurred in our series of arthroscopic resections. However, in eight cases there was persistent swelling at the site of the ganglion at the first postoperative visit. We attributed this to retained irrigation fluid within the ganglion sac. This can be prevented by using a drain through the wrist portals as suggested by Fontes (1997) or remedied by simple aspiration.

Table 3—Results of arthroscopic resection of ganglia

	Pederzini et al. (1995)	*Osterman and Raphael (1995)*	*Fontes (1997)*	*Present study (2000)*
P Cases (*n*)	7	18	32	34
R Pain (%)	Yes	66	63	97
E Swelling (%)	100	75	75	91
O Grip strength (%)	Reduced	44	nr	85
P Wrist motion (%)	Reduced	55	nr	59
P Follow-up (months)	12	16	18	16
O Pain (%)	0	0	Improved	9
S Grip strength (%)	Normalized	71	Improved	94
T Wrist motion (%)	Improved	82	Improved	100
O Return to work (days)	20	24	nr	15
P Recurrence	1	0	1	2

nr = not reported.

Recurrence after open surgery is reported to be 10 to 40% (Angelides and Wallace, 1976), whereas recurrence after arthroscopic resection appears to be lower. Osterman and Raphael (1995) did not report any recurrences in 18 cases, and Pederzini et al. (1995) and Fontes (1997) each had only one recurrence in 14 and 32 cases, respectively. In our study, two of 34 patients had a recurrence of the ganglion.

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