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Arthroscopic resection of wrist ganglia: About 30 cases

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ABSTRACT

Introduction: The synovial wrist ganglion is a particularly common pathology of which the first "complication" is recidivism. The main objective of our study was to determine the rate of recurrence of this pathology in a series of arthroscopic patients. The secondary objective was to assess patient satisfaction well after the operation.
Material and methods: Our study was observational and retrospective and involved 30 patients (17 dorsal and 13 palmar cases) aged 41 years on average. The patients underwent an arthroscopic procedure for a palmar or dorsal ganglion of the wrist between March 2007 and April 2013. The data were collected by re-reading the files and conducting telephone interviews. Each patient answered a questionnaire about the operation, after-treatment, and their satisfaction well after the surgery. At the end of the interview, we calculated the Patient Rated Wrist Evaluation (PRWE) score.
Results: The mean follow-up was 4.6 years. A recurrence was noted in 4 (13%) cases, at an average delay of 9 months (6 months–1 year). There were only 2 patients (6.7%) that experienced the complication of complex regional pain syndrome type 1. Twenty-eight (93%) patients experienced improvement in postoperative pain. For 27 (90%) patients, firm-handed activities could be practised without limitation. The average time to resumption of activities of daily living was 27.1 days (1–240 days), resumption of firm-handed activities was 56 days (15–360 days), and return to work was 47.5 days (1–360 days). The mean PRWE score was 6.9/50 (0–34) for pain and 1.38/50 (0–8) for function.
Conclusion: The 13% recurrence rate is on the average of what is observed in the literature. Later satisfaction with the intervention is very good, and complications remain rare.Studies tend to show a lower rate of complications and recurrence following arthroscopic treatment, but to date, no randomized comparative series between the two methods has yet revealed any significant difference in these two points. A study of this type on a large scale could make it possible to highlight one of these treatment approaches.

1. Objectives

Ganglia account for 60–70% of wrist tumours. Despite their frequency, wrist ganglia do not yet have a precise definition. Indeed, these so-called synovial ganglia are benign tumours, the origin of which is articular[1,2] or myxoid degeneration,[3] often developing within the dorsal scapho-lunar complex.[4] The spontaneous evolution of the ganglion is regression, potentially followed by new phases of appearance and regression of swelling. Therefore, the therapeutic abstention of a symptomatic tumour without risk of malignant evolution is quite admissible. Medical treatment should be attempted before considering surgery. The aspiration of the ganglion followed by an injection of corticoids remains the most common solution, with a recurrence rate of 61%.[5] Recurrence remains the main complication of these ganglia whatever the treatment chosen. Surgical treatment has become increasingly popular as a treatment option since the work of Angelides and Wallace.[2] Indeed, the rate of recurrence, initially close to 40%, has significantly decreased since the excision of the capsule was added to that of the ganglion and the collar. Within the surgical treatment, two techniques compete, namely, open surgery and arthroscopic excision.

The objective of our study is to determine the recurrence rate of the ganglion in our series of patients who underwent arthroscopy by two surgeons accustomed to this technique. The secondary goal is to assess patient satisfaction following this surgery.

2. Material and methods

Our study was observational and retrospective, involving 30

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patients who underwent surgery between March 2007 and April 2013 in the same centre. The inclusion criteria were as follows: treatment of dorsal or palmar ganglia using an arthroscopic technique, minimum follow-up of two years, and surgical revision of a recurrence. The exclusion criteria were as follows: radio or medio-carpal osteoarthritis, history of distal radius fracture, intracarpal ligamentous lesion, and surgery associated with the ganglion. We evaluated the recurrence rate of wrist ganglia after arthroscopic treatment with a follow-up greater than 2 years, regardless of the size of the recurrent ganglion. The evaluation was performed using the computerized patient record and a standardized telephone questionnaire. The satisfaction of each patient was also evaluated, as was the Patient Rated Wrist Evaluation (PRWE) score for the functional aspect.

All interventions were performed by two orthopaedic upper limb surgeons. The surgical technique was the same in all cases, following a precise and reproducible pattern. Locoregional anaesthesia was administered. The patient was supine with a tourniquet placed at the root of the limb. The wrist was pulled at 2.5 kg on a Legre distractor. Two surgical approaches were then realized. For the dorsal ganglia, radio-carpal and mid-carpal paths were followed by a trans-cystic approach. An evaluation of the scapholunar stability was done thanks to the mid-carpal approach. For the palmar ganglia, a 3/4 optical approach for the arthroscope was associated with a 1/2 approach. It was sometimes difficult to locate the ganglion arthroscopically, but several simple methods were used to facilitate this task. Manual pressure on the swelling allowed the capsule to bulge. Sometimes, the simple puncture of the ganglion made it possible to verify its position by regression of an intra-articular bulge. Other authors, such as Dumontier et al.[6] or Ahsan and Yao,[7] injected methylene blue into the ganglion, and the localization was confirmed when the blue spread throughout the joint. Osterman and Raphael[8] and Mathoulin preferred to locate the ganglion using needles introduced in a trans-cystic manner.

The ganglion was then evacuated endoarticularly. A capsulectomy was systematically performed on 1 to 2 square cm using a shaver. The main risks were dorsal extensor lesions and flexor pollicis longus, flexor carpi radialis, and radial arthery lesions for palmar ones.

3. Results

3.1. Epidemiology

The average follow-up was 4.6 years. Thrity patients were contacted by telephone, over a total of 44 operated on the study period. Out of a total of 30 patientsover 44, 25 (83%) patients were women. The average age of this population was 41 years. Nine (30%) of them performed "heavy manual" work, 13 (43%) "light manual" work, 7 (23%) "non-manual" work, and one (3%) did not work. Ten patients (33%) practised a firm-handed hobby versus 20 (67%) who did not, and six (20%) patients practised a firm-handed sport, whereas 24 (80%) did not.

3.2. Surgery

One case out of 30 (3%) underwent a surgical revision of a previous ganglion at the same location. The surgery involved the right wrist in 17 cases (57%) versus 13 on the left side (43%). The intervention was located on the dominant side in 21 cases (70%). In 17 cases (57%), the ganglion was located dorsally, and in 13 cases (43%), the ganglion was located on the palmar aspect. At each intervention, a capsulectomy was associated with the ganglionectomy.

3.3. Postoperative

A removable splint was prescribed and worn for 22.6 days on average (0–90 days). Six (20%) patients received physiotherapy sessions. Regarding complications, no superficial or deep infection was noted, nor any tendon lesion. Two (6.7%) complications were identified, namely, two cases of complex regional pain syndrome type 1 (CRPS1) with a symptom duration of 1 and 3 years, respectively.

3.4. Telephone survey

The motivation for the intervention was overwhelming pain in 24 cases (80%), aesthetic discomfort in one case (3%), and both pain and aesthetic discomfort in 5 cases (17%). Regarding the main criterion of this study, namely, recurrence, we noted 4 (13%) cases (3 dorsal ganglia, one palmar): two smaller ganglia appeared at 6 months and one year, and an identical ganglion occurred at 6 months and a larger one at 1 year. Two of them were confirmed clinically but the patients did not ask for an operation. All patients experienced an improvement in postoperative pain except for two (7%) cases corresponding to the two patients who suffered from CRPS1. Twenty-four patients (80%) were very satisfied with the aesthetic result, and 6 (20%) patients were just satisfied. Twenty-eight patients (93%) would recommend this procedure to others, as opposed to two who would not; one patient suffered from CRPS1, and the other patient experienced recurrence. In 27 cases (90%), manual or sporting firm-handed activities could be practised without limitations; however, 2 patients experienced a loss in skill level, and one patient (CRPS1) could not practice again. Patients performed a subjective assessment of wrist strength as a percentage: 21 (70%) indicated a score of 100%, and for the remaining 9 patients, the average was 79% (50–90%). The average time to resume activities was as follows:

- 27.1 days (1–240) for activities of daily living
- 56 days (15–360 days) for the resumption of activities with strength or sport
- 47.5 days (1–360 days) for returning to work

Finally, the PRWE score was calculated for each patient, and the results were as follows: pain score of 6.9/50 and function score of 1.38/50.

4. Discussion

4.1. Materials and methods

Our series remains relatively restricted, which implies a lack of power. The completion of a retrospective study is also responsible for a decrease in power. Patients were not reviewed clinically but were questioned by phone after at least two years of follow-up, so we only have subjective informations about range of motions or grip strength for example.

4.2. Results

Recidivism remains the main "complication" of so-called synovial ganglia of the wrist. The work of Angelides and Wallace[2] made it possible to introduce capsular resection to surgical treatment, thereby lowering the rate of recurrence.

This remains very variable according to the series as seen in Table 1, which lists several series of arthroscopic resections of wrist ganglia, palmar or dorsal. It is difficult to explain the reason for the discrepancies between the different series. To date, no study has clearly identified risk factors for recidivism, even if certain "leads" emerged. Kim et al.[9] in 2013 searched for factors influencing recidivism in a large series of 115 dorsal ganglia, but no conclusions were determined as results were not significant.

In our study, this rate at 13% is within the average of the observed results.

The recidivism period was an average of 9 months, which is quite early and corresponds to what can be found in the literature. With

Table 1
Arthroscopic resection of wrist ganglia: literature review.

Study	Number of ganlia (localization)	Recidivism (%)/Follow-up	Return to work (days)	Complications (%)
Our study 2018	30 (dorsal/palmar)	13	47.5	6.7
Fernandes 2017[14]	34 (dorsal)	3/ > 48	NC	3
Head 2015 (meta-analysis)[10]	512 (dorsal/palmar)	6/NC	NC	4 (221 evaluated)
Fernandes 2014 (meta-analysis)[12]	232 (palmar)	6/NC	NC	6.9
Kim 2013[11]	115 (dorsal)	11/32	NC	NC
Aslani 2012[15]	52 (dorsal)	17.3/39.2	14	NC
Gallego 2010[16]	114 (dorsal)	12.3/ > 24	11	5,3
Chassat 2006[11]	54 (dorsal)	29.7/28	8,8	3,7
Rocchi 2006[17]	47 (dorsal/palmar)	4.2/15	NC	8,5
Ho 2006[18]	16 (palmar)	12.5%	NC	NC
Mathoulin 2004[19]	128 (96 dorsal, 32 palmar)	Dorsal: 4.2/34, Palmar: 0/26	NC	NC
Rizzo 2004[20]	41 (dorsal)	4.9/47.8	NC	0 serious complications

respect to the open surgical treatment of these ganglia, and referring to a recent meta-analysis[10] of 12 studies involving 809 ganglia, the average recurrence rate was 21%, which was higher than most figures concerning arthroscopic treatment. Very few authors have compared the two surgical techniques in the same population.

In 2008, Kang et al.[11] published a prospective randomized study involving 72 patients; 41 patients received arthroscopy, and 31 patients had open surgery. No significant difference could be found between the two groups regarding recidivism.

The operative sequences of arthroscopic or open surgery resections of wrist ganglia were generally fairly simple. In our series, we noted two complications (6.7%) inherent in surgery; that is, two cases of CRPS1 responsible for persistent symptoms until 1 and 3 years postoperatively, respectively. The review of the literature concerning arthroscopic management showed similar rates. Potential complications were infection, haematoma, tendon injury, lesions or neurapraxia of the sensitive branches of the radial nerve or even the median nerve.[12,13] In the meta-analysis of Head et al., a complication rate of 4% under arthroscopy versus 14% in the open procedure was observed. Again, no single population study could show a significant difference in the complication rate between the two techniques.

4.3. Satisfaction/functional scores

In our series, 29 out of 30 patients had preoperative pain.

The results of the questionnaire showed particularly high satisfaction concerning the improvement of the pain, and only the patients who presented a complication were not relieved.

In terms of aesthetics, patients were very satisfied or satisfied; arthroscopy has the advantage of resulting in only two scars 2 mm in length, described as "almost invisible" by the majority of patients.

One of the most revealing elements of a patient's satisfaction following an intervention remains the answer to the question "Would you advise this intervention to a member of your entourage?". In this series, 93% of patients responded positively. Again, only patients who had a complication responded negatively.

Finally, recovery of activities of daily life and work occurred rather late compared to those in the data from the literature; this finding can be explained by the postoperative instructions for wearing a removable splint as an analgesic and to promote capsular healing. On the other hand, the duration of resumption of activities was significantly increased because of the CRPS1 present in two patients.

In the end, the results of the PRWE questionnaire, in which the patient evaluates his wrist, are very satisfactory with very low figures showing that residual pain is uncommon, with a very low rate of limitation of activity in daily, recreational, or professional life.

5. Conclusion

The so-called synovial ganglia of the wrist are a very common benign pathology, but its physiopathology still remains controversial (articular? Myxoid degeneration?)

Their treatments are varied, and some still have their place as a waiting solution in the context of symptomatic ganglia, especially aspiration.

When medical treatment is a failure, surgery is proposed, and the question then arises concerning the options of arthroscopic or open surgery approaches. Studies tend to show a lower rate of complications and recurrence following arthroscopic treatment, but to date, no randomized prospective comparative series between the two methods has shown a significant difference in these two points. A study of this type on a large scale could possibly make it possible to highlight one of these treatment approaches.

Declaration on interests

None.

Author declaration

All authors declare that they do not have any conflict of interest.

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