Surgery for wrist ganglia: one-hundred and twenty-two patients reviewed 8 years after operation

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Abstract

Wrist ganglia give few symptoms, but are a common reason for referral to a hand surgeon. We studied patient long-term satisfaction after operation. We reviewed 122 patients, who were operated for dorsal (n=82) and volar (n=40) wrist ganglia 8 years before (range 3-11). Three radial arteries were injured during surgery for volar a ganglion. By the time of review 33 patients (27%) had a recurrence or had been re-operated. Radical surgery did not reduce the recurrence rate significantly. Reported general complaints from the wrist improved from a mean visual analogue scores (VAS, 0=best; 100= worst) of 56 before surgery to VAS 14 at review and unsightliness from VAS 50 to VAS 14. Patients were equally happy with transverse and longitudinal scars. Ten patients (8%) stated that they would not have consented to surgery if they had known the outcome in advance. We conclude that, in spite of a high recurrence rate, most patients are happy with the results of surgery.

Introduction

Ganglia of the wrist are a frequent reason for referral to the hand surgery outpatient clinic. In our experience, these patients usually have only cosmetic or minor physical symptoms that may be ascribed to the ganglion. We have been unsure whether patients are happy to exchange a preoperative bump with postoperative scar, and whether their slight physical complaints improve notably after surgery. For this reason we have reviewed a series of operated patients.

At surgery our policy is to remove the ganglion, the duct and also a portion of the joint capsule.[1,2] For various anatomical and surgeon-related reasons this was not always done. This offers an opportunity also to assess the recurrence rate when less radical procedures have been performed.

The purpose of this review is therefore to evaluate long-term patient satisfaction with the results of surgery for ganglia of the wrist and also the recurrence rate after various modifications of the operative procedure.

Materials and Methods

Our department operated 251 ganglia of the hand and wrist during an eight year period. We have previously reported on those patients who were operated for ganglia of the flexor tendon sheath.[3] A questionnaire was now sent by post to all the 160 patients who had been operated for wrist ganglia. The time between operation and mailing was 8 (range: 3-11) years. The questionnaire inquired about any postoperative complications, recurrences, re-operations, and whether they would have consented to the operation if they had known the outcome in advance. They were also asked to note on visual analogue lines their general complaints with the wrist before surgery, pain in the wrist and general complaints with the wrist during the last week before receiving the questionnaire, and general satisfaction with the results of the operation. The visual analogue recordings were converted to scores (VAS) ranging from 0 (best) to 100 (worst). One reminder with a new questionnaire and stamped return envelope was sent after eight weeks to those who had not replied. Two patients had died and one had moved abroad. Replies were received from 122 patients (76%) operated for 40 volar ganglia and 82 dorsal ganglia. Five were for dorsal ganglia that had recurred after previous surgery. In 49 cases information was missing on the returned questionnaire. These patients were contacted by telephone in order to obtain the missing data. In these cases the patients were asked, when appropriate, to give VAS scores between 0 and 10 and their responses were multiplied by 10 to conform to the other VAS scores. All 40 patients who stated that they would not have consented to surgery had they known the outcome in advance or who gave a VAS score of 15 or worse were asked to return for a clinical review. Of these, 27 were reviewed in person and 6 by telephone, while 7 could not be reached.

Results

Three quarters of the patients were women and two thirds of the ganglia were dorsal (Table 1). There were no intra-operative complications during surgery for dorsal ganglia, but three injuries to the radial artery during operation for volar ganglia. In two cases the artery was micro-surgically repaired and in one case it was ligated. Two of these patients were completely happy with the results of the operation at review, and the third had complaints that could not be ascribed to the ganglion, surgery, or arterial injury.

Patients were mainly happy with the results (Table 1). There was no indication that they preferred transverse to longitudinal scars (Table 2); 20 (17%) felt that the wrist was stiffer than before surgery, while 98 did not. Thirty-six patients who had been operated for ganglia of the dominant hand (11 volar and 25 dorsal) stated that before surgery they had tired easily when writing. This was reportedly improved after surgery in 28, unchanged in 6 and worse in 2.

There were 33 recurrences (Table 1). In two cases the recurrent ganglion disappeared spontaneously and in one case after aspiration. Ten of the remainder were re-operated while 20 felt that this was unnecessary. Only 3 of the 33 patients with recurrences stated that they would not have undertaken the index operation if they had known the outcome in advance. The 20 patients who still had a ganglion at review gave a mean VAS score for remembered general complaints with the wrist before surgery of 61 (SD 19) and for general complaints with the wrist during the last week before review of 23 (SD 17).

There was no indication that a liberal resection of the joint capsule reduced the frequency of recurrence (Table 3). However, only three of the 16 patients who had been operated by a hand surgeon according to our stated policy of removing a cuff of capsule around the pedicle's entry into the joint capsule had a recurrence.

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There were recurrences in 9 of the 22 who were operated in this way by general orthopedic surgeons or orthopedic surgeons in training (P<0.2). Fourty patients had either stated on the questionnaire that they would not have consented to surgery had they known the outcome in advance (n=10) or given a VAS score of 15 or worse for either pain in the wrist (n=22), general complaints from the wrist (n=34), or general satisfaction with the results of the operation (n=32). No further information was available for one patient. In the others the dissatisfaction was due to recurrence of the ganglion in 23 cases and due to a sensitive or ugly scar in eight. One patient complained of cold sensitivity and reduced sensibility of the fingers. Seven patients had various complaints in the extremity that were unlikely to be related to the ganglion or the surgery.

Discussion

Although the etiology of ganglia is unknown, many authors recommend excision of the ganglion and stem and also a cuff of the joint capsule,[1,2,4] as it has been found that the area of capsule near the attachment of the duct may contain small nascent ganglia.[4,5] The recurrence rate when this is done is variable but seems, on the whole, to be lower than when only the ganglion and stem are excised.[4,6-16] There are long-term studies that indicate that around half of wrist ganglia have disappeared spontaneously after 5 to 10 years.[4,13-15] The time between surgery and evaluation is therefore important when comparing recurrence rates between studies.

Although it is our policy to excise a brim of joint capsule adjacent to the insertion of the duct,[1] many of our patients were operated by general or inexperienced orthopedic surgeons who did not do this. This may be one reason for the high recurrence rate among our patients. Over one quarter of our patients had a ganglion at review 8 years after surgery or had been re-operated. Like some others,[10,13] we found a non-significant trend for better results among those who had been operated with joint capsule resection by a hand surgeon. Janzon and Niechajev,[11] however, found that being operated by an experienced surgeon did not improve the recurrence rate.

We were not able to confirm the lower recurrence rate when a radical excision is performed. Varley *et al.*[17] reported a 66% recurrence rate when aspirating ganglia and reported that this was only negligibly improved by repeating the aspiration in unsuccessful cases. They suggested that the results of treatment to a large extent may depend on the characteristics of the ganglion.

Text-books recommend transverse incisions for cosmetic reasons for dorsal ganglia and it has been reported that volar longitudinal scars become significantly wider than transverse scars.[1,2,4,10] Our patients were equally happy with both types of scar and we feel that the direction of the incision may be left up to the surgeon.

Injury to the radial artery is the most common major complication of surgery for volar wrist ganglia. Aydin *et al.*[18] reported on 40 volar ganglia and found them attached to the radial artery in 26 cases. The prevalence of injury has been reported to lie between 1% and 16%.[9,14,16,18,19] Maw and Renaut reported a pseudo-aneurism of he radial artery after ganglion surgery.[19] Few patients, like in the present series, seem to have long-term complaints because of this and some report that they routinely tie the artery off when it is deemed necessary for technical reasons.[8] Lister and Smith reported that retaining the portion of the ganglion wall that was attached to the artery reduced the danger of injury to the artery.[20] Also arthroscopic resection reduces the risk of arterial injury.[16] We feel that, while dorsal ganglia may be operated in local anesthesia, it seems prudent to operate volar ganglia under tourniquet control in regional or general anesthesia. Seventeen percent of our patients reported that the wrist at review was stiffer than normal. This is a common finding, although not in quite as high a proportion of patients as in our study.[14,15,18,21] As we did not review most of these patients in person, we can not verify this complaint objectively. Clay

Table 1. Mean (standard deviation) demographic data and visual analogue scores (VAS) before operation and at review.

Data	Dorsal ganglia	Volar ganglia
Number of patients	82	40
Women	77%	73%
Age at operation	34 (14)	40(18)
Pre-operative general wrist complaints (VAS)	57 (22)	55 (26)
General wrist complaints at review (VAS)	14 (21)	13 (22)
Pre-operative unsightliness (VAS)	53 (30)	44 (34)
Unsightliness at review (VAS)	15 (21)	13 (23)
Pain at review (VAS)	11 (21)	9 (22)
General satisfaction with operation (VAS)	17 (29)	12 (22)
Recurrences	25 (30%)	8 (20%)
Regretted operation	7 (9%)	3 (8%)

VAS: 0= best; 100=worst. Regretted operation: those who answered that they would not have consented to the operation if they had known the outcome in advance.

Table 2. Patients' mean (SD) visual analogue scores (VAS) recording for unsightliness depending on incision (n=number of patients).

	Dorsal ganglia		Volar ganglia		All ganglia	
	n.	VAS	n.	VAS	n.	VAS
Longitudinal	29	14 (23)	29	10 (21)	58	12 (22)
Transverse	50	15 (19)	6	2 (4)	56	14 (19)

Table 3. Recurrence rate depending on operative details (n=number of patients).

Operative detail	n.	Recurrences	%
Only ganglion resected	14	3	21
Part resection of duct, left open	31	8	26
Part resection of duct; ligated	9	4	44
Capsule left open	56	19	34
Capsule cuff removed	39	13	33
No cuff removed	17	4	24
Capsule closed	8	2	25
Resection through duct	39	12	31
Resection with capsule	64	21	33
Hand surgeon	25	5	20
Not hand surgeon	39	14	36

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and Clement could only confirm significantly reduced grip strength in one out of nine patients who reported this after operation for a wrist ganglion.[6]

It is striking that only 10 of our 33 patients with recurrence of the ganglion required re-operation. Most find that one third or less of patients with recurrence is re-operated.[8-10,21,22] It is interesting to note that most patients with recurrences after aspiration of the ganglion also do not want an operation.[18,21,23,24] This may indicate that aspiration of ganglia is a rational policy in spite of the high frequency of recurrence.[17,21,23-25] Many patients with wrist ganglia seek advice because they fear malignancy and may be reassured by the ganglion disappearing after aspiration, even if it subsequently recurs.[17,24,26]

In spite of not very satisfactory results on objective evaluation, our patients on the whole were happy with the outcome. This is a common finding,[6-8,15] but may not entirely be due to the treatment received. Dias and Buch reported on 155 patients with volar wrist ganglia who had been followed prospectively.[14] Mean patient satisfaction was 83% at final review after five years for both those who had been operated and those who had been treated with aspiration. It was 88% among those who had simply received information and reassurance. There was no significant difference in reported pain, weakness or stiffness between the three groups, but those who had only received reassurance felt that the wrist was significantly more unsightly. In a similar report on 236 dorsal ganglia,[15] patient satisfaction after six years was 83% after excision, 81% after aspiration and 53% after reassurance. Pain was reported by 76% initially, but had fallen to 28% at review, with no difference between the three treatment groups.

Conclusions

We conclude that, even if our recurrence rate is higher than expected, patients are mainly happy with the outcome. Few of them regret having consented to surgery. A review of the literature, however, indicates that a similar degree of patient satisfaction and a lower number of surgeries might be achieved by initially aspirating the ganglia.

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