

## Surgery for ganglia of the flexor tendon sheath

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### Abstract

There are very few reports in the literature on the results of surgery for ganglia of the flexor tendon sheaths of the digits. We reviewed 24 patients operated for flexor tendon sheath ganglia 8 (3-11) years previously. Two operations were for recurrences and one of these recurred again. There was one permanent digital nerve injury and one patient complained of cold sensibility. VAS (0=best; 100=worst) for mean general complaints from the hand was remembered as 51 before surgery and was 5 at review. Mean pain at review was reported as VAS 4 and general satisfaction with the operation as VAS 3. All stated that they would have consented to surgery if they had known the outcome in advance. We conclude that the results of surgery are good, although complications do occur.

### Introduction

Ganglia of the flexor tendon sheaths to the fingers (sesamoid synovial ganglia, fibrous flexor sheath ganglia, volar retinacular ganglia) present as small, hard, tender tumours on the volar aspect of the metacarpo-phalangeal joint or of the proximal phalanx. The third ray is most often affected.<sup>1,3</sup> They are hard to see, but easy to palpate and easily diagnosed as they do not move with the tendons. The aetiology is unknown. They are unlikely to be herniations of the flexor sheath synovium as they have no synovial lining.<sup>4</sup> McDowell (quoted by Angelides and Wallace) found a valve-like structure between the sheath and the ganglion similar to that found in ganglia of the wrist.<sup>5</sup> Treatment is either percutaneous by simple aspiration of the gelatinous contents or laceration of the cyst with the needle tip,<sup>3,6-10</sup> or surgical excision together with a cuff of the tendon sheath.<sup>2,3,11</sup> This area of the sheath has been found to contain microscopic cysts that it is thought may develop into symptomatic ganglia if not removed.<sup>2,4</sup> Our department operated a total of 251 ganglia of the hand and wrist during an eight year period. A total of 28 (11%)

were of the flexor tendon sheaths to the fingers. Surgery was performed in a bloodless field under local anaesthesia and consisted of removal of the ganglion together with a small square of the tendon sheath.<sup>12</sup> While the results of aspiration of these ganglia are well documented, there are fewer reports on the results of surgery. The purpose of this review was to confirm previous reports of good results after operation. We have not treated patients by aspiration.

### Materials and Methods

A questionnaire was sent to all patients 8 (3-11) years after operation inquiring about any postoperative complications, recurrences, re-operations, loss of sensation in the finger, and whether they would have consented to the operation if they had known the result in advance. They were also asked to indicate on visual analogue lines general complaints with the hand before surgery, pain and general complaints with the hand during the last week before receiving the questionnaire, and general satisfaction with the results of the operation. The 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. Patients who replied, but had omitted questions in the questionnaire were contacted by telephone in order to obtain the missing data. In these cases the patients were asked to give VAS scores between 0 and 10 which were multiplied by 10 to conform to the other VAS scores.

Patients who indicated a VAS score of 10 or worse for either pain in the finger, general complaints with the hand, or general satisfaction with the results of the operation were asked to return for a clinical review.

### Results

There had been operations of the flexor tendon sheaths of two thumbs, seven index fingers, ten long fingers and nine ring fingers in 15 women and 13 men. The mean age at surgery was 38 (range: 13-64) years.

Questionnaires were not returned by four patients, one of whom proved to have died, and our material therefore consists of the remaining 24 patients. Five patients were contacted by telephone because of incomplete questionnaires. Five patients indicated on the questionnaire that they were less than completely satisfied with the result according to the criteria above. One, who gave a VAS score of 12 for general complaints with his hand, but other-

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wise indicated that he was happy with the result, could not be located. The other four attended at a clinical review.

Two fingers were operated for recurrences. One of these had a recurrence also after the index operation, was re-operated and had a new recurrence. There were no other patients with recurrence after the index operation but one patient was subsequently re-operated for a small sterile abscess in the scar and another had a flexor tenosynovectomy of the same finger. There were no postoperative infections. In one patient one side of an operated finger had clearly reduced sensibility on touch and when examined with Semmes Weinstein monofilaments. It was concluded that the digital nerve had been injured. Another patient complained of cold sensibility and not being able to hyperextend the operated and neighbouring fingers at the metacarpo-phalangeal joint. Apart from a thickened area of the scar, clinical findings in this patient were normal.

Patients remembered their mean preoperative complaints with the finger as a VAS value of 51 (8-86), while it was reported as 5 (0-62) at review. Mean VAS for pain during the last week before receiving the questionnaire was 4 (0-46) and mean general satisfaction with the results of the operation was VAS 3 (0-24). The high scores were recorded by the patient with a digital nerve injury and the one with recurrence. All patients, also these two patients, stated that they would have consented to the surgery if they had known the outcome in advance.

## Discussion

Aspiration or percutaneous laceration are the treatments most commonly reported in the literature (Table 1).<sup>6-12</sup> The recurrence rate appears to be one third or less. Bruner tried to lacerate the ganglion wall with the needle and reported recurrence in one of 15 patients.<sup>6</sup> Richman *et al.*<sup>7</sup> reported that after 17 months, four out of 13 digital ganglia that had been treated by aspiration and multiple perforations had recurred. Korman *et al.*<sup>8</sup> found that after one year six out of 17 ganglia treated in this way had recurred. Kato *et al.*<sup>9</sup> successfully employed ultrasound to aspirate 24 out of 26 ganglia of the flexor tendon sheath. None had recurred after one year. Bittner and co-workers reported a 33% recurrence rate after one or two aspirations of 141 flexor sheath ganglia and calculated a considerable economic advantage from attempting aspiration before deciding on surgery.<sup>3</sup> They also noted that the ganglion disappeared spontaneously in 13 out of 20 patients who refused treatment. Mathews reported no recurrences after 3 to 36 months among 34 ganglia that had been surgically excised,<sup>2</sup> Abe and co-workers no

recurrences after 133 surgeries,<sup>10</sup> and Bittner *et al.*<sup>3</sup> one recurrence after 43 operations (Table 1). We also had one recurrence among 24 operations with a follow up of three to 11 years. This patient had altogether three recurrences after surgery and it is may be that her ganglion in some way was atypical.

On the whole, our patients were happy with the results of surgery. None would have refused operation if they had known the outcome in advance. There was one digital nerve injury. This, while obviously possible, has not been reported previously after this type of surgery. Scores for complaints during the last week before review were much lower than the remembered corresponding preoperative scores and scores for pain at review were very low.

## Conclusions

We conclude that results are good after surgical excision of flexor tendon sheath ganglia and that complications are few. Even so, it seems reasonable to attempt one or two aspirations before surgery.

**Table 1. Published recurrence rates after aspiration or laceration and surgery of flexor tendon sheath ganglia.**

| Authors                                 | Op digits | Months Follow-up<br>Aspiration/laceration | Recurrence % |
|---|-----------|---|--------------|
| Bruner 1963 <sup>6</sup>                | 15        | ?   | 7            |
| Mathews 1973 <sup>2</sup>               | 5         | 3-36                                      | 40           |
| Richman <i>et al.</i> 1987 <sup>7</sup> | 13        | 17 (9-32)                                 | 31           |
| Korman <i>et al.</i> 1992 <sup>8</sup>  | 17        | 12  | 35           |
| Kato <i>et al.</i> 1997 <sup>9</sup>    | 8         | >12                                       | 0            |
| Bittner <i>et al.</i> 2002 <sup>3</sup> | 141       | ?   | 33           |
| Abe <i>et al.</i> 2004 <sup>10</sup>    | 55        | 5 (1-240)                                 | 89           |
| Surgery                                 |           |   |              |
| Mathews 1973 <sup>2</sup>               | 34        | 3-36                                      | 0            |
| Kato <i>et al.</i> 1997 <sup>9</sup>    | 8         | >12                                       | 0            |
| Bittner <i>et al.</i> 2002 <sup>3</sup> | 43        |   | 2            |
| Abe <i>et al.</i> 2004 <sup>10</sup>    | 133       | 5 (1-240)                                 | 0            |
| Jebson 2007 <sup>11</sup>               | 25        | 19 (5-38)                                 | 0            |
| Present study                           | 24        | 96 (36-132)                               | 4            |

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