

REDUCTION IN THE NEED FOR OPERATION AFTER CONSERVATIVE TREATMENT OF OSTEOARTHRITIS OF THE FIRST CARPOMETACARPAL JOINT: A SEVEN YEAR PROSPECTIVE STUDY

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Abstract. The effect of occupational therapy for patients awaiting surgery for isolated osteoarthritis of the carpometacarpal joint of the thumb was assessed. Thirty-three patients awaiting joint replacement because of pain were randomised into three groups. One group was treated with technical accessories, two other groups had in addition one of two types of splints, and all patients received extensive advice on how to accommodate activities of daily living. They all had an initial seven months' trial on this regimen at which time 23/33 (70%) no longer required an operation. During the following seven years four patients died, but only two of the remaining 19 patients wanted an operation. We therefore recommend that patients with osteoarthritis of the carpometacarpal joint of the thumb are offered a similar programme in addition to access to accessories and splints preoperatively.

Key words: osteoarthrosis of the carpometacarpal joint of the thumb, conservative treatment, splint, technical accessories.

Osteoarthritis of the carpometacarpal joint of the thumb (OA of CMC I) is common, but in most cases the initial symptoms are not severe (2). It affects mainly women after the menopause, and initial complaints are pain and swelling. Later the disease may cause pain after activity, pain at rest, and reduced mobility and strength. In the final stages it may cause secondary deformity (11).

Numerous techniques for treating OA of CMC I have been evaluated (5, 6, 10, 13, 16), but most studies have short minimum follow up times, and the long-term results can therefore only be estimated. Because surgical treatment requires prolonged immobilisation, can cause increased discomfort during recovery, and results in less than complete satisfaction after full rehabilitation, non-surgical treatments are of interest (5, 6, 10, 11, 13, 16). We know of only a few

studies on the subject of efficiency of treating degenerative arthritis with splints (4, 7, 8, 14). The effect of orthotic treatment of the web space angle in cases with OA of the CMC-I joint have been reported (9, 15), but to our knowledge nobody has evaluated its prospective effect on the need for operation.

Because of long waiting times for operation, we had developed a routine before this study to provide the patients with accessories in addition to splints made from various materials to alleviate the discomfort during the interim period. Over a number of years we found that several patients then declined the operation as they felt a clear improvement. We therefore decided to set up a prospective study to assess the influence of structured advice, provision of accessories, and splinting on the need for CMC-I joint replacement.

PATIENTS AND METHODS

All potential candidates for operative treatment of pain from the CMC-I joint who were referred to our hand surgery department during the years 1988–1989, were examined by one consultant hand surgeon (MB). If the patient fulfilled the criteria previously stipulated by Nylén et al. (13), they were included in the study: isolated CMC-I joint arthritis on the radiograph; no sign of adduction contracture; and pain on movement with stress and pain at rest that interfered with their work and daily activities. Thirty-three women, mean age 63 years (46–80 years) were recruited and randomised into three groups.

All patients had three individual sessions with a hand therapist who showed them how to avoid excessive loading of the painful joint by use of splints or accessories, or both, and modification of their work environment.

The first group was treated with technical access-

ories only and had unrestricted access through occupational therapists to the following specially fitted accessories: bread saw, grabber stick, scissors, potato peeler, tap handle, pen handle, cheese cutter, and book support. Two other groups were given splints in addition to the accessories: the first had received a semistable textile splint and the other a non-stabilising leather splint.

Seven months later the patient and the same consultant hand surgeon reassessed the need for operation. The surgeon was unaware of which group the patient belonged to. Patients who no longer wanted an operation after the initial seven month period were then followed up by the occupational therapist. They had adjustments made to the accessories and splints when required and retained a fast access for re-evaluation of surgical need if necessary during the next seven years. After the first seven months of the study all patients had access to both types of splints. After a minimum of seven years all living patients' wishes for operation were reassessed by the same consultant hand surgeon.

The significance of differences was assessed using the Mann-Whitney test and the software computer package (InStatTM 2.02A, GraphPad Software, USA). Probabilities of less than 0.05 were accepted as significant.

RESULTS

The results are summarised in Table I. All living patients were followed for a minimum of seven years, three patients in the textile splint group and one patient in the leather splint group died between the seven-month and the seven-year follow-up.

Our results showed that after seven months of occupational therapy as described above, only 10 of the 33 patients wanted an operation. During the following seven years only two more patients wanted an operation (Table I). No differences between the three groups could be detected at the various assessment points.

Patients who were operated on had a mean age

of 59 years (range 51–69) and those who were not a mean age of 65 years (range 46–80), (age was recorded after the seven month “introduction” period). This age difference is significant ($p = 0.03$).

DISCUSSION

The range and mean age of patients in our study compare well with recent studies on outcome following surgical treatment of OA of the CMC I (5, 10). The high proportion of women with this disorder who require operation has also previously been reported (5, 10, 13), so the sex and age mix in our group is comparable with those in previous studies of outcome after surgical treatment. The indications for operation that were used in this study follow the criteria previously stipulated by Nylén et al. (13).

Clinically relevant OA of the CMC I is often painful and the patient may be keen to have an operation to reduce the discomfort. Several techniques have been described but none are without problems (6, 12, 16, 18). Our study showed that 70% of patients awaiting operations for OA of the CMC I can be successfully treated conservatively by an experienced hand therapist for a minimum of seven years. Similar results have not previously been reported to our knowledge.

We know of no studies on the natural course of osteoarthritis of the CMC I, but it is thought to result in an increasing adduction contracture with hyperextension of the metacarpal joint and finally a zigzag collapse (3). The patients in our study had no adduction contracture and none of the patients developed adduction contracture with hyperextension of the metacarpal joint during the observation period. Our good results with splinting of the web space are similar to those presented by Francois (9). He found an increase of the angle of the web space measured on radiographs, but also a subjective reduction in the intensity of pain from the CMC-I joint. Recent studies have shown no significant differences in outcome with regard to surgical technique, but a significant proportion of patients have unsuccessful operations that lead to chronic problems (10). It is therefore interesting to note that two thirds of the patients in this study who had conservative treatment became satisfied with their condition and refused opera-

Table I. Patients' need for operation

Group	Start	7 Months	7 Years
Technical accessories only	11	3	3
Semistable textile splint	11	4	5
Leather splint	11	3	4
Total	33	10	12

tion. These patients therefore all had a successful outcome with no complications. The results of patients who were operated on are currently being incorporated in a separate study. It is noteworthy that all dissatisfied patients in the study by Hollevoet et al. (10) were significantly younger than those who were satisfied. Our results show that the patients who wanted an operation were significantly younger than those who did not after the initial introduction period of seven months ($p = 0.03$). A younger group of patients would be expected to make higher demands on the hand, would therefore be less likely to be able to adapt to a more sedate lifestyle, and therefore choose a more aggressive treatment strategy. Operation, however, may not always lead to the expected outcome required by patients with the highest functional demands. In our group of patients, most retired during the study, which in our experience often reduces the wish for operation. This is supported by the age difference between those operated on and those not operated on in our study. We were surprised that all three groups were improved, as the leather splint has been shown to provide only minimal stability compared with other types of splint (1). The good effect of even a soft splint could be explained by proprioceptive mechanisms in the skin, blocking the pain from aching arthritic joints (17).

To our knowledge this is the first long-term follow up study of conservatively treated patients with OA of CMC I. We conclude that the method described can significantly reduce the number of patients who will finally require surgical treatment for osteoarthritis of the carpometacarpal joint of the thumb. We recommend that patients with similar problems be offered six months of similar conservative treatment before choosing to have an operation.

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