

ELBOW SYNOVECTOMY IN RHEUMATOID ARTHRITIS

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We present the results of a clinical and radiographic follow-up study of patients undergoing elbow synovectomies. Twenty-five elbows in 24 patients with rheumatoid arthritis were followed for a median period of 52 months (range 10-108) after operation. Nineteen (74%) stated they had improvement of pain and function. Two patients reported increased pain. Improvement of motion was noted, but this was not statistically significant. Radiographic classification showed statistically significant progressive changes. Three complications were noted, all without permanent sequels. Moderate elbow destruction can provide a good indication for elbow synovectomy in the treatment of patients suffering from rheumatoid arthritis.

Keywords : rheumatoid arthritis ; synovectomy ; elbow joint.

Mots-clés : arthrite rhumatoïde ; synovectomie ; coude.

INTRODUCTION

There is general agreement that elbow involvement starts late in rheumatoid arthritis, but in cases of longstanding rheumatoid arthritis, elbow involvement can be seen in 41%-68% of the patients (3). Symptoms in the elbow appear at a relatively late stage and therefore nearly all of the synovectomies performed in the elbow must be regarded as late synovectomies. It also remains a relatively rare procedure, representing only 5% of all operations carried out for rheumatoid arthritis (3).

We present a long-term follow up study on elbow synovectomies in rheumatoid arthritis.

MATERIALS AND METHODS

During the period 1977-1986 synovectomy of the elbow was performed in 29 patients. Four patients died before follow-up and preoperative information was missing in one other case. Clinical and radiographic follow-up was carried out in 24 patients with 25 synovectomies.

All of the patients had definite rheumatoid arthritis, according to the criteria from the American Rheumatism Association (ARA). Sixteen patients were seropositive and 8 were seronegative. The median age at operation was 58 years (range 30-73 years). Preoperative duration of elbow symptoms was from 1 to 17 years.

The indications for operation were : pain (83%), joint effusion (70%), and an unsuccessful medical treatment for at least 6 months.

The preoperative antirheumatic medical treatment included : NSAIDs (100%), cytostatics (69%), corticosteroids (57%), and gold (38%).

The operative procedure was performed by a dorso-radial approach as described by Gschwend (2). In 22 cases synovectomy was combined with resection of the radial head. A thick compression dressing was applied without a plaster cast.

Active assisted exercises were started after suction drainage was removed, usually after 2 to 3 days, and then functional occupational therapy was instituted.

The evaluation at follow-up included the following parameters : Pain, joint effusion and stability, each graded in 4 groups : None, mild, moderate and severe.

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Active range of motion in flexion, pronation, supination and lack of extension was recorded.

Pre- and postoperative radiographs were evaluated and classified into the Larsen-Dale-Eek (LDE) scale (7) in 22 elbows. Preoperative radiographs were missing in 3 cases.

The patient assessment of the operation was evaluated ; these parameters were graded as marked improvement, slight improvement, unchanged and worsened.

All complications were recorded.

Statistical methods :

Pratt's test (13) was used with significance level $P < 0.05$.

RESULTS

The clinical follow-up time after the operation was on average 52 months (range 10-108 months).

Pain relief and function after the operation are shown in Table I. The active range of motion in flexion and lack of extension preoperatively and at follow-up were evaluated as shown in tables II and III. No statistically significant differences were noted regarding these variables.

The range of pronation/supination only showed slight improvement ; neither of these changes were statistically significant.

Radiological progression is shown in table IV. The mean preoperative LDE grading was 2.8 (range 1-4) and at follow-up 3.6 (range 2-5). The progression was significant.

Effusion was seen in 23 elbows before surgery, and at follow-up in 8.

Postoperative complications were seen in three cases. One deep infection healed uneventfully after revision ; one neurapraxia of the ulnar nerve disappeared after transposition of the nerve, and a hematoma occurred in a third case.

No permanent complications were reported.

Table I. — Pain and function after 25 synovectomies of the elbow

	Worse	Unchanged	Slight improvement	Marked improvement
Pain	2	4	7	12
Function	0	6	10	9

Table II. — Flexion preoperatively and at follow-up in 25 synovectomies of the elbow (degrees)

Preoperative flexion	Flexion at follow-up			Total
	< 90	> 90	normal	
< 90	0	0	1	1
> 90	1	12	5	18
normal	0	4	2	6
Total	1	16	8	25

$P > 0.05$

Table III. — Lack of extension preoperatively and at follow-up in 25 synovectomies of the elbow (degrees)

Preoperative lack of extension	Follow-up lack of extension			Total
	> 30	< 30	none	
> 30	6	2	0	8
< 30	4	10	1	15
None	0	2	0	2
Total	10	14	1	25

$P > 0.05$

Table IV. — Radiographic changes, preoperatively and at follow-up in 22 synovectomies of the elbow, according to the Larsen Dale Eek scale

Preoperatively	Follow-up						
	LDE	0	I	II	III	IV	V
0	—	—	—	—	—	—	—
I	—	—	2	—	1	—	—
II	—	—	—	3	3	1	—
III	—	—	—	2	2	—	—
IV	—	—	—	2	4	1	—
V	—	—	—	—	—	—	1

$P < 0.05$

DISCUSSION

In the present study, only three cases could be classified as early synovectomies (LDE grade 0-1), and therefore no distinction between early and late synovectomies was made.

We found statistically significant radiographic progression shown by LDE-grading. Our radiographic results are in agreement with previous studies (2, 3, 4, 9, 12) namely that in the presence of elbow-joint destruction, a synovectomy does not prevent radiological progression.

The clinical results reveal however a general reduction of pain and slight improvement of function. These findings confirm previous studies (1, 2, 3, 4, 8, 9, 12).

Synovectomy reduces the amount of joint fluid and removes the proliferative synovitis, thereby decreasing intra-articular tension which affects pain afferents in the fibrous capsules and ligaments; this leads to pain relief and reduces joint swelling. After a few months a new synovial membrane is regenerated in the joint, and arthroscopic examination of the knee joint has shown that recurrence of synovitis starts earlier than 6 months following synovectomy and continues to increase between 6 and 12 months (10). However the lack of villous change and vasculitis may indicate a difference in the inflammatory process observed after synovectomy (11).

Pathological enzymatic activity in the new synovial membrane and joint fluid has also been

shown to decrease after synovectomy (10). These findings might be connected with the satisfactory mid and long-term results after synovectomy, regarding pain relief and reduced joint effusion, but the results are determined by the general progression of the rheumatoid disease process.

The surgical approach and the value of the resection of the radial head remain a matter of controversy. Several authors agree that the dorso-radial approach is generally adequate for a complete synovectomy; in cases with ulnar nerve symptoms preoperatively, a medial approach may be used to allow for release or anterior transposition of the nerve (1, 2, 3, 8).

Resection of the radial head leads to increased loading of the ulnar compartment and an increased rate of symptoms at ulnar head (14).

Arthroscopic synovectomy has now been developed for the elbow joint, which could expand the indications for synovectomies in the future, owing to lesser morbidity after the operation (5). Arthroscopic synovectomy is however a highly demanding procedure which should be performed by a surgeon experienced in the technique.

Therefore open elbow synovectomy will perhaps be performed less frequently in the future, but the procedure is still satisfactory for the management of moderate elbow destruction in patients with rheumatoid arthritis.

For cases with severe destruction, unconstrained surface replacement-prostheses have been developed and the long-term results seem to justify their use in patients who will place low demands on the prosthesis (6, 15).

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SAMENVATTING

C. M. JENSEN, S. W. RASMUSSEN, M. HAUGE-GAARD, T. M. MELCHIOR, H. HANSEN. Synovectomie van de elleboog in rheumatoïde arthritis.

De resultaten van een klinische en radiologische follow-up studie bij patiënten behandeld met een synovectomie van de elleboog worden gerapporteerd. Vijftientig

ellebogen in 24 patiënten, lijdend aan rheumatoïde arthritis werden post-operatief gevolgd gedurende een gemiddelde periode van 52 maanden (met 10 en 108 maanden als extremen). Negentien (74%) patiënten stelden een verbetering van pijn en functie vast. Bij 2 patiënten was er een toename van de pijn. Een verbeterde functie was genoteerd maar deze vaststelling was statistisch niet relevant. Röntgenologische studie toonde een statistisch relevante deterioratie. Twee complicaties werden gezien zonder definitieve restletsels. Een matige destructie van de elleboog is een goede indicatie voor synovectomie bij rheumatoïde arthritis.

RÉSUMÉ

C. M. JENSEN, S. W. RASMUSSEN, M. HAUGE-GAARD, T. M. MELCHIOR, H. HANSEN. Synovectomie du coude pour atteinte rhumatoïde.

Les auteurs présentent les résultats d'une étude clinique et radiologique réalisée chez des patients qui avaient subi une synovectomie du coude pour atteinte rhumatoïde.

Vingt-quatre patients atteints d'arthrite rhumatoïde (vingt-cinq coudes opérés) ont été suivis pendant une période médiane de cinquante-deux mois (extrêmes : 10 et 108) après l'opération. Dix-neuf d'entre-eux (74%) ont fait état d'une amélioration sur la douleur et la fonction mais deux patients ont noté une aggravation de la douleur. La mobilité articulaire a été améliorée, mais cette amélioration n'était pas statistiquement significative. L'évaluation radiologique a montré une détérioration progressive, statistiquement significative. Trois complications sont survenues, dont aucune n'a laissé de séquelle.

Une destruction modérée de l'articulation du coude dans l'arthrite rhumatoïde peut être une bonne indication pour une synovectomie chirurgicale.