

Synovectomy of the rheumatoid knee does not prevent deterioration

7-year follow-up of 83 cases

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Eighty-three knees in 65 patients were studied retrospectively 7 (3-11) years after synovectomy for rheumatoid arthritis. Half of all the knees had an osteotomy or prosthesis operation after a median interval of 4 years. Early synovectomy had been performed in 67 knees; half of these had a satisfactory result. Most of the late synovectomies were unsatisfactory.

Our results support the opinion that deterioration of the rheumatoid knee cannot be prevented by early synovectomy. Late synovectomy is discouraged.

Whether synovectomy of the knee in rheumatoid arthritis (RA) is a valid procedure is still a matter of debate. The alternative to early synovectomy is nonsurgical treatment, e.g., medical or with radioactive nuclides (radio-synoviorthesis). The role of late synovectomy is questionable and should be compared with the good, almost predictable result of knee arthroplasty.

Arthroscopic synovectomy is now a relatively easy procedure; there is a risk of it being applied too often. To clarify the current role of synovectomy and to evaluate its indications, we carried out a retrospective study on the intermediate- and long-term results of surgical synovectomy.

Patients and Methods

Between 1976 and 1984, synovectomy was performed in 95 knees of 75 patients in our hospital. All the patients had an adult-onset classical or definite RA as defined by the American Rheumatism Association (ARA). The indication for surgery was pain and swelling of the knee of more than 6 months' standing, not controlled by conservative means. Operation was performed through a straight midline incision in most cases, followed by removal of synovial tissue from the suprapatellar pouch, from medial and lateral recesses, from the intercondylar space, and as much as possible

from the dorsal side of the joint. Intact menisci and cruciate ligaments were not interfered with. Postoperative care was functional, and early weight bearing was encouraged. At the time of investigation, 5 patients had died, 4 could not be traced, and 1 patient refused reexamination. Thus, 65 patients (54 females, 11 males) with 83 synovectomized knees were available for study. The median age at the time of surgery was 54 (25-77) years. Median follow up was 7 (3-11) years (Table 1). There were 67 early synovectomies (5 Stage 1 and 62 Stage 2) and 16 late synovectomies (Stage 3). Stage 4 knees have been considered too much damaged to benefit from synovectomy. Patients who had not been reoperated on were interviewed individually, and they underwent a clinical and a radiographic examination. Data on patients reoperated on with a prosthesis or a double osteotomy were obtained from their records. Three parameters were considered:

1. *Overall subjective result.* The result was assessed by the patients as good, fair, or unsatisfactory. Reoperated on knees were assessed as having a poor result.

2. *Knee score.* Not reoperated knees were scored by the Hospital for Special Surgery (HSS) knee scoring system (Insall 1976).

3. *ARA staging.* All the knees were staged preoperatively and at the time of follow-up (or at the time of reoperation) according to Steinbrocker et al. (1949), adopted by ARA.

Results

Early synovectomy provided a good or fair result in half of the cases. Late synovectomy, on the whole,

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Table 1. Data for 65 patients with 83 synovectomized knees

A	B	C	D	E	F	G	H	I	J	K	A	B	C	D	E	F	G	H	I	J	K
1	L	F	67	06/76			2	4	29	1	32	L	F	64	10/80			2	3	48	1
2	R	F	69	10/76	3	58	2	3			33	L	F	65	10/80	1	94	2	2		
3	R	F	59	01/77			3	4	79	1		R		66	11/81	1	87	2	2		
4	L	F	56	01/77	1	100	2	2			34	R	F	68	12/80	2	59	2	3		
5	L	F	71	01/77			2	3	6	1	35	R	M	61	01/81	1	90	2	2		
6	L	F	30	02/77	1	85	2	2				L		61	01/81	1	84	2	2		
7	R	F	35	02/77			2	4	75	1	36	L	F	57	02/81	1	74	2	3		
	L		37	04/78			1	4	84	1		R		57	10/81			2	3	51	1
8	L	F	68	03/77	2	73	2	3			37	L	F	27	02/81	2	70	3	3		
	R		70	10/78	2	62	2	3			38	L	F	68	04/81	3	64	2	3		
9	R	M	36	04/77	1	73	1	3				R		68	07/81	3	54	2	3		
10	L	M	35	05/77			1	3	32	2	39	R	M	69	06/81	1	78	2	2		
11	L	F	55	05/77			2	4	17	2		L		69	07/81	3	51	2	4		
12	R	F	57	05/77	2	69	1	3			40	R	F	27	07/81	3	53	3	4		
13	L	F	25	06/77			2	4	106	1		L		27	01/82	3	46	3	4		
14	R	F	57	10/77	1	93	2	3			41	L	M	59	07/81	1	95	2	2		
	L		60	03/81			2	3	42	1	42	L	F	64	07/81	1	90	2	2		
15	L	F	51	11/77			3	4	88	1		R		64	08/81	1	95	2	2		
16	L	F	42	01/78	1	99	2	2			43	R	M	67	08/81	2	65	2	2		
17	L	F	55	01/78	2	77	2	3			44	R	F	68	09/81	1	85	2	2		
18	R	F	59	05/78			2	4	40	1	45	R	F	60	10/81			2	3	13	2
19	R	M	62	09/79			3	4	8	1	46	R	F	54	02/82			2	4	29	1
20	R	M	77	11/79			3	4	9	1	47	R	F	57	04/82			2	4	62	1
21	L	F	73	01/80	3	49	2	4			48	R	F	55	07/82			2	4	61	1
	R		73	02/80	2	60	2	4			49	R	M	61	08/82			2	4	49	1
22	R	F	56	03/80			1	4	44	1	50	R	F	32	09/82	2	76	2	2		
	L		56	04/80			2	3	60	1	51	R	F	55	10/82			2	4	48	1
23	L	F	57	05/80			2	4	41	1	52	L	F	68	03/83	2	72	2	2		
	R		57	05/80			2	4	42	1	53	R	F	39	04/83			2	4	29	1
24	R	F	42	05/80			3	4	47	1	54	L	F	31	05/83	2	81	2	2		
	L		42	05/80			3	4	56	1	55	R	F	69	07/83	3	56	2	2		
25	L	F	63	06/80	2	78	2	3			56	R	F	43	09/83	1	79	3	3		
26	L	M	48	06/80			2	3	43	1	57	R	F	62	10/83			3	4	18	1
	R		48	06/80			2	4	56	1	58	R	F	60	11/83			2	4	39	1
27	R	F	49	06/80			3	4	23	1	59	R	M	33	12/83	1	88	2	2		
	L		51	08/81	2	69	2	2			60	L	F	58	01/84	3	60	2	2		
28	R	F	57	06/80	2	66	2	3			61	R	F	36	01/84			3	3	34	1
29	L	F	51	06/80			2	2	23	2	62	R	F	47	01/84	1	94	2	2		
30	L	F	35	08/80			2	3	53	2	63	L	F	60	01/84	2	76	2	2		
	R		35	08/80	1	68	2	3			64	R	F	63	04/84	1	88	2	2		
31	R	F	59	10/80	3	47	3	3			65	L	M	63	05/84	2	58	2	2		
	L		61	01/82	3	27	2	2													

A case

B side

C sex

D age at synovectomy

E month/year of synovectomy

F subjective result

1 good

2 fair

3 unsatisfactory

G HSS knee score

H ARA stage at synovectomy

I ARA stage at follow-up

/reoperation

J months until reoperation

K type of reoperation:

1 total knee arthroplasty

2 double osteotomy

achieved an unsatisfactory or poor result (Table 2). Only 30 of 83 knees, mainly Stage 2 knees, had remained at the preoperative stage (Table 3).

For failed synovectomy, 31 knee arthroplasties and five double osteotomies had been performed. In most cases the reoperation was done within 6 years (median interval 4 years) irrespective of whether the synovectomy was early or late.

Discussion

Our results differ from those in several series (Geens et al. 1969, Laurin et al. 1974, Brattström et al. 1985, Ishikawa et al. 1986) in which the general opinion was that synovectomy had a beneficial and even prophylactic effect. Some authors have stated, however, that radiographic deterioration continues after synovectomy, although possibly to a lesser extent than in control

Table 2. Overall results related to ARA stage at the time of synovectomy

ARA stage	Good	Fair	Unsatisfactory	Poor (reop.)
1	1	1	-	3
2	18	14	8	22
3	1	1	3	11
Total	20	16	11	36
HSS score, median	87	70	49	
range	68-100	58-81	27-64	

Table 3. Preoperative ARA stage compared with ARA stage at the time of follow-up or reoperation

ARA Preoperative	At follow-up or at reoperation			
	1	2	3	4
1	0	0	3	2
2		25	19	18
3			5	11

knees (Pätiälä 1976, Meijers et al. 1983, McEwen 1988). Laurin et al. (1974) used the ARA staging and reported much better final results after 5-17 years,

even with late synovectomy. They concluded that there was "at least suggestive evidence that synovectomy may have a prophylactic effect."

Also Ishikawa et al. (1986) found better results after 10-23 years, indicating a prophylactic effect. Both Laurin et al. (1974) and Ishikawa et al. (1986) used stricter criteria than we did to assess their results, applying subjective, clinical, and radiographic data. Although their results were better, we cannot account for this. We suggest that historical and cultural differences might contribute to the difference.

In our opinion, synovectomy cannot exert a prophylactic effect in rheumatoid arthritis. Nearly every knee proposed for surgery will have some minor bone erosions. Aschan and Moberg (1984) showed that inflamed synovial tissue that has invaded the bone can cause recurrence of synovitis. Myllylä et al. (1983) have shown that there is only a minor reduction of lysosomal enzymes after synovectomy and no change in the amount of complement. So, although clinical signs and symptoms of synovitis are reduced by synovectomy, the destructive process itself is not really influenced.

We conclude that early synovectomy of the rheumatoid knee provides an acceptable palliative effect, but that it is questionable whether there is any prophylactic effect. Late synovectomy has an unacceptably high failure rate and should be discouraged.

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