

Surgery for synovial chondromatosis

26 cases followed up for 6 years

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Surgery was performed in 31 patients with synovial chondromatosis: 12 had synovectomy and removal of loose bodies, and 16 had removal of loose bodies only. The remaining 3 patients had more radical surgery: 2 had total hip replacement and 1 had resection arthroplasty. Twenty-six patients were reviewed after an average of 6 years and 4 months. Thirteen patients were symptomatic and 11 had residual signs of limited joint motion and localized tenderness. In 1 case of metatarsophalangeal joint involvement, recurrence occurred. Removal of loose bodies only did not differ from synovectomy and removal of loose bodies.

We report the experience since 1953 in our area in patients operated on for synovial chondromatosis with special emphasis on the value of adding a synovectomy for the removal of loose bodies.

Patients and methods

A thorough review of the files of four university hospitals (Chaim Sheba, Beilinson, Asaf-Harofe, and Kaplan) yielded 31 cases of synovial chondromatosis treated surgically between 1953 and 1986 (Table 1). In all the cases, histologic specimens were reexamined and reconfirmed based on multiple metaplastic cartilaginous foci in the synovial membrane. The mean age of the patients was 42 (9-76) years. There were 18 males and 13 females.

The knee was involved in 18 patients, the hip in 6, and the ankle joint in 3 patients. The shoulder,

elbow, wrist, and metatarsophalangeal joints were each involved in 1 patient. Presenting symptoms included pain in all the patients, limited range of motion in 12, and locking episodes in 10 out of 18 patients with knee involvement. The average duration of symptoms before diagnosis was 3 years. Preoperative radiographs were available in 25 out of 31 cases. In 21 patients, single or multiple calcified masses were seen within the joint cavity, and in 4 there was moderate arthrosis.

Because this is a retrospective study, we have interviewed the involved surgeons as regards their choice of surgical treatment. Our conclusion was that the decision for either a limited operation or a more extensive one was unrelated to the severity of the disease, number of loose bodies, arthritic changes, or specific joint involvement, but according to the surgeon's preference. In 12 patients a synovectomy and removal of loose bodies were done, whereas in 16 patients only the loose bodies were removed. Two patients underwent total hip replacement and 1 had an excisional arthroplasty of the metatarsophalangeal joint.

Histologically, there were 25 cases of both intra-synovial cartilaginous foci and extrasynovial loose bodies, and 6 cases of only intrasynovial lesions.

Twenty-six of the 31 patients were available for clinical and radiographic review. The mean follow-up period was 6 (1-17) years. In these patients the affected joints were 17 knees, 5 hips, 1 ankle, 1 metatarsophalangeal joint, 1 shoulder, and 1 wrist.

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Table 1. Surgery for chondromatosis in 31 joints

			Symptoms				Clinical findings							Follow-up					
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R		
1	F	46	1	+	+	-	+	-	36	1	1	1	2	3	+	-	1		
2	M	52	4	+	-	-	+	-	12	1	3	1	2	4	+	-	3		
3	F	32	1	+	+	-	+	+	36	1	2	1	1	1	-	+	1		
4	M	60	1	+	+	-	+	-	36	2	2	1	3	1	-	-	1		
5	F	47	1	+	+	-	+	+	24	1	1	1	1	1	-	-	1		
6	M	24	3	+	-	-	-	-	84	3	2	1							
7	F	55	1	+	-	-	-	-	84	1	1	1	3	2	+	-	1		
8	M	17	6	+	-	-	-	+	6	1	1	1							
9	M	31	3	+	-	-	+	+	24	1	1	1							
10	F	60	2	+	-	+	-	-	36	3	2	1	1	1	-	-	1		
11	F	20	2	+	-	+	-	-	36	1	1	1	2	1	-	-	1		
12	F	76	2	+	-	+	-	-	60	2	3	2	1	1	-	-	1		
13	F	57	2	+	-	+	-	-	144	2	3	2	2	1	-	-	1		
14	F	25	1	+	-	+	-	-	24	1	2	1	3	4	+	+	2		
15	M	22	5	+	-	+	+	-	12	1	2	1	2	2	+	-	1		
16	F	42	1	+	+	-	-	-	2	3	1	1	1	1	-	-	1		
17	F	33	1	+	+	-	+	-	8	1	1	2	3	4	-	+	1		
18	M	8.5	3	+	-	-	-	+	12	1	1	2	2	1	+	-	1		
19	M	30	7	+	-	+	+	-	7	1	1	1	3	3	+	+	1		
20	M	4	1	+	+	+	+	-	36	1	2	1	1	1	-	+	1		
21	M	26	1	+	-	-	-	-	4	1	1	1	2	1	-	-	1		
22	M	42	1	+	+	-	+	+	72	1	2	1	1	1	-	+	1		
23	M	68	1	+	-	-	-	-	12	3	2	1	1	2	+	-	1		
24	M	34	1	+	+	+	-	-	72	1	2	1	1	1	-	-	2		
25	M	47	1	+	-	-	-	-	24	1	1	1	1	1	-	-	1		
26	M	36	1	+	-	+	-	-	84	3	2	1	2	2	-	+	1		
27	M	25	1	+	-	-	-	-	72	1	1	1							
28	F	57	1	+	+	+	-	-	2	1	1	1	1	1	-	-	2		
29	M	53	1	+	-	-	-	+	5	3	1	2	1	1	-	-	1		
30	M	54	2	+	-	+	-	-	72	1	1	1	2	1	-	+	2		
31	F	67	2	+	-	-	-	-	48	2	2	2							

A Case

B Sex

C Age

D Site of lesion

1 knee

2 hip

3 ankle

4 metatarsophalangeal joint

5 shoulder

6 elbow

7 wrist

E Pain

F Locking

G Decreased range of motion

H Swelling

I Palpable loose bodies

J Duration of symptoms (months)

K Radiographic findings

1 single or multiple calcified masses in joint cavity

2 secondary arthrosis

3 radiographs not available

L Treatment

1 removal of loose bodies only

2 synovectomy and removal of loose bodies

3 total or excisional arthroplasty

M Histologic findings

1 intrasynovial lesions and loose bodies

2 intrasynovial lesions only

N Symptoms at follow-up

1 asymptomatic

2 symptoms less severe than preoperatively

3 symptoms identical to preoperative symptoms

O Range of motion

1 normal

2 mild decrease

3 moderate decrease

4 marked decrease

P Presence of localized tenderness

Q Presence of muscle atrophy

R Radiographs

1 no significant change

2 incomplete removal of loose bodies

3 recurrence

Results

Thirteen patients were asymptomatic, while 13 had residual symptoms. Most of them had less severe symptoms than before their operation. Decreased range of motion, local tenderness and/or muscle

atrophy were found in 11 patients. In Case 2 with metatarsophalangeal involvement treated with resection arthroplasty recurrence occurred.

Follow-up radiographs demonstrated incomplete removal of loose bodies in 4 patients. There was no case of marked arthrosis.

When separating the follow-up knees into those operated on by removal of loose bodies only and those that had both synovectomy and removal of loose bodies, there was no difference between the two operations as regards the final results.

Two of the 26 reviewed patients underwent additional surgery because of persistent symptoms and progressive arthrosis: 1 underwent a total knee replacement, whereas the other had hemiarthroplasty of the hip.

During the follow-up period, involvement of the contralateral knee with synovial chondromatosis was diagnosed in 3 patients.

Discussion

Most authors suggest that the surgery for synovial chondromatosis should consist of removal of loose bodies and excision of the synovial membrane (Mussey and Henderson 1949, Murphy et al. 1962, Jaffe 1968, Christensen and Poulsen 1975). Lately, these procedures are performed arthroscopically (Coolican and Dandy 1989).

Jeffreys (1967) had no recurrence in 5 patients treated with partial synovectomy and in 12 patients managed with only the removal of loose bodies. He concluded that the results after removal of loose bodies are as satisfactory as those of the more extensive procedure of synovectomy. We were unable to find other reports supporting Jeffreys' view; however, our results accord with his.

Our current approach to synovial chondromatosis is arthroscopic or surgical removal of loose bodies only, lavage, and synovial biopsy but no synovectomy.

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