

EXPERIENCE WITH KNEE SYNOVECTOMY IN NORWICH

1964-1973

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Thirty-six patients (43 knees) who underwent anterior synovectomy for rheumatoid disease between 1964 and 1973 have been personally reviewed. The notes and X-rays of a further seven patients (10 knees) have been examined.

Twenty-five per cent of the knees were failures at the time of review, but only two were failures from the outset.

The indications for the operation and also the contraindications are described and evaluated.

It is concluded that:

1. In the rheumatoid knee, anterior synovectomy is a pain relieving operation.
2. The indications are wider than classically stated, and can include knees with full thickness cartilage destruction, and flexion deformities up to 20°.
3. The majority of knees fail because of secondary degenerative change, and this is manifested by pain rather than stiffness.
4. Postoperative manipulation does not prejudice the final result.
5. Associated popliteal cysts (five in this series) can be cured by anterior synovectomy.

Key words: knee synovectomy, results in advanced cases

Accepted 20.iii.76

This is an independent review by one of us (D.J.) of a series of anterior synovectomies of the knee done for rheumatoid disease in the Norwich area between 1964 and 1973. It is also an attempt to evaluate the clinical impressions which accumulated during the period under study.

All of the operations were done by one surgeon (J.G.T.) or his trainees. The indication was persistent pain and swelling in a rheumatoid knee. Throughout

the period under review it was the policy also to consider knees with relatively advanced disease for synovectomy. The relative contraindications were:

- 1) Flexion less than 90°.
- 2) Instability.
- 3) Varus or valgus deformity.
- 4) Dry, grating knee.
- 5) Subchondral bone collapse on X-ray.

Table 1. Clinical material.

	Patients	Knees
Personally reviewed	36	43
Notes reviewed		
Dead	3	5
D.N.A.	4	5
Untraceable	4	4
Total	47	57

Table 2. Cases personally reviewed.

Follow-up period	16 months-10 years
Patient ages	15 years-64 years
Males	14
Females	22

PATIENTS

All of the patients submitted to synovectomy were rheumatoid arthritides referred by the Department of Rheumatology (Table 1). This analysis, however, is of only those knees personally assessed, amounting to 43 knees in 36 patients. Details are shown in Table 2. At all stages in this investigation the notes and X-rays of those seven patients who did not attend for review were studied, to search for possible bias in the results of the personally reviewed series. This is a non-selected series. Only two patients had monarticular disease. A wide range of anti-inflammatory drugs had been used during medical treatment. Many patients had been submitted to temporary or long-term steroid therapy.

OPERATION

Subtotal synovectomy was done in most cases through a medial parapatellar incision; in a minority via separate anteromedial and lateral incisions. The suprapatellar pouch, the medial and lateral recesses, and the intercondylar notch were routinely cleared of synovium. The menisci were removed only if they were severely degenerated. The patella was excised if its articular cartilage was extensively destroyed, but not for chondromalacia or isolated cartilage ulceration. Postoperative management was standard. Suction drainage was used for 48 hours. The knee was immobilised in a plaster cylinder for 1 week. The wound was then inspected and the knee mobilised. If at least 60° of flexion had not been regained by the end of the third postoperative week, then gentle manipulation was carried

out. The technique of manipulation was standard. Under anaesthesia with thiopentone and scoline, the knee was gently flexed to 90°. It was then splinted in this position with an anterior plaster slab. The following day the splint was removed and movements were recommended. The knee was placed in the flexion splint at night until the physiotherapist was satisfied that flexion was not being lost.

All wounds healed by first intention. There were no serious postoperative complications. Histological evidence of active rheumatoid disease was obtained in all cases.

RESULTS

The knees were graded as *successes* or *failures* at the time of review, after a study of the notes and radiographs, an interview with the patient, and a clinical examination. A knee was judged to be a failure if it was the same as, or worse than, preoperatively.

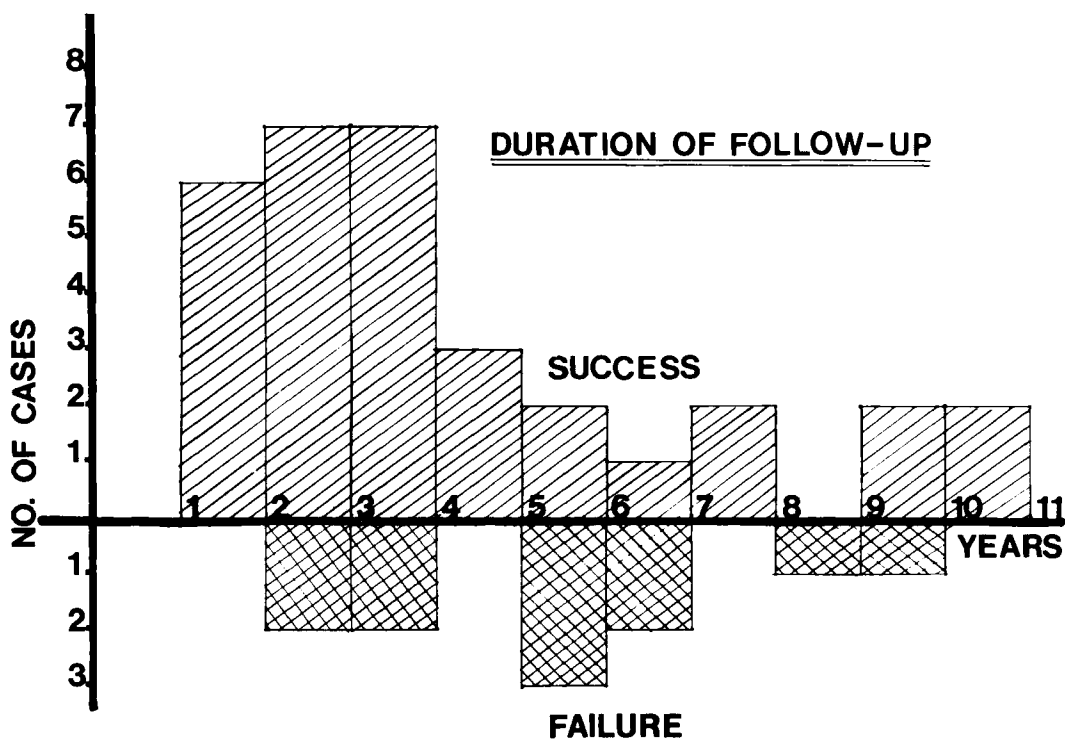
Eleven out of the 43 knees in the personally reviewed series were graded as failures. Inclusion of a review of the notes and radiographs of those seven patients (10 knees) who did not attend for assessment did not adversely alter this ratio (Table 3).

Up to the time of review only one patient from the personally reviewed series, and the only known failure from the cases who did not attend for review, had undergone further surgery. In both these cases, double osteotomy was done.

Figure 1 shows the distribution of personally reviewed knees related to the duration of follow-up at the time of review. Approximately half these knees have been followed up for 4 years or less; since half of all the failures became apparent more than 4 years postoperatively (Figure 2), it is expected that the up-to-4-year follow-up group will produce more failures.

Table 3. All traceable cases.

Patients	43
Knees	53
Failures	12 (23 %)
Further operations	2 (both double osteotomies)



In this series it has not been possible to obtain evidence that steroid therapy, seronegativity or positivity, or sedimentation rate, affects the result of synovectomy. Also no valid conclusions can be drawn as to whether or not synovectomy affects the general arthritic process. The prospective studies needed to obtain such information would be extremely difficult

<u>ASSESSMENT OF PAIN RELIEF.</u>							
X : SUCCESS F : FAILURE							
POST-OP	PRE-OP			XXXX	XXXX		
				XXXXX	XXXXX		
				XXXXX	XXXXX		
				XXXXX	XXXXX		
				XXXXX	XXXXX		
				XXXXX	XXXXX		
			XX	XXXXX	XXXXX	XXX	
		1	2	3	4	5	6
				FFFF	FFFX	XXXXX	XXXXX
				FF	F	XXXXX	XXXXX
				XXXXX	XXXXX		
				XXX	XXXXX		
					F		

to carry out because of the many variables encountered.

This is shown in detail in Figure 3. Pain has been graded 1–6 according to a d'Aubigné-Postel scale (d'Aubigné & Postel 1954). By this scale 6 equals no pain and 1 equals severe, spontaneous

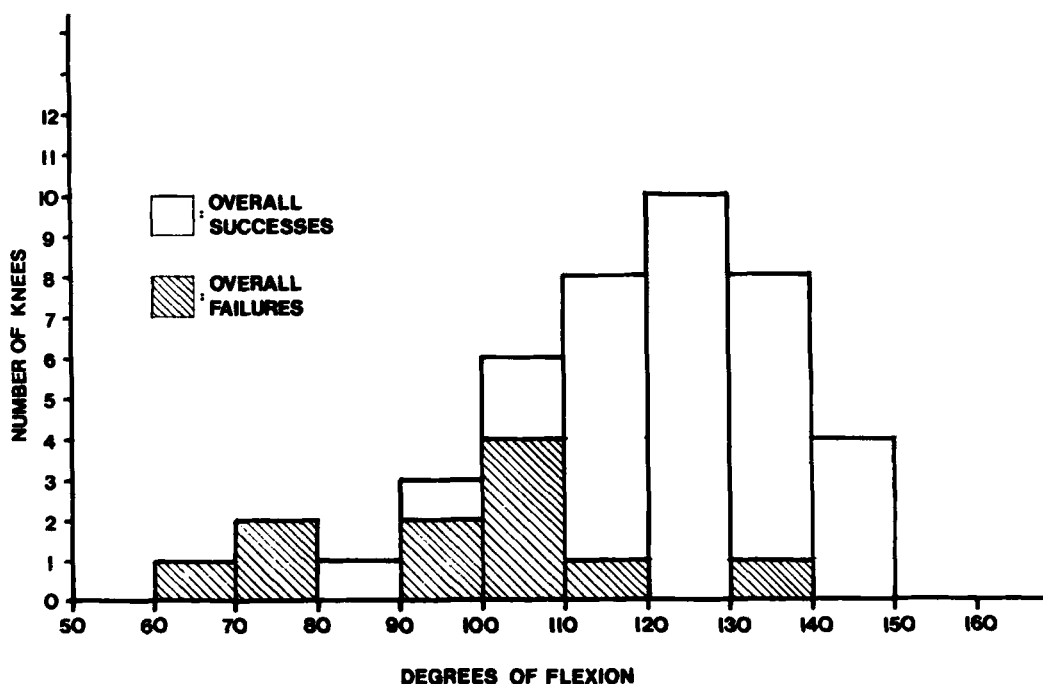


Figure 4. Knee flexion at the time of review. At this stage only four knees had flexion less than 90°.

pain. Most of the successes were improved by two points on the scale. Thirty-two of the 43 personally reviewed knees had complete or almost complete pain relief at the time of review. One of these (F in column 6) had had a double osteotomy done and is therefore classified a failed synovectomy.

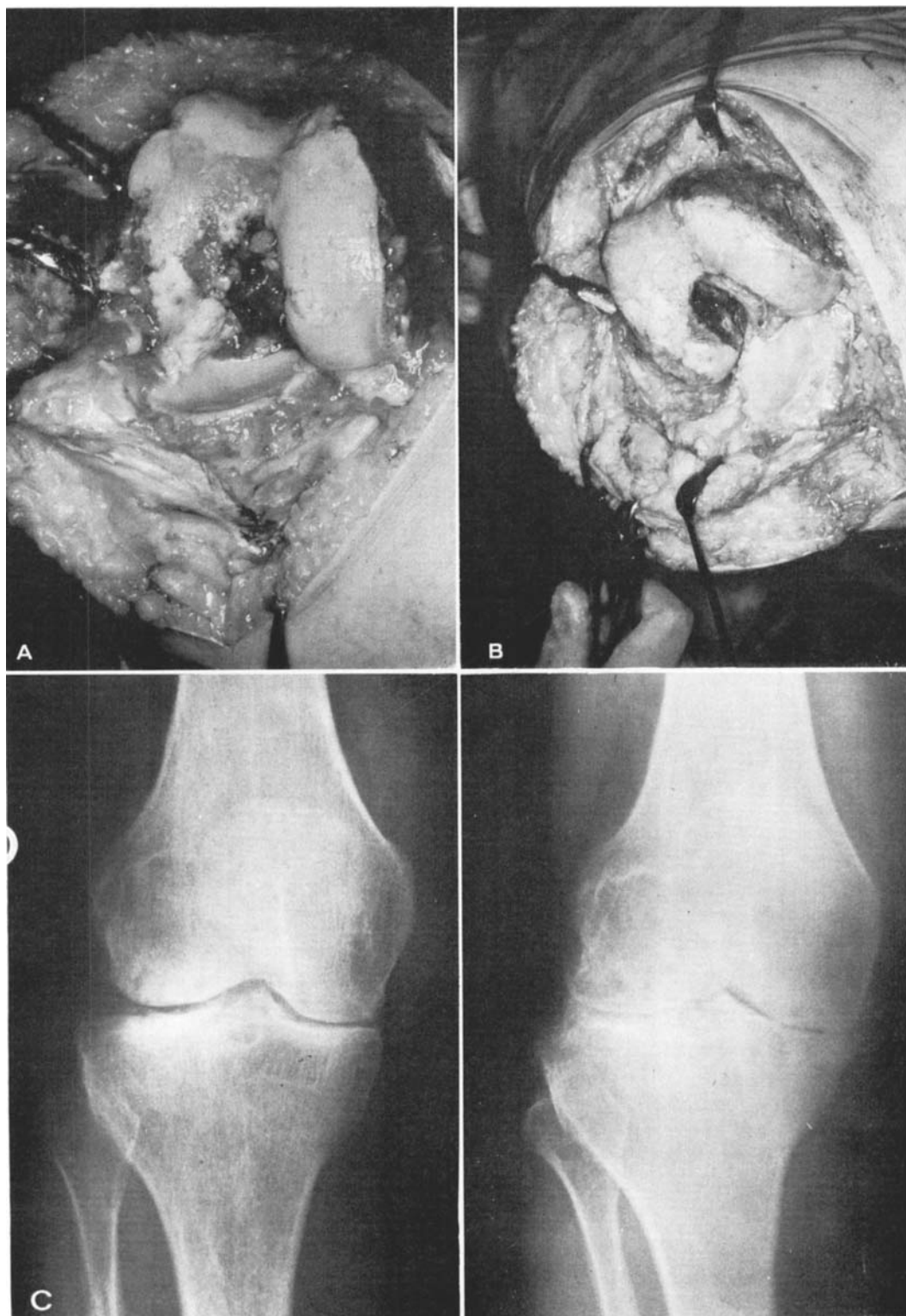
Effect of synovectomy on knee flexion

The flexion of the knee related to success or failure at the time of review is shown in Figure 4. Only four knees out of 43 had flexion of less than 90° at the time of review. In the successful group (32 knees), 20 knees had approximately the same flexion ($\pm 10^\circ$) compared with that preoperatively; seven gained more than 10° of flexion and five lost between 10° and 20° of flexion. These five are still graded as successes overall because of relief from pain and synovitis.

Results in knees with more advanced changes

It has been the policy of this unit to consider knees with more advanced changes for synovectomy, and in fact almost half of the knees in this series are in this category. Graduation of the severity of articular disease by X-ray appearance has been avoided because the operative findings are frequently worse than the radiographic appearance would lead one to suspect. The operation notes, which for all cases in this series were in detail, were studied. The presence of bare bone was used as the index of ad-

Figure 5. a. Case J.L. Bare bone at operation (1968). b. Case J.L. The knee after synovectomy. c. Case J. L. Radiographs in 1968 and 1974. This knee lasted 4 years before it failed. Over the past 2 years it has not deteriorated further. The patient does not want further surgery because this is not at present her main disability.



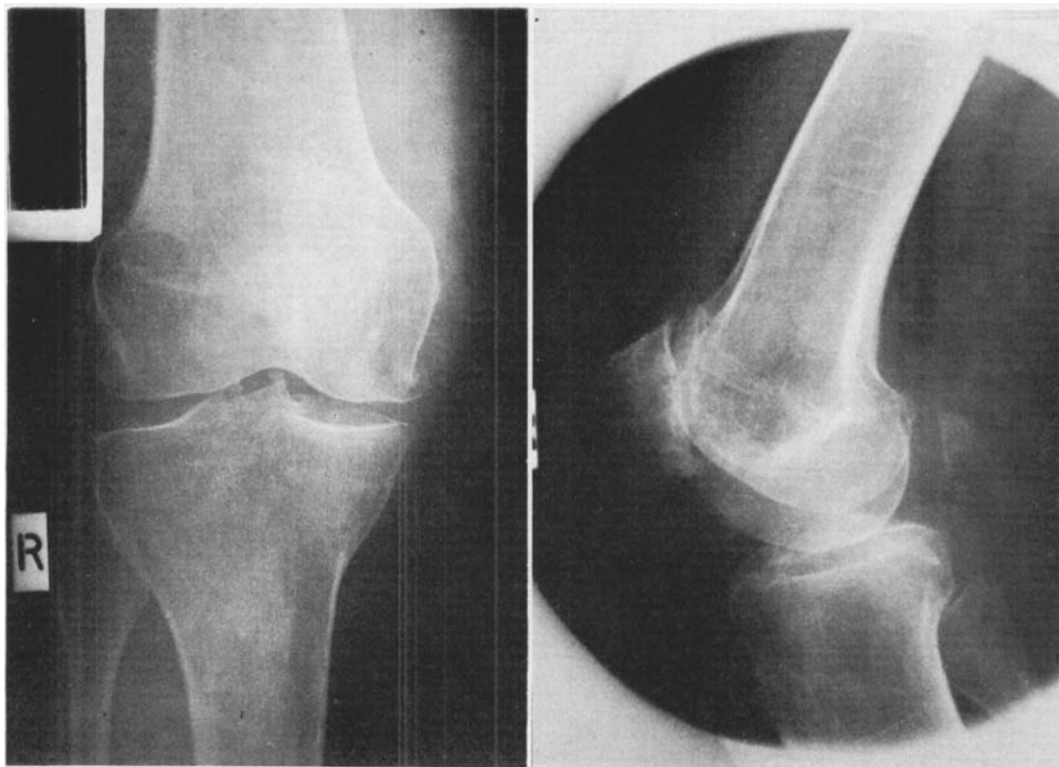


Figure 6. a. Case V.A. Preoperative radiographs 1964. Bare bone present in all compartments. Patellectomy done.

vanced disease. This means areas of full thickness cartilage destruction in weight-bearing areas of the joint. The presence of peripheral erosions or osteophytes, or the degree of synovial proliferation are not considered as being necessarily indicative of advanced disease (Figures 5–7). Figure 8 shows the results. Twenty knees had bare bone at the time of operation, and seven of these had a patellectomy as well as synovectomy. The success/failure rate is the same as for the series as a whole. The need to do a patellectomy did not seem to prejudice the result in the small number of cases in which it was done.

Anterior synovectomy and popliteal cysts

Five patients in this series had popliteal cysts. All these were cured by an-

terior synovectomy, thus agreeing with the findings of Pinder (1973).

Postoperative manipulation

Twenty-four knees were manipulated and 19 were not. There was no significant difference between the manipulated and non-manipulated groups with regard to success or failure at the time of review.

The cause of failure

The clinical signs and X-rays of the knees considered failures were analysed. Findings suggest that the majority of knees fail because of secondary degenerative changes rather than recurrence of active synovitis (Table 4), and thus we agree with Marmor (1973) in this respect.



Figure 6. b. Case V.A. 1974. Still a clinical success. Knee cool, stable, and painless. Flexion 10° – 130° .

DISCUSSION

Most authors agree that knee synovectomy for rheumatoid disease is a valuable operation for relieving pain and improving functional capacity (Geens 1969). There is not, however, complete general agreement on the indications, or, perhaps more importantly, on the contraindications for the operations. For instance, is the presence of a flexion deformity a contraindication to operation? Laurin (1971) and Laurin et al. (1974)

state that it is, but in Marmor's series (1973) a flexion deformity up to 20° was considered acceptable. We have not considered a flexion deformity a definite contraindication. In fact, in the 43 personally reviewed knees in this series, 24 had flexion deformities of between 5° and 20° at the time of surgery. Nine of these knees (38 per cent) were graded as failures. This is a higher failure rate than for the series as a whole, but not high enough to make a flexion deformity up to 20° a contraindication.

It has been frequently reported that knees which have clinically or radiologically advanced changes preoperatively do poorly following synovectomy (Geens 1969, Geens et al. 1969, Graham & Checketts 1973, Laurin et al. 1974). Lowry & Lele (1971) set out contraindications to synovectomy according to the

Table 4. Analysis of clinical signs and X-rays in failed cases to show that the cause of failure in the majority of cases is secondary degenerative change.

Secondary degenerative changes	8
Synovitis	1
Mixed	2



Figure 7. Case B.S. Operation 1969. Radiographs in 1969 and 1974; bare bone at operation. Still a success. Painless, cool, stable, flexion 5° – 125° . Note the radiological improvement.

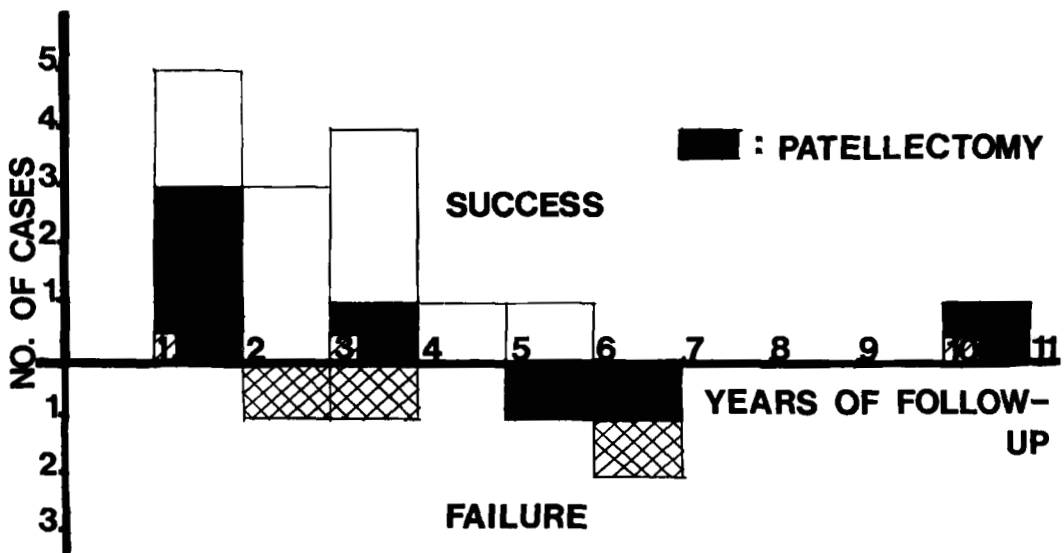


Figure 8. Fate of knees with bare bone. The failure rate is the same as for the series as a whole.

severity of the local disease, and define their grades of severity. However, in all series (Marmor 1973, Laurin et al. 1974, Roles & Arden 1973), the fact remains that there are some knees with relatively advanced changes which have done well following synovectomy. Our small, but carefully documented and examined series shows that in the medium term, up to 5 years postoperatively, knees undergoing synovectomy in a more advanced stage of disease can do as well as those operated upon earlier. The necessity to do a patellectomy does not seem to influence the result.

With regard to the cause of failure in synovectomised knees, it has not been shown here that the majority of failures are due to a recurrence of synovitis, as reported by several authors (Ranawat et al. 1971, Graham & Checketts 1973). Out of the eleven knees classified as failures in this series, eight were cool and dry and showed radiological degenerative changes, and two showed degenerative changes, but also had detectable synovial thickening and mild warmth; in only one case was there definite synovitis without radiological degenerative changes. It may well be that regenerated synovial membrane is grossly identical with the pre-operative membrane (Patzakis et al. 1973), but this does not necessarily imply that it is functionally or immunologically the same. If recurrent synovitis were the cause of the majority of failures, then we might expect resynovectomy to be a less rare operation than it is.

ACKNOWLEDGEMENTS

We wish to thank Drs. Cardoe and Wenley for referring these patients to us, and for their

permission to review them. We would also like to thank Mr. Burn and the Department of Medical Illustration, United Norwich Hospitals, and our medical secretaries.

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