

PSEUDOCHONDROMALACIA PATELLAE

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A condition causing knee pain with retropatellar crepitus similar to chondromalacia patellae is described. The symptoms seem to be due not to chondromalacia of the patella, but to a local synovial thickening proximal to the articular surface of the medial femoral condyle. Thirteen patients, aged 10 to 21 years, were operated upon because of this condition, three of them bilaterally. In most of them the changed synovial membrane was excised. The operation in eleven of the knees was followed by considerable or complete relief. Of the remaining five knees, three were temporarily improved.

Key words: pseudochondromalacia patellae; chondromalacia patellae; knee joint; synovitis

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Nangle (1972) and Smillie (1974) have described a condition with knee pain caused by a thickening of the synovial membrane. The thickening was localized to the anterior femoral surface just proximal to the articular surface. Both authors stress that the condition can be mistaken for chondromalacia patellae. Nangle called the condition "pseudochondromalacia of the patella". This report seems to confirm Nangle's and Smillie's observations.

PATIENTS

The material consisted of thirteen patients, six males and seven females. Three of the females were operated upon bilaterally. The patients' ages at the time of operation ranged from 10 to 21 years (mean 17 years) (Table 1). The patients presented for treatment over a period of 3 years at an orthopaedic department serving a population of 260,000 inhabitants. During the same period chondromalacia patellae was diagnosed in a much larger number of cases.

Symptoms

The duration of symptoms varied between 6 months and 5 years, in most cases more than 2 years. All of the patients denied any known trauma. The condition was not related to any particular type of physical activity.

All the patients reported knee pain when walking or running. The pain was localized to the anterior part and sometimes also to the inside of the knee. The pain became more pronounced on exertion. After exertion the pain was often felt for some hours even at rest. None had any history indicating luxation or subluxation of the patella. Spontaneous pain at rest was common. Most of the patients had a feeling of crepitations in the knee and several had experienced a sensation of momentary catching but not actually locking. None had noticed any swelling of the knee. Nine had bilateral symptoms. In three of them both knees were operated upon, while in the remaining six the symptoms in the other knee were not considered severe enough to warrant operation. For further details concerning the symptoms see Table 1.

None of the patients had any manifestations of generalized joint disease or other systemic illness at the time of operation. However, later one of the patients developed symptoms in other joints, and he might possibly have rheumatoid arthritis.

Table 1. Clinical details (thirteen patients)

Age at operation (years)	Sex	Symptoms bilaterally	Side operated	Duration of symptoms (years)	Pain on motion	Pain at rest	Feeling of crepitations	Catching	Follow-up time (years)	Postoperative results	Remarks
10	F	+	R	1	+			+	2.5	Improved	
13	M		R	3	+	+	+		2	Symptom-free	
13	M		R	1	+	+			3	Symptom-free	Partial chondrectomy of patella
14	M	+	R	1	+		+		2.5	Improved	
15	F	+	R	2	+		+		2	Symptom-free	
16	F		L	2	+	+	+		1	Symptom-free	
16	M	+	L	1.5	+		+		2	Not improved	Symptom-free for 4 months postoperatively
17	F	+	L	2	+	+	+	+	1.5	Symptom-free	
17	F		R	2	+	+	+	+	2	Improved	
18	F	+	L	3	+	+	+	+	0.5	Improved	Partial chondrectomy of patella
18	F	+	R	4	+	+		+	2.5	Symptom-free	
19			L	5	+	+		+	1.5	Not improved	Symptom-free for 3 months postoperatively
20	M	+	R	3	+		+		2.5	Not improved	Symptom-free for 4 months postoperatively
20	M		R	0.5	+		+		2	Not improved	Rheumatoid arthritis ?
20	F		L	0.5	+			+	2.5	Improved	
21	F	+	R	1	+	+	+		2	Not improved	Fracture of patella 3 weeks postoperatively

The cartilage of the proximal pole of the patella was rounded off in two knees. In all the other knees the changed portion of the synovial membrane was excised.

Signs

With the knee extended translation of the patella proximally or distally applying simultaneous pressure to the upper part of the patella invariably produced painful crepitations. These crepitations resembled those which can be felt in chondromalacia patellae. All the knees were tender to palpation in an area covering 3–4 cm² on the anterior surface of the femur, immediately proximal to the articular surface of the medial femoral condyle (Figure 1). Palpation of this area revealed a rough, uneven surface. This part of the examination was best carried out with the knee flexed 70–80°. The stability of all the knees was normal and none showed evidence of exudate. In all the knees the position of the patella relative to the femoral condyles was judged as normal. In all the patients the mobility of the ankle, knee and hip joints was normal. Three patients could not squat fully with their heels flat on the ground.

The E.S.R. was normal in all patients. A–P roentgenograms of the extended knee and lateral views of the knee flexed about 30° were normal. In eleven knees in which the growth plate in the upper tibia was closed before operation the relation

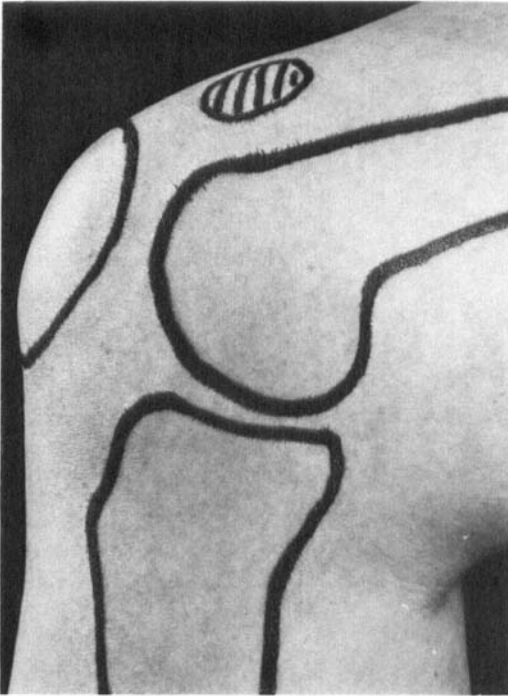


Figure 1. The medial side of the knee. The hatched area is the site of tenderness to palpation and the area in which a rough uneven surface can be palpated.

between the length of the patella and the patellar ligament was determined on the roentgenograms according to Insall & Salvati (1971). It was found to be 0.93 to 1.36 (mean 1.07). In the remaining five knees the growth plates were still open and for technical reasons such measurement was not possible.

OPERATIVE FINDINGS AND TREATMENT

The knee joint was explored via a medial parapatellar incision in a bloodless field with the patient under general anaesthesia. Immediately proximal to the articular surface of the medial femoral condyle the synovial membrane was found to be reddened and thickened. The site of the thickening corresponded to the area with tenderness and a palpable rough surface. On translation of the patella in a proximal direction over this area the synovial membrane folded in front of the upper cartilage-lined pole of the patella (Figure 2). On continued translation of the patella in a proximal direction the synovial cushion was forced under the patella. This occurred gradually and every time a portion of the membrane was pressed under the patella, the latter jerked. When this was repeated one experienced a sensation of crepitations in the hand manipulating the patella. The same thing happened when the patella was translated distally from its most proximal position. This finding corresponded to the retroapatellar crepitations felt preoperatively.

In two cases the almost rectangular edge of the cartilage on the proximal pole of the patella was rounded off with the knife. The patella then slipped smoothly over the thickening of the synovial membrane without any folding, and the crepitations disappeared. In all the other cases the changed portion of the synovial membrane was excised together with the underlying fatty layer without interfering with the periosteum. Afterwards the crepitations could no longer be elicited.

In none of the cases was it possible to detect or feel any fissures or other changes in the cartilage of the patella or femoral condyles. The position of the patella relative to the femur was judged as normal. The amount of synovia was not increased. The menisci and the cruciate ligaments were normal in the parts that could be examined via the incision. The incision was closed in layers and the leg was immobilised in plaster from the groin to the ankle with the knee extended. The patient was allowed to walk on the leg as soon as he could. The plaster and the skin sutures were removed after 10–14 days. As a rule the patients recovered full mobility of the knee in 3–4 weeks.

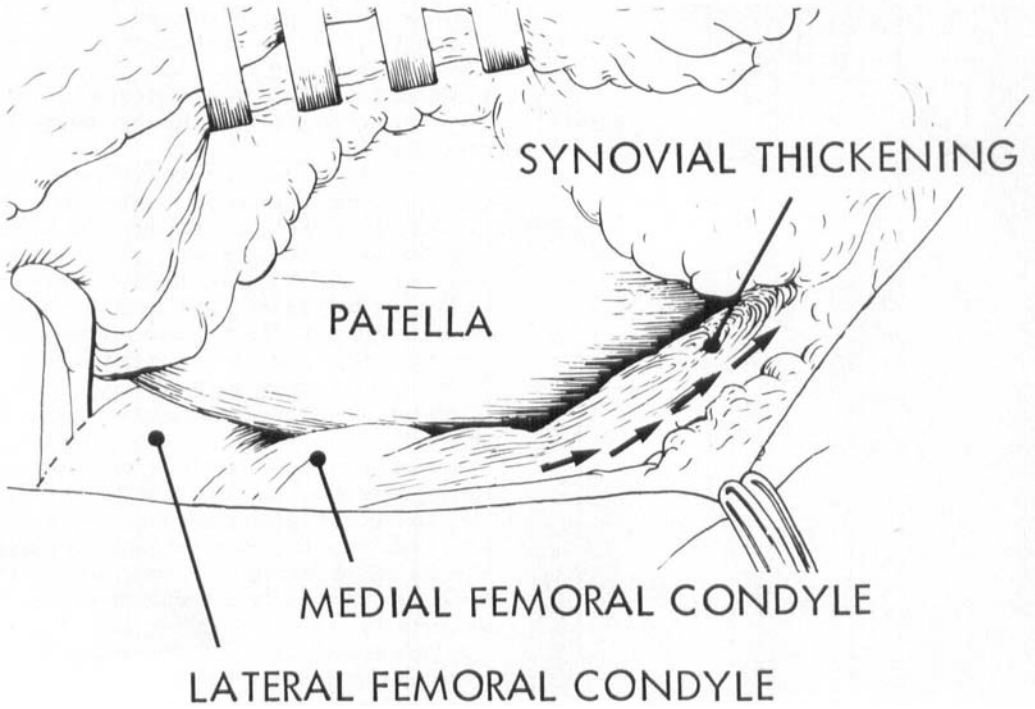
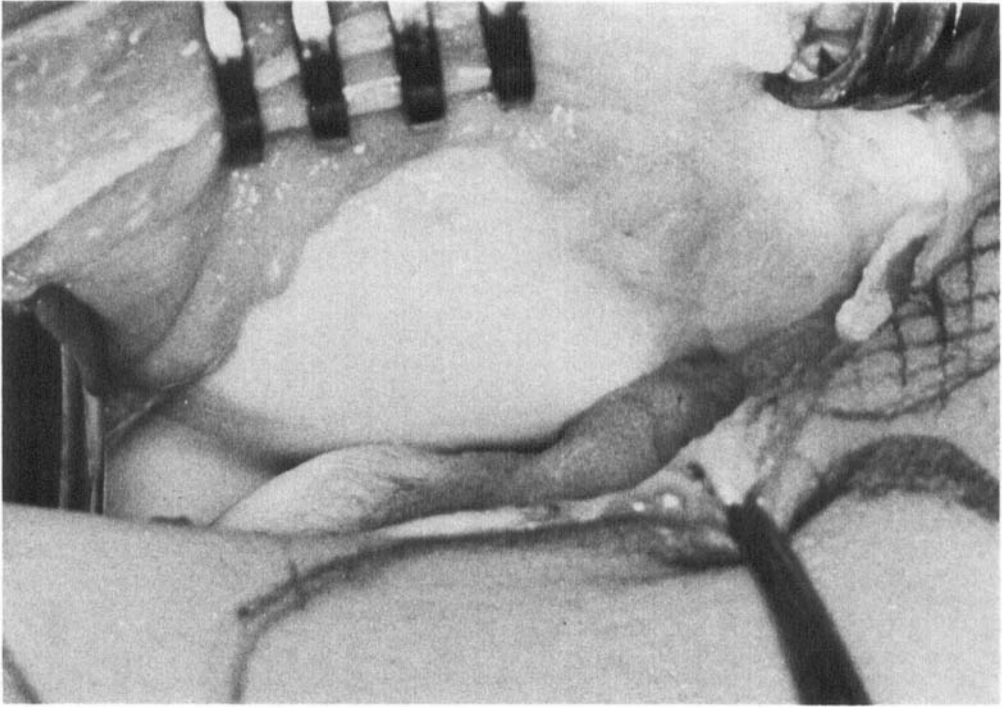


Figure 2. Right knee. Medial parapatellar incision. Proximal to the cartilage of the medial femoral condyle is a reddened thickening of the synovial membrane which folds up in front of the upper part of the patella.

Histologic examination of the excised synovial membrane showed in all patients a mild, unspecific chronic inflammation. The sub-synovial fatty layer was normal.

POSTOPERATIVE RESULTS

The patients were followed up for 1 to 3 years. Six knees became free of symptoms. Five were improved. These five knees were occasionally painful on exertion, but much less than before the operation. In these eleven symptom-free or improved knees the tenderness and palpable roughness on the area proximal to the medial femoral condyle disappeared. In the remaining five operated knees the symptoms were about the same as before the operation. Three of these were symptom-free for 3–4 months after operation. Then the symptoms gradually recurred (Table 1).

The recurrence was accompanied by a return of the tenderness and the uneven area proximal to the medial femoral condyle. One patient fell 3 weeks after the operation and sustained a patellar fracture without displacement. The fracture was treated by immobilisation and healed, but the patient has largely the same symptoms as before the operation. The fifth patient with no recovery has after some years begun to complain of symptoms referable to other joints and there is now reason to suspect that he has rheumatoid arthritis.

None of the operations were complicated. None of the knees are worse after the operation and all have normal mobility.

DISCUSSION

Nangle and Smillie reported a condition that was presumably the same as that described here, i.e., knee pain due to thickening of the synovial membrane over the anterior surface of the femur proximal to the articular surface. Excision of the thickening gave relief.

Smillie described the condition in patients he considered to have patella alta. Nangle's

patients had "an abnormally high patella". Smillie based his diagnosis of patella alta on the clinical findings. Nangle did not define what he meant by "an abnormally high patella". Neither Nangle nor Smillie mentioned any retropatellar crepitations, but both contended that the condition is often mistaken for chondromalacia patellae. Both authors mention also clinical signs other than patella alta which lend support to their diagnosis. Thus, Nangle claims that "a useful point in the diagnosis was the fact that the patients could not squat fully with their heels flat on the ground because of contracted quadriceps and calcaneal tendons". Smillie writes that his patients sometimes had exudate in the knee which he thinks argues against chondromalacia patella and further that the pain was elicited by "compression of the patella clearly located above the femoral condyles with the knee in extension".

In the present material the type and site of the pain as well as the retropatellar crepitations suggested chondromalacia patellae. None of the criteria described by Nangle or Smillie could, however, be used for establishing a differential diagnosis. Thus, neither at the clinical examination nor at the operation was there any evidence of patella alta. The results (0.93–1.36, mean 1.07) of the measurements according to Insall & Salvati in those patients where this was possible did not suggest patella alta (Insall & Salvati 1971, Jacobsen & Bertheussen 1974, Lancourt & Cristini 1975). Only three patients could not squat properly with their heels on the ground. The first patient, operated upon before Nangle published his report, was not examined pre-operatively in this respect. In none of the patients was any exudate in the knee demonstrable at the clinical examination or at operation.

Instead, the characteristic palpable rough and uneven surface proximal to the articular surface of the medial femoral condyle together with tenderness on palpation was used to distinguish this condition from chondromalacia patellae. Neither Nangle nor Smillie mentioned such a finding.

Nangle and Smillie contended that the aetiology in their cases was patella alta this having caused an abnormal contact between the patella and femur. In the cases presented here it was necessary to search for another explanation. Primary synovitis localized to this particular area appears improbable. It appears more likely that the cause was a special configuration of the patella and/or femur or some abnormal pattern of movement between them. The fact that the two patients in whom the upper cartilage-lined margin of the patella was rounded off made an almost complete recovery although the thickened synovial membrane was left untouched argues for such a cause. However, owing to lack of precise knowledge of the normal configuration of this special part of the patella in this age group it is not possible to say whether the form of the patella was abnormal in the patients in this material. Nor could any abnormal shape of the femur or any abnormal pattern of movement between the patella and the femur be detected. However, the thickening and reddening of the synovial membrane was considered definitely pathologic in all the cases, for which reason this part of the membrane as a rule was excised.

In those patients in whom the symptoms recurred some time after the operation tenderness to palpation and the roughness

proximal to the medial femoral condyle returned. This was ascribed to a recurrence of the thickening of the synovial membrane. It would have been interesting to reoperate upon these knees and then round off the upper cartilage-lined corner of the patella, but this was not considered warranted until more is known about this condition.

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