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Traumatic hemarthrosis in stable knees

A thorough arthroscopic examination was performed in 90 consecutive patients with sprained knee injuries with hemarthrosis, but without signs of instability or fracture. The source of bleeding was found in all but five joints. Thirty-nine injuries were tears of the cruciate ligament, only three of which were complete tears. Fourteen injuries were (osteo)chondral fractures and six were meniscal lesions. The remainder bled from the synovium or meniscal attachments. The arthroscopic examination resulted in an altered course of treatment in few, if any, of these patients.

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Great efforts have been invested in the early diagnosis of ligamentous injuries of the knee. Particularly the anterior cruciate ligament has been considered to require surgery (Palmer 1938, Liljedahl et al. 1965, Feagin & Curl 1976, Funk 1983, Noyes et al. 1983). Hemarthrosis has been considered a very important symptom (Jacobsen & Töndervold 1975, Hughston et al. 1976, Westlin & Wiklund 1978, Mariani et al. 1982). In patients with hemarthrosis of the knee, anterior cruciate ligamentous injuries were found in 50–70 per cent (Gillquist et al. 1977, Noyes et al. 1980).

The diagnosis of ligamentous knee injuries requires anesthesia and possibly also arthroscopy. A point of importance in this context is the pathology of knee joints with hemarthrosis, but without other signs of ligament injuries of the knee at the clinical examination. What injuries would escape detection if an arthroscopy is not performed and what would the consequences be for the patient?

With the aid of arthroscopy, we have tried to identify the source of traumatic hemarthrosis in knees that were stable at examination under anesthesia.

Materials and methods

Since 1973, all knee injuries admitted to our emergeny room have followed a uniform diagnostic procedure including stability tests, aspiration of the joint when hemarthrosis was suspected, and radiographic examination. All patients in whom instability could not be ruled out and in whom the injury was caused by a sprain or obscure trauma without radiographic signs of fracture went on to examination and stability tests under general anesthesia. The sagittal instability was evaluated with the Lachman test and the anterior drawer and the pivot shift tests. The mediolateral instability was tested in both straight and semiflexed positions.

From 1979 to 1984, 940 consecutive patients went through this entire diagnostic procedure. Eighty-one per cent of the knees had hemarthrosis. Among the latter were 90 patients who, after indirect trauma, were stable under general anesthesia. The average age was 25 (12–58) years, and 66 were men. Two thirds of the injuries were caused by sports activities, usually soccer. The examination was undertaken on the average 7 days after the accident.

Arthroscopy was performed with a 5-mm Storz arthroscope equipped with 30° and 70° telescopes, which were introduced either centrally through the patellar ligament or through an anterolateral stab incision. In order to perform a complete examination, additional incisions were used at times. Continuous saline irrigation was used; and in addition to the visual examination, a hook was inserted to test the tension of the anterior cruciate ligamant and other structures.

Results

The cause of the bleedings was found in all but five cases – in several instances there was more than one source of bleeding. The most common finding was hematoma in a partially torn anterior cruciate ligament. A complete rupture of the anterior cruciate ligament was found in only three cases. There were 14 chondral or osteochondral fractures. Only six meniscal lesions were found. Otherwise, the bleedings were in the synovium, mostly on the medial, lateral, or anterior aspects, and also in a few instances in the meniscal attachments (Table 1). Among those 15 joints with bleeding in the medial part of the synovialis eight had a history suggesting patellar dislocation.

Table 1. Arthroscopic findings in 90 stable knees with hemarthrosis.

Cruciate ligament tear		39
Complete anterior	3	
Partial anterior	34	
Partial posterior	2	
(Osteo)chondral fracture		14
Condyles	7	
Patella	7	
Fat pad hematoma		14
Synovial hematoma		26
Medial	15	
Lateral	7	
Superior	2	
Posterior	2	
Meniscal hematoma		14
Lateral	2	
Medial	12	
Meniscal tear		6
Medial	3	
Lateral	3	
Source of bleeding not found		5

Discussion

The chondral fractures were in many instances small, and it could not be established with certainty at the time of the arthroscopy that they were the source of the bleeding.

The proposal that arthroscopy will provide a diagnosis in almost all knee injuries (Lysholm et al. 1981) is supported by our findings that even stable knee joints may present substantial pathology. In a similar study partial anterior cruciate injuries were found in 28 per cent and complete ligamentous ruptures in 44 per cent of the cases (Noyes et al. 1980). The relatively few total ruptures of the cruciate ligament found by us were due to the selection for arthroscopy of only cases that were found to be stable by an experienced knee surgeon. In only three instances a complete rupture of the anterior cruciate ligament had escaped diagnosis before arthroscopy.

An important question is whether surgical repair would have been of benefit to these patients. Partial anterior cruciate ligamentous injuries without clinical instablity need not be operated on (Odensten et al. 1985), and perhaps not even total ruptures in stable knees. However, a partial rupture may have an inherent risk of further injury – sports activities should probably be restricted for months. Meniscal lesions do not suffer from delayed surgery and may remain asymptomatic indefinitely.

So far, there is no evidence that osteochondral or chondral fractures need early surgery or that surgery makes any difference for the patient's prognosis. The diagnostic efforts invested in the patients described here rather support the statement of Dandy et al. (1982) that "arthroscopy has raised more questions than it has answered."

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