

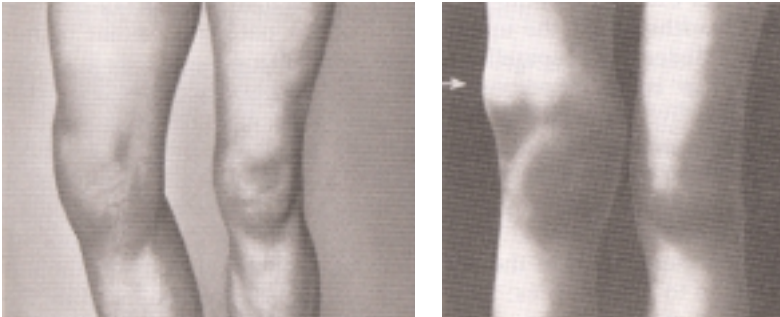
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# 34

## The Knee Joint

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For examination the lower limbs should be bare. The patient is examined first in the upright position, both front and back, secondly seated, thirdly supine and finally prone. In the supine position the hip joint should be examined if there is no obvious abnormality in the knee, as pain is sometimes referred from the hip to the knee. When the diagnosis is straightforward the examination may be concluded before the whole of the routine is complete, but except with localized swellings it is unwise to curtail it. In particular, to omit to examine the popliteal space may prove a matter or regret.



**Fig. 34.1** Traumatic effusion into the knee joint. Note the obliteration of the normal outline of the joint when compared with the other knee.

**Effusion into the Knee Joint.** To commence, consider the physical signs of fluid in the joint, irrespective of whether it is the result of a recent injury or not.

*Inspection with the Patient Standing.* Fluid in the joint can often be seen (*Fig. 34.1*). Look particularly for a fullness above and on either side of the patella which suggests an effusion into the knee joint. In large effusions, especially in chronic cases, the distended suprapatellar pouch often is outlined as a horseshoe-shaped swelling (*Fig. 34.2*) because of wasting of the quadriceps femoris muscle. *Testing for the Presence of Fluid in the Knee Joint.* The only conditions likely to be confused with an intra-articular effusion are: (a) superficial cellulitis; and (b) prepatellar bursitis. Fluid *in* the joint is demonstrated in the following ways:

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Fig. 34.3 Testing for a patellar tap.

*Substantiating Continuity of a Supra- and Infrapatellar Swelling.* If the amount of fluid is considerable, transmitted fluid impulse can be elicited from *below* the patella on one or other side of the ligamentum patellae, to that part of the swelling two finger-breadths *above* the upper border of the patella—a point manifestly well clear of a distended prepatellar bursa (*see* p.530).

*The Patellar Tap* is pathognomonic. In the horizontal position a considerable amount of excessive synovial fluid gravitates into the suprapatellar pouch. With one hand placed above the patella as shown in *Fig. 34.3*, exert downward and backward pressure on the suprapatellar pouch, and drive the fluid into the knee joint proper. With the index finger of the other hand, depress the patella with a sharp, jerky movement. Should the characteristic tap be felt, it is proof of the existence of excessive fluid in the joint. Too much fluid can prevent the patella being pushed on to the condyles; too little will not life the patella free from them. There must be a *moderate* amount for this test to be positive.

*Test for a Small Amount of Fluid in the Knee Joint.* By compression, displace the fluid from one of the obliterated hollows on either side of the ligamentum patellae into the knee joint proper. In a good light, watch; the hollow refills slowly. Even a small effusion can be confirmed by this test.

**Traumatic Synovitis** is not a diagnosis; it is a sign of injury (Smillie). There is usually an interval of several hours between the injury and the appearance of the swelling, whereas in acute traumatic hermarthrosis swelling is apparent within half an hour. Varying mixtures of blood and synovial fluid alter this latent period.

**Haemarthrosis.** In addition to the above short latent period, that the joint is filled mainly with blood, as opposed to synovial fluid, is indicated, by the following signs: the knee feels slightly warmer than normal; the swelling is tense and extremely tender; later it feels doughy.

Even more emphatically, haemarthrosis is not a diagnosis but a sign of intra-articular ligamentous tearing, of a torn meniscus, or of a fracture into the joint, each of which must be sought. An X-ray is thus essential, but in addition, in

**Palpation of the Joint.** Acquire the habit of looking upon the knee joint, not as a mere hinge, but as a two-component joint. The patello-femoral component often is neglected in routine examination, yet not infrequently it can provide helpful, and sometimes cardinal, information regarding intra-articular pathology. While the patient is still lying on his back, palpate deeply and systematically beneath the overhanging edges of the patella for tenderness. Next, push the patella medially and laterally. This permits direct palpation of a small portion of the articular surface of the femoral condyles.

**Passive Movements.** With the left hand laid upon the joint, grasp the ankle with the right; flex and extend the knee joint several times (*see Fig. 2.25, p.16*), noting if there is joint crepitus or a click. Crepitus may be felt by moving the patella on the underlying femoral condyles.

**Significance of a Click.** An intra-articular click is not necessarily due to a torn meniscus. A painless click as the patella moves over the condyle sometimes occurs in a normal joint, especially during childhood. The importance is, 'Is it accompanied by discomfort or pain?'; 'Does the patient associate the sound with the "sickening" sensation that heralds the attack of which he complains?' If not, (a) test the lateral mobility of the patella (*see p.527*); (b) test the other knee joint—a click occurring in a normal joint frequently is bilateral.

**Differential Diagnosis of a Click.** An intra-articular click can in some respects be simulated by the sound of a snapping tendon such as is produced by the semitendinosus slipping around and becoming hitched over the medial condyle, or the tendon of biceps over the head of the fibula, or the edge of the iliotibial band over the lateral condyle—or any tendon in the neighbourhood becoming hooked over an exostosis. Provided the phenomenon can be reproduced at the time of examination, an extra-articular snap should not be confused with an intra-articular click, for the extra-articular sound is a dull thud, often accompanied by a shudder, and the tendon implicated can be seen and felt as a tense sinew.

## Internal Derangements of the Knee Joint

This is an old term\* which is something of a blunderbuss, and includes such conditions as a tear of a collateral ligament and bruising of the infrapatellar fatpad, neither of which is intra-articular. It is hoped that with increasing experience the reader will use the term less, and with augmented clinical acumen will specify *which* derangement is present. The term covers the conditions which follow, up to but excluding, 'Injuries of the Extensor Apparatus' (p. 526). It is convenient to deal first with lesions of the menisci, the commonest cause by far.

## Lesions of the Menisci

These are very common in males, particularly among footballers and coalminers. With the knee flexed and weight-bearing, a twist occurs with

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\* Introduced by William Hey in 1784. Smillie notes that the abbreviation 'I.D.K.' also stands for 'I don't know'. The introduction of the arthroscope which enables inspection of the interior of the joint has, in expert hands, greatly reduced the number of the fruitless surgical explorations of the joint.

order to elucidate the signs to be described, if no fracture is found, aspiration of the joint with full aseptic precautions and under anaesthesia is necessary.

In cases where the signs point to haemarthrosis, yet the accident was trivial or non-existent, focus attention on the possibility of haemophilia (*see pp. 329,449*).

**Examinations of the Movements of a Recently Injured Knee Joint** may yield valuable information, e.g. localized tenderness over the medial collateral ligament; loss of full extension. On the other hand, the examination is often disappointingly uninformative because voluntary muscle spasm of an apprehensive patient makes detailed examination impossible. *In these circumstances any attempt to move the joint must be postponed for a few days*, when the examination is likely to be attended by more satisfactory results.

**Testing Flexion and Extension.** Should there be free fluid in the joint, full flexion will be curtailed. Likewise full extension is not possible, the fluid preventing the last part of the movement of the leg and thigh into a straight line.

**Examination in a Case other than One of Recent Trauma.** The presence of a scar (or scars) should be noted, and, if present, the patient interrogated.

**The Pointing Test.** If pain is the leading symptom ask the patient to point with one finger to its site. In torn medial meniscus this sign is often particularly valuable (*Fig. 34.4*). If the patient has felt 'something moving about in the joint', ask him to try to find the 'joint mouse' himself.



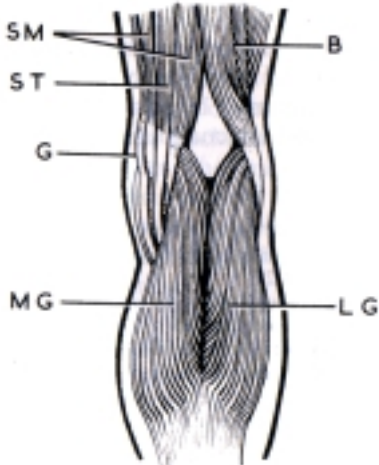
**Fig. 34.4** Patient pointing to the spot where he experiences pain (recurrent displacement of the medial meniscus). The site of pain when the medial ligament is torn is indicated also (II).

**Wasting of the Quadriceps.** Inspection and comparison with the opposite side will reveal any wasting of the quadriceps muscle; indeed, a better estimation of loss of volume and of tone of this tripartite muscle is obtained by inspection and palpation than by use of a tape-measure. This is true particularly of a limb which is well covered with subcutaneous fat. The eyes should be directed especially to the vastus medialis, which, in internal derangements of the knee joint of some standing, wastes first and wastes most.

While if the knee joint is insecure the vastus medialis wastes apace, the converse is also true, for when this muscle is paralysed or irreparably injured, an otherwise normal knee joint becomes insecure.

**Testing Movements.** The Neutral Position is with the knee straight. Ask the patient to bend his knee as fully as possible (maximum flexion =  $135^{\circ}$ , i.e. until the calf and the back of the thigh are contiguous), and then to straighten it. Measure the degree of flexion and extension attained.

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**Fig. 34.19** Tendons and muscles at the back of the knee joint. SM, Semimembranosus; ST, Semitendinosus; G, Gracilis; MG, Medial head of gastrocnemius; B, Biceps femoris; LG, Lateral head of gastrocnemius.



**Fig. 34.20** An unusually large semimembranosus bursa.

of the joint and stands out when the knee is fully extended (*Fig. 34.21*) but tends to disappear when the joint is flexed.

Having ascertained that the swelling is cystic, compress it; should the lumen of the stalk be patent, some of the contents can be displaced into the knee, rendering it more flaccid. Because the communicating channel sometimes is small, the pressure must be exerted for some moments. Next test the joint for signs of osteoarthritis. As a rule, these and other bursal swellings around the knee are practically painless, and are not tender: also more often than not they are



**Fig. 34.21** Popliteal (Baker's) cyst. The patient was aged 82 with obvious osteoarthritis of the knee joint



**Fig. 34.22** Enlargement of the bursa anserina.



**Fig. 34.23** Cyst of the medial meniscus.

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