The knee and its disorders in terms of Homoeopathy

© Dr. Rajneesh Kumar Sharma MD (Homoeopathy)
Homoeo Cure Research Institute
NH 74- Moradabad Road
Kashipur (UTTARANCHAL) - INDIA
Ph- 09897618594

Abstract

The knee, largest of human joints, is compound joint. Despite its single cavity in man, it is convenient to describe it as two condylar joints between the femur and tibia and a sellar joint between the patella and femur. The former are partly divided by menisci between corresponding articular surfaces. The level of the joint is at the (palpable) proximal margins of the tibial condyles. Being too complex, the knee joint is prone to have a number of disorders. To study these problems, one must be thoroughly acquainted with anatomy and normal movements of the knee joint. Then after a very keen case taking as well as physical, radiological and pathological examinations needed, the correct diagnosis, prognosis and only then the remedial diagnosis could be made to meet the cure.

Anatomy of Knee Joint

One should study the following in detail from some standard books on anatomy-
Articular Surfaces, Fibrous Capsule, Synovial Membrane, Bursae, The ligaments of the knee, Menisci, Vessels and Nerve Supply to the Joint.

The extensor mechanism of the knee

Extension of the knee is produced by the quadriceps muscle acting through the quadriceps ligament, patella, patellar ligament and tibial tubercle.

- **Weakness of extension-** It leads to instability, repeated joint trauma and effusion. There is often a vicious circle of pain-
  →quadriceps inhibition →quadriceps wasting →knee instability →ligament stretching and further injury →pain.
- **Loss of full extension-** It also leads to instability, as there is failure of the screw-home mechanism. Rapid wasting of the quadriceps is seen in all painful and inflammatory conditions of the knee.
  Weakness of the quadriceps is also sometimes found in lesions of the upper lumbar intervertebral discs, as a sequel to poliomyelitis, in multiple sclerosis and other neurological disorders, and in the myopathies. Quadriceps wasting may be the presenting feature of a diabetic neuropathy or secondary to femoral nerve palsy from an iliacus haematoma.
  The term 'jumper's knee' is used to describe a number of conditions where there is pain in the patellar ligament or its insertion: it includes the -
  Sinding–Larsen–Johansson syndrome- seen in children in the 10–14 age group, where there are X-ray changes in the distal pole of the patella.
  Osgood Schlatter's disease- (often thought to be due to a partial avulsion of the tibial tuberosity) which occurs in the 10–16 age group. In it there is recurrent pain over the tibial tuberosity, which becomes tender and prominent. Radiographs may show partial detachment or fragmentation. Pain generally ceases with closure of

the epiphysis. In an older age group (16–30) the patellar ligament itself may become painful and tender. This almost invariably occurs in athletes, and there may be a history of giving-way of the knee. CT scans may show changes in the patellar ligament, the centre of which becomes expanded.

Common Pathology about the Knee

Swelling of the knee

The knee may become swollen as a result of the accumulation within the joint cavity of excess synovial fluid (Psora/Sycosis), blood (Psora/ Syphilis) or pus (Sycosis/Syphilis). Much less commonly the knee swells beyond the limits of the synovial membrane. This is seen in soft tissue injuries of the knee when haematoma (Psora/Sycosis/Syphilis) formation and oedema (Psora) may be extensive. It is also a feature of fractures, infections (Psora) and tumours (Psora/Sycosis/Syphilis) of the distal femur, where confusion may result either from the proximity of the lesion to the joint or because it involves the joint cavity directly.

Synovitis, effusion

The synovial membrane secretes the synovial fluid of the joint; excess synovial fluid (Psora/Sycosis) indicates some affection of the membrane. Joint injuries cause synovitis by tearing or stretching the synovial membrane (Syphilis). Infections act directly by eliciting an inflammatory response (Psora). The membrane itself becomes thickened (Sycosis) and its function disturbed in rheumatoid arthritis (Syphilis/Sycosis) and villo-nodular synovitis (Psora/Sycosis); both are usually accompanied by large effusions (Sycosis). In long-standing meniscus lesions and in osteoarthritis of the knee (Sycosis/Syphilis), the synovial membrane may not be directly affected, and no effusion may be present. The recognition of fluid in the joint is of great importance. Effusion indicates damage to the joint (Syphilis), and the presence of a major lesion must always be eliminated. A tense synovitis (Sycosis) may be aspirated to relieve discomfort.

Haemarthrosis

Blood in the knee is seen most commonly where there is tearing of vascular structures. The menisci are avascular, and there may be no haemarthrosis (Psora/Syphilis/Sycosis) when a meniscus is torn. Bleeding into the joint will take place (Psora/ Sycosis), however, if the meniscus has been detached at its periphery or if there is accompanying damage to other structures within the knee (e.g. the cruciate ligaments) (Syphilis).

Pyarthrosis

Infections of the knee joint are rather uncommon, and usually blood-borne. Sometimes the joint is involved by direct spread from an osteitis (Psora) of the femur or tibia; rarely the joint becomes infected following surgery or penetrating wounds. In acute pyogenic infections (Psora/Syphilis), the onset is usually rapid and the knee very painful (Psora); swelling is tense (Sycosis), tenderness is widespread (Psora), and movement resisted (Syphilis). There is pyrexia and general malaise (Psora). Pyogenic infections in patients suffering from rheumatoid arthritis (Syphilis/Sycosis) have often a much slower onset, often with suppressed inflammatory changes if the patient is receiving steroids. Tuberculous infections of the knee (Psora/Syphilis) have a slow onset, spread over weeks. The knee appears small and globular, with the associated profound quadriceps wasting (Syphilis) contributing to this appearance. In gonococcal arthritis (Sycosis), great pain and tenderness (Psora) (often apparently out of proportion to the local swelling and other signs), are the striking features of this condition. When it is thought that there is pus in a

joint, aspiration should be carried out to empty it and obtain specimens for bacteriological examination. If tuberculosis is suspected, synovial biopsy to obtain specimens for culture and histology is required.

Lesions of ligaments of the knee

It is important to detect ligament injuries as they may account for appreciable disability. The commonest are-

- Recurrent effusion
- Lack of confidence in the knee
- Difficulty in undertaking strenuous or athletic activities and
- Sometimes trouble in using stairs or walking on uneven ground.

The diagnosis and interpretation of instability in the knee is difficult as the main structures round the knee have primary and secondary supportive functions, and several may be damaged.

The medial ligament has superficial and deep layers. Considerable violence is required to damage it.

- If only a few fibres are torn, no instability will be demonstrated, but stretching the ligament will cause pain.
- With greater violence, the whole of the deep part of the ligament ruptures, followed in order by the superficial part, the medial capsule, the posterior ligament, the posterior cruciate ligament and sometimes finally the anterior cruciate ligament.
- Minor tears of the medial ligament in the older patient may be followed eventually by calcification in the accompanying haematoma (Sycosis), and this may give rise to sharply localised pain at the upper attachment (Pellegrini–Stieda disease).
- The lateral ligament and capsule may be damaged by blows on the medial side of the knee which throw it into varus.
- In the case of the medial ligament, increasing violence will lead to tearing of the posterior capsular ligament and the cruciates. In addition, the common peroneal nerve may be stretched and sometimes irreversibly damaged.
- Impaired anterior cruciate ligament function is seen most frequently in association with tears of the medial meniscus. In some cases this is due to progressive stretching and attrition rupture. In others, the anterior cruciate ligament tears at the same time as the meniscus, and in the most severe injuries the medial ligament may also be affected (O'Donoghue's triad). Isolated ruptures of the anterior cruciate ligament are uncommon, but do occur.
- Chronic laxity (Sycosis) generally results from old injuries, and may cause problems from acute, chronic or recurrent tibial subluxations. There may be a history of giving way of the knee, episodic pain (Psora), and functional impairment (Psora). There is often quadriceps wasting (Syphilis) and effusion (Sycosis) and secondary osteoarthritis (Syphilis/Sycotic) may develop.
- Posterior cruciate ligament tears are produced when in a flexed knee the tibia is forcibly pushed backwards (as for example in a car accident when the upper part of the shin strikes the dashboard). Instability (Psora/ Syphilis) is not uncommon, often leading if untreated to osteoarthritis of rapid onset.

Rotatory instability in the knee-

Tibial condylar subluxations- In this group of conditions, when the knee is stressed, the tibia may sublux forwards or backwards on the medial or lateral side, giving rise to pain and a feeling of instability in the joint (Psora/ Syphilis). The main forms are as follows:

- **Anteromedial rotatory instability**- The medial tibial condyle subluxes anteriorly. In the most severe cases, this follows tears of both the anterior cruciate ligament and the medial ligament and capsule. The medial meniscus may also be damaged (Syphilis) and contribute to the instability (Psora/Syphilis).
- **Anterolateral rotatory instability**- The lateral tibial condyle subluxes anteriorly. In the more severe cases, the anterior cruciate ligament and the lateral structures are torn, and there may be an associated lesion of the anterior horn of the lateral meniscus.
- **Posterolateral rotatory instability**-The lateral tibial condyle subluxes posteriorly. This may follow rupture of the lateral and posterior cruciate ligaments.
- **Combinations of these lesions** (particularly 1 and 2, and 2 and 3) may be found, especially where there is major ligamentous disruption of the knee.

Lesions of the menisci

- **Congenital discoid meniscus-** This abnormality, most frequently involving the lateral meniscus, commonly presents in childhood. It may produce a very pronounced clicking from the lateral compartment, a block to extension of the joint and other derangement signs (Syphilis).
- **Meniscus tears in the young adult-** The commonest cause is a sporting injury, when a twisting strain is applied to the flexed, weight-bearing leg. The trapped meniscus commonly splits longitudinally, and its free edge may displace inwards towards the centre of the joint (bucket-handle tear). This prevents full extension (with physiological locking of the joint), and if an attempt is made to straighten the knee, a painful elastic resistance is felt (Psora) ('springy block to full extension'). In the case of the medial meniscus, prolonged loss of full extension may lead to stretching and eventual rupture of the anterior cruciate ligament (Syphilis).
- **Degenerative meniscus lesions in the middle-aged-** Loss of elasticity in the menisci (Syphilis) through degenerative changes associated with the ageing process may give rise to horizontal cleavage tears within the substance of the meniscus; these tears may not be associated with any remembered traumatic incident, and sharply localized tenderness in the joint line is a common feature.
- **Cysts of the menisci-** Ganglion-like cysts (Sycosis) occur in both menisci, but are much more common in the lateral. Medial meniscus cysts must be carefully distinguished from ganglions arising from the pes anserinus (the insertion of sartorius, gracilis and semitendinosus). In true cysts there is often a history of a blow on the side of the knee over the meniscus. They are tender (Psora), and as they restrict the mobility of the menisci (Sycosis), they render them more susceptible to tears (Syphilis).

Patellofemoral instability-

The patella has always a tendency to lateral dislocation as the tibial tuberosity lies lateral to the dynamic axis of the quadriceps. Normally, at the beginning of knee flexion, the patella engages in the groove separating the two femoral condyles (the trochlea), which

helps to keep it in place as flexion continues. This system may be disturbed in a number of ways-

- There may be an abnormal lateral insertion of the quadriceps
- Tight lateral structures (Psora), or
- An increase in the angle between the axis of the quadriceps and the line of the patellar ligament (e.g. as a result of knock-knee deformity or by a broad pelvis)
- The lateral condyle may be deficient (Syphilis), or
- The patella itself may be small and poorly formed (hypoplasia) (Syphilis) or
- Highly placed (patella alta)-This is often associated with genu recurvatum. (A low set patella—known as patella baja or infera—is uncommon and may follow certain surgical corrective procedures. It is not associated with any patellar instability.)

There are a number of conditions characterized by loss of normal patellar alignment-

- **Acute traumatic dislocation of the patella-** This injury occurs most frequently in adolescent females during athletic activities.
- **Recurrent lateral dislocation-** Further painful dislocations of the patella occur, often with increasing frequency and ease.
- **Congenital dislocation of the patella-.** The patella may be dislocated at birth in association with other congenital abnormalities (Syphilis). The dislocation is irreducible.
- Hab**itual dislocation of the patella-** The patella dislocates every time the knee flexes (Psora) and this is pain free (Sycosis/ Syphilis). It often arises in childhood and may be due to an abnormal attachment of the iliotibial tract, from fibrosis in a quadriceps muscle, or as a feature of one of the joint laxity syndromes (Sycosis).
- **Permanent dislocation of the patella**- This is uncommon and may result from an untreated childhood or adolescent dislocation.

Retropatellar pain syndromes/chondromalacia patellae

These are characterized by chronic ill-localised pain at the front of the knee, often made worse by prolonged sitting or walking on slopes or stairs (Psora). It is commonest in females in the 15–35 age groups, and the pathology is often uncertain. In a number of cases there is softening (Syphilis)) or fibrillation (Sycosis) of the articular cartilage lining the patella (chondromalacia patellae), and this may lead to patellofemoral osteoarthritis (Syphilis/Sycosis). There may be no obvious precipitating cause, but in some there is evidence of patellofemoral malalignment or other of the factors responsible for recurrent dislocation (even although there may be no history of frank dislocation).

Osteochondritis dissecans

This occurs most frequently in males in the second decade of life, and most commonly involves the medial femoral condyle. A segment of bone undergoes avascular necrosis (Psora/Syphilis), and a line of demarcation becomes established between it and the underlying healthy bone. Complete separation may occur so that a loose body is formed. The symptoms are initially of aching pain and recurring effusion (Psora), with perhaps locking of the joint if a loose body is present (Sycosis).

Fat pad injuries

The infrapatellar fat pads may become tender and swollen, and may give rise to pain on extension of the knee (Psora), especially if they are nipped between the articulating surfaces of femur and tibia. This may occur as a complication of osteoarthritis, but is seen

more frequently in young women when the fat pads swell in association with premenstrual fluid retention (Psora).

Loose bodies

Loose bodies are seen most often as a sequel to osteoarthritis or osteochondritis dissecans (Sycosis/Syphilis). Much less commonly, numerous loose bodies are formed by an abnormal synovial membrane in the condition of synovial chondromatosis (Sycosis).

Osteoarthritis

The stresses of weight-bearing mainly involve the medial compartment of the knee, and it is in this area that-

- Primary osteoarthritis usually first occurs. Being overweight, the degenerative changes accompanying old age, and overwork are common factors.
- Secondary osteoarthritis may follow ligament and meniscus injuries, recurrent dislocation of the patella, osteochondritis dissecans, joint infections and other previous pathology. It is seen in association with knock-knee and bow-leg deformities, which throw additional mechanical stresses on the joint.

In osteoarthritis, the articular cartilage becomes progressively thinner, leading to joint space narrowing (Syphilis). The subarticular bone may become eburnated (Syphilis), and often small marginal osteophytes and cysts are formed (Sycosis). Exposure of bone and free nerve endings gives rise to pain and crepitus on movement. Distortion of the joint surfaces may lead to loss of movement and fixed flexion deformities (Syphilis/Sycosis).

Rheumatoid arthritis

Characteristically, the knee is warm to touch (Psora); there is effusion (Psora/Sycosis), limitation of movements (Syphilis), muscle wasting (Syphilis), synovial thickening (Sycosis), tenderness and pain (Psora). Fixed flexion (Syphilis/Sycosis), valgus and (less commonly) varus deformities are quite common. Generally other joints are also involved, although the monoarticular form is occasionally seen.

Reiter's syndrome

This usually presents as a chronic effusion (Sycosis) accompanied by discomfort in the joint. It is often bilateral, with an associated conjunctivitis (Psora/Sycosis/Syphilis), and there may be a history of urethritis (Psora/Sycosis/Syphilis) or colitis (Psora/Sycosis/Syphilis).

Ankylosing spondylitis

The first symptoms of ankylosing spondylitis are generally in the spine, but occasionally the condition presents at the periphery, with swelling and discomfort in the knee joint. Stiffness of the spine (Psora) and radiographic changes in the sacroiliac joints are nevertheless almost invariably present (Syphilis/Sycosis).

Disturbances of alignment

- **Genu varum (bow leg) -** This commonly occurs as a growth abnormality of early childhood, and usually resolves spontaneously. Rarely genu varum is caused by a growth disturbance (Psora) involving both the tibial epiphysis and proximal tibial shaft (tibia vara). In adults genu varum most frequently results from osteoarthritis, where there is narrowing of the medial joint compartment (Syphilis). It also occurs in Paget's disease and rickets. It is less common in rheumatoid arthritis.
- **Genu valgum (knock knee) -** This occurs most frequently in young children where it is usually associated with flat foot. Nearly all cases resolve spontaneously by the age of 6. It is also seen in plump adolescent females and

may be a contributory factor in recurrent dislocation of the patella Psora). In adults, it most frequently occurs in rheumatoid arthritis, after uncorrected depressed fractures of the lateral tibial table, and as a sequel to a number of paralytic neurological disorders (Syphilis) where there is ligament stretching and altered epiphyseal growth (Psora/Sycosis).

- **Genu recurvatum-** Hyperextension at the knee is seen after ruptures of the anterior cruciate ligament and in girls where the growth of the upper tibial epiphysis may be retarded from much point work in ballet classes or from the wearing of high heeled shoes in early adolescence. In the latter cases there is corresponding elevation of the patella (patella alta), contributing to a tendency to recurrent dislocation or chondromalacia patellae. More rarely, the deformity is seen in congenital joint laxity (Sycosis), poliomyelitis (Psora/Syphilis) and Charcot's disease (Psora/Syphilis)- (amyotrophic lateral sclerosis (ALS) a disease of the motor tracts of the lateral columns and anterior horns of the spinal cord, causing progressive muscular atrophy, increased reflexes, fibrillary twitching, and spastic irritability of muscles; associated with a defect in superoxide dismutase. A number of cases are inherited as an autosomal dominant trait. This disorder affects adults, is 90–95% sporadic in nature, and is usually fatal within 2 to 4 years of onset. Variants include progressive spinal muscle atrophy, in which only a lower motor neuron component occurs, and progressive bulbar palsy, in which isolated or predominantly lower brainstem motor involvement is seen. Syn: Aran-Duchenne disease, Charcot's disease, creeping palsy, Cruveilhier's disease, Duchenne-Aran disease, Lou Gehrig's disease, muscular trophoneurosis, progressive muscular atrophy, progressive spinal amyotrophy, wasting palsy, wasting paralysis.)

Bursitis

Cystic swelling occurring in the popliteal region is usually referred to as enlargement (Sycosis) of the semimembranosus bursa. This may communicate with the knee joint, and fluctuate in size. Rupture may lead to the appearance of bruising on the dorsum of the foot, and this may help to distinguish it from deep venous thrombosis (Psora/Syphilis/Sycosis) or cellulites (Psora/Sycosis). Fluctuant bursal swellings (Psora) may also occur over the patella (prepatellar bursitis or housemaid's knee) or the patellar ligament (infrapatellar bursitis or clergyman's knee).

Chronic prepatellar bursitis (Sycosis), with or without local infection, is common in miners where it is referred to as 'beat knee'; it is also associated with other occupations where prolonged kneeling is unavoidable (e.g. it is common in plumbers and carpet layers).

DIAGNOSIS OF A KNEE COMPLAINT

1. ***Patient's age and sex-*** bearing in mind the following important distribution of the common knee conditions.

Age Group	**Males**	**Females**
0–12	Discoid lateral meniscus	Discoid lateral meniscus
12–18	Osteochondritis dissecans	First incident of recurrent dislocation
	Osgood–Schlatter's disease of the patella	Osgood–Schlatter's disease

18–30	Longitudinal meniscal tears	Recurrent dislocation of the patella
	Chondromalacia patellae	Fat pad injury
30–50	Rheumatoid arthritis	Rheumatoid arthritis
40–55	Degenerative meniscus lesions	Degenerative meniscus lesions
45+	Osteoarthritis	Osteoarthritis

Infections are comparatively uncommon and occur in both sexes in all age groups. Reiter's syndrome occurs in adults of both sexes; ankylosing spondylitis nearly always occurs in male adults. Ligamentous and extensor apparatus injuries are rare in children.

2. ***Swelling of the knee*** - An effusion (Psora/Sycosis/Syphilis) indicates the presence of pathology which must be investigated. (However, that the absence of effusion does not necessarily eliminate significant pathology.)

3. ***Mechanical problem*** (internal derangement) - according to the symptoms of the patient, this can be done by-

- *Obtaining a convincing history of an initiating injury*-
  - The degree of violence, and its direction.
  - The initial incapacity is important: for example, a footballer is unlikely to be able to finish a game with a freshly torn meniscus.
  - Whether there was bruising (not a feature of meniscal injuries) or
  - Swelling after the injury (Psora), and
  - Whether the patient was able to weight-bear.
- *Asking if the knee 'gives way'*-
  - 'Giving way' of the knee on going down stairs or
  - Jumping from a height follows cruciate ligament tears, loss of full extension in the knee and quadriceps wasting (Syphilis).
  - 'Giving way' on twisting movements or walking on uneven ground follows many meniscus injuries.
- *Asking if the knee 'locks'*-
  - Patients often confuse stiffness and true locking. The position of knee if it locks should be seen. Normally the knee never locks in full extension.
  - Locking which is due to a torn meniscus generally allows the joint to be flexed fully or nearly fully, but the last 10° to 40° of extension are impossible. Attempts to obtain full extension are accompanied by pain.
  - What produces any locking; with long-standing meniscus lesions, a slight rotational force, such as the foot catching on the edge of a carpet, may be quite sufficient.
  - In chronic lesions, weight-bearing is not an essential factor, locking not infrequently occurring during sleep.
  - If the knee is not locked at the time of the patient's attendance, it should be asked how it became free: unlocking with a click is suggestive of a meniscus lesion.
  - Locking from a loose body may occur in various degrees of flexion.
  - There may be deformity with locking from a dislocating patella.
- *Asking about pain*-

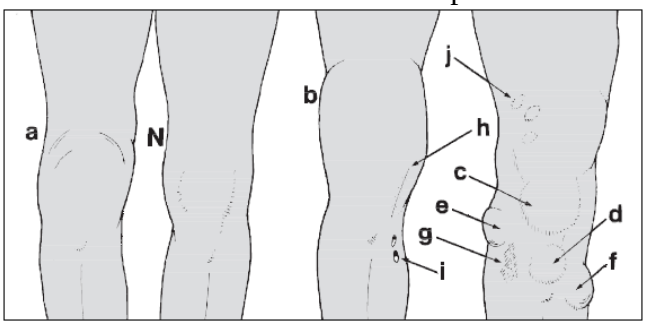
- The circumstances in which it is present and the patient if he can localize it by pointing to the site with one finger should be identified.

Additional investigations

Occasionally a firm diagnosis cannot be made on the basis of the history and clinical examination alone. The following additional investigations are often helpful-

- *Suspected internal derangement*
  - *Arthroscopy*- may give much useful information, and in conjunction with the clinical examination will permit a firm, accurate diagnosis to be made in the majority of cases. Incorrect diagnoses are most common in lesions involving the menisci in their posterior thirds. An increasing number of conditions are amenable to arthroscopic surgery which can often be performed after diagnostic arthroscopy as a follow-on procedure during the same session.
  - *MRI scans*- can be useful in diagnosing lesion of the menisci and ligaments where there is uncertainty. Although an accuracy of 90% is claimed, there is often an increase in the signal intensity in the region of the posterior third of the medial meniscus which can lead to false interpretations.
  - *Arthrography*- may be helpful, although interpretation of the radiographs is specialized and often difficult.
  - *Examination under anesthesia*- If pain prevents full examination (e.g. by preventing flexion) anesthesia may allow this to be performed. This may be followed up by arthroscopy.
- *Suspected acute infections*
  - Aspiration and culture of the synovial fluid.
  - Blood culture.
  - Full blood count, including differential white count, and estimation of the sedimentation rate and C-reactive protein.
- *Suspected tuberculosis of the knee*
  - Chest radiograph.
  - Synovial biopsy, with specimens of synovial membrane being sent for both histological and bacteriological examination. At the same time, synovial fluid specimens are also sent for bacteriology and sensitivities.
  - Mantoux test.
- *Suspected rheumatoid arthritis*
  - Examination of other joints.
  - Estimations of rheumatoid factor.
  - Full blood count and sedimentation rate.
  - Serum uric acid.
- *Further investigation of poor mineralization, bone erosions, etc*-.
  - Estimation of serum calcium, phosphate and alkaline phosphatase.
  - Estimation of rheumatoid factor.
  - Serum uric acid.
  - Full blood count and differential count.
  - Skeletal survey and chest radiograph.
  - Radioisotope scan.

  - Bone biopsy.
- *Further investigation of chronic effusion, aspirate negative*
  - Tests as for suspected rheumatoid arthritis.
  - Brucellosis agglutination tests.
  - Radiography of the chest and sacroiliac joints.
  - Arthroscopy and synovial biopsy.
- *Further investigation of severe undiagnosed pain.*
- *X-ray examination of the chest, pelvis and hips.*
- *Arthroscopy or exploration.*
- **Aspiration of the knee joint-** Indications include the presence of a tense haemarthrosis or to obtain specimens for bacteriology in suspected infections.



ASSESSMENT

Inspection

Swelling-

a- If there is any swelling, note if it is confined to the limits of the synovial cavity and suprapatellar pouch,

b- Suggesting effusion, haemarthrosis, pyarthrosis or a space-occupying lesion in the joint. Note if any swelling extends beyond the limits of the joint cavity,

c- Suggesting infection (of the joint, femur or tibia), tumour or major injury. Examine any local swelling, e.g. prepatellar bursitis (housemaid's knee)

d- infrapatellar bursitis (clergyman's knee)

e- Meniscus cyst, occurring in the joint line.

f- Diaphyseal aclasis (exostosis, often multiple and sometimes familial).

Skin appearance-

g- Note any bruising which suggests trauma to the superficial tissues, or knee ligaments. Bruising is not usually seen in meniscus injuries. Redness suggests inflammation.

h- Note scars of previous injury or surgery—the relevant history must be obtained

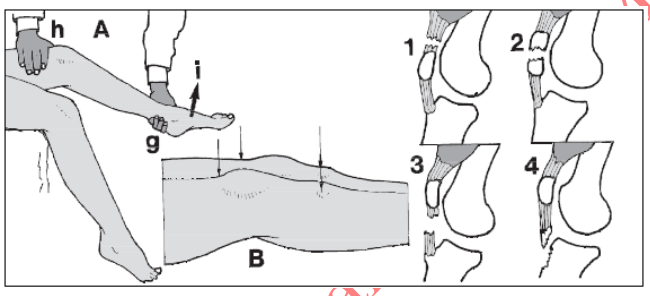
i- Sinus scars are indicative of previous infections, often of bone, and with the potential for reactivation

j- Evidence of psoriasis, with the possibility of psoriatic arthritis. In beat knee.

Temperature- Note should be made for any increased local heat and its extent, suggesting in particular rheumatoid arthritis or infection. There may also be increased local heat as part of the inflammatory response to injury, and in the presence of rapidly growing tumours. Both sides must always be compared. A warm knee and cold foot suggest a popliteal artery block. Always should be checked if any warm bandage the patient may have been wearing just prior to the examination, and the peripheral pulses must be checked.

The quadriceps muscle- Slight wasting and loss of bulk are normally apparent on inspection. Examination of the contracted quadriceps by-

a- Placing a hand behind the knee
b- And asking the patient to press against it. The muscle tone may be felt with the free hand
c- Now asking the patient to dorsiflex the inverted foot to show and feel the tone in the important vastus medialis portion of the muscle. Substantial wasting may be confirmed by measurement, assuming the other limb is normal. This objective test may be valuable for repeat assessments and in medico-legal cases.
d- To begin by locating the knee joint and marking it with a ball-point pen.
e- To make a second mark on the skin 18 cm above this.
f- To repeat on the other leg. Compare the circumference of the legs at the marked levels. Wasting of the quadriceps occurs most frequently as the result of disuse, generally from a painful or unstable lesion of the knee, or from infection or rheumatoid arthritis.



Extensor apparatus-

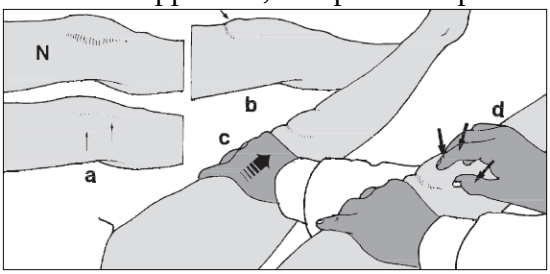
A- With the patient sitting with his legs over the end of the examination couch

g- Ask him to straighten the leg while you support the ankle with one hand.
h- Feel for quadriceps contraction and
i- Look for active extension of the limb.

Loss of active extension of the knee (excluding paralytic conditions) follows-

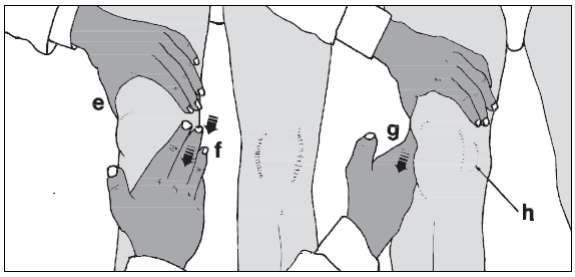
(1) Rupture of the quadriceps tendon;
(2) Many patellar fractures;
(3) Rupture of the patellar ligament;
(4) Avulsion of the tibial tubercle.

B- The site of the pathology may be determined by looking for tenderness, palpable gaps in the components of the extensor apparatus, and proximal patellar displacement.



Effusion- Small effusions are detected most easily by inspection.

a- The first signs are bulging at the sides of the patellar ligament and obliteration of the hollows at the medial and lateral edges of the patella.
b- With greater effusion into the knee the suprapatellar pouch becomes distended. Effusion indicates synovial irritation from trauma or inflammation.



c- *Patellar tap test*- Squeeze any excess fluid out of the suprapatellar pouch with the index and thumb, slid firmly distally from a point about 15 cm above the knee to the level of the upper border of the patella.

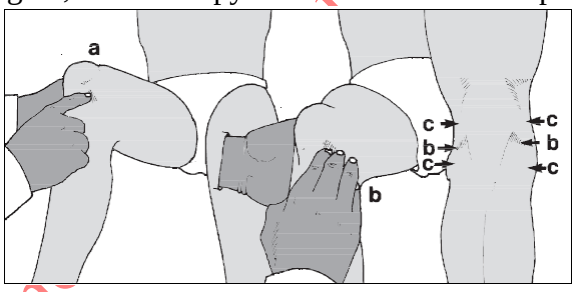
d- Place the tips of the thumb and three fingers of the free hand squarely on the patella, and jerk it quickly downwards. A click indicates the presence of effusion. N.B. If the effusion is *slight* or *tense*, the tap test will be *negative*.

e- *Fluid displacement test*- Small effusions may be detected by this manoeuvre. Evacuate the suprapatellar pouch as in the patellar tap test.

f- Stroke the medial side of the joint to displace any excess fluid in the main joint cavity to the lateral side of the joint.

g- Now stroke the lateral side of the joint

h- While closely watching the medial. Any excess fluid present will be seen to move across the joint and distend the medial side. This test will be negative if the effusion is gross and tense. In a haemarthrosis, the joint has a doughy feel in the suprapatellar region, while in a pyarthrosis there is widespread tenderness.



Tenderness

It is the first essential to identify the joint line quite clearly.

a- Begin by flexing the knee and looking for the hollows at the sides of the patellar ligament; these lie over the joint line. Then confirm by feeling with the fingers or thumb for the soft hollow of the joint with the firm prominences of the femur above and the tibia below.

b- Begin by palpating carefully from in front and then back along the joint line on each side. Localised tenderness here is commonest in meniscus, collateral ligament and fat pad injuries.

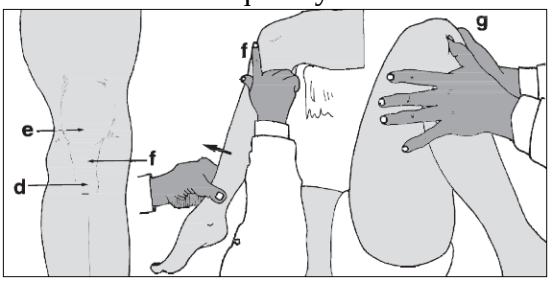
c- Now systematically examine the upper and lower attachments of the collateral ligaments. Associated bruising and oedema is a feature of acute injuries.

d- In children and adolescents, tenderness is found over the *tibial tubercle* (which may be prominent) in Osgood–Schlatter's disease and after acute avulsion injuries of the patellar ligament and its tibial attachment.

e- Tenderness over the *lower pole of the patella* is found in Sinding–Larsen–Johansson disease.

f- Where a problem with the patellar ligament is suspected in an athletic patient, look for *patellar ligament* tenderness, especially while the patient is attempting to extend the leg against resistance. In suspected osteochondritis dissecans

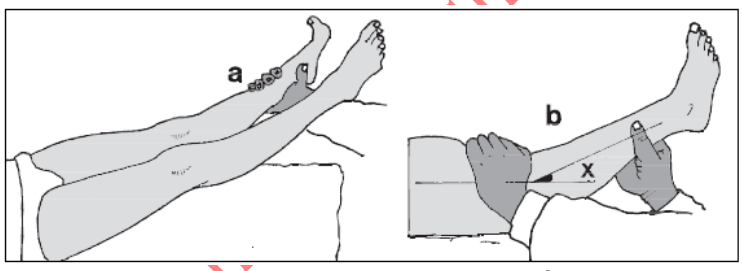
g- flex the knee fully and look for tenderness over the *femoral condyles*). Note that osteochondritis dissecans most frequently involves the medial femoral condyle.



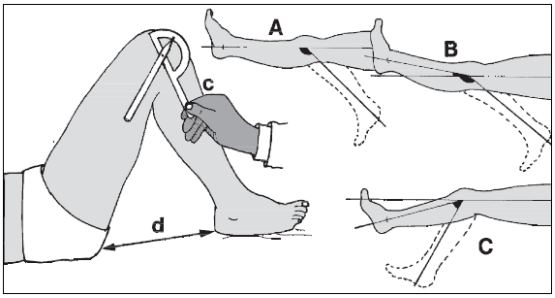
Movements

Extension (normal = 0°) - Normally the line of the tibia and femur should coincide, with full extension being recorded as 0°. Loss of full extension may he described as 'the knee lacks X° of extension'.

a- Try to obtain full extension if this is not obviously present. A springy block to full extension is very suggestive of a bucket handle meniscus tear. A rigid block (commonly described as a fixed flexion deformity) is often present in the arthritic knee.



b- *Hyperextension* (genu recurvatum) - is present if the knee extends beyond the point when the tibia and femur are in line, and is recorded as 'X° hyperextension'. It is often seen in girls associated with a high patella, chondromalacia patellae and recurrent dislocation of the patella. It sometimes accompanies tears of the anterior cruciate, medial ligament, or medial meniscus. If severe, look for other signs of joint laxity.



Flexion (normal = 135° or more) –

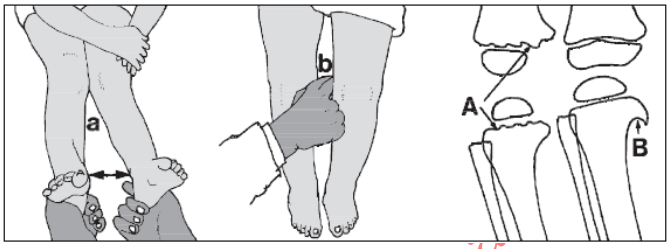
c- Measure the range of flexion using a goniometer. Flexion of 135° and over is regarded as normal, but compare the two sides. Loss of flexion is common after local trauma, effusion and arthritic conditions.

d- Alternatively, measure the heel to buttock distance with the leg fully flexed. (This can be a very accurate way of detecting small alterations in the range, with 1 cm = 1.5° approximately, and is useful for checking daily or weekly progress.)

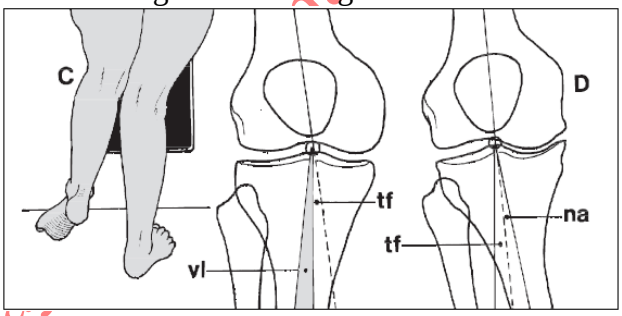
The range of movements in the examples would be recorded as follows:
(A) 0–135° (normal range);
(B) 5° hyperextension–140° flexion; (C) 10–60° (or 10° fixed flexion deformity with a further 50° flexion).

Genu valgum and varus

a- In children, it should be noted if any *genu valgum* (knock- knee) is unilateral or bilateral. a- Assess by bringing the legs together, to touch lightly at the knees. Normally the knees *and* malleoli should touch. Make sure the patellae are pointing upwards. Measure the intermalleolar gap. In the older 10–16 age group, < 8 cm in females and < 4 cm in males is regarded as normal.



b- *Genu varum* (bow leg) may be assessed by measuring the distance between the knees, using the fingers as a gauge. The patient should be weight-bearing, and the patellae should be facing forwards. In the 10–16 age groups, < 4 cm in females and < 5 cm in males is regarded as being within normal limits.



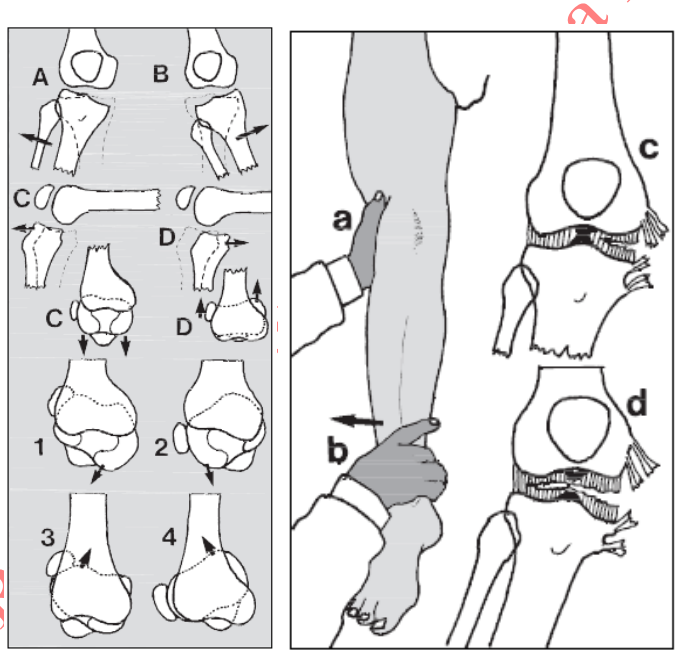
Radiographs may help. In **(A)** *rickets, note* the wide and irregular epiphyseal plates. In **(B)** *tibia vara*, notable is the sharply down-turned medial metaphyseal border. Note that radiological varus is normal till a child is 18 months old.

In adults, genu valgum deformity is seen most often in association with rheumatoid arthritis. It is also common in teenage girls. It is best measured by X-ray, and the films should be taken with the patient taking all his weight on the affected side **(C)** (and preferably in 30° flexion). The degree of valgus **(vl)** may be roughly assessed by measuring the angle formed by the tibial and femoral shafts and deducting the 'normal' tibiofemoral angle **(tf)**, which is approximately 6° in the adult. The shaded area represents genu valgum. (Note that the tibiofemoral angle is virtually the same as the Q-angle used in the assessment of patellar instability.) *Genu varum* **(D)** may be assessed by adding the 'normal' tibiofemoral to the actual (negative) angle **(na)**. It is seen most commonly in osteoarthritis and Paget's disease etc.

Knee instability

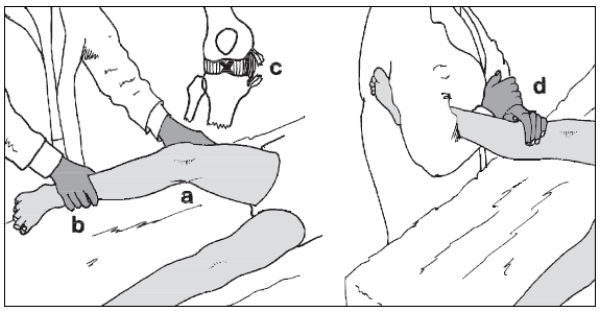
The following *potential* deformities may be looked for:

(A) *Valgus*- (when the medial ligament is torn: severe when the posterior cruciate is also damaged);
(**B**) *Varus*- (when the lateral ligament is torn: severe when the posterior cruciate is also torn);
(C) *Anterior displacement of the tibia* (anterior cruciate tears: worse if medial and/or lateral structures torn);
(D) *Posterior displacement of the tibia* (posterior cruciate ligament tears).
Rotatory-
(1) *The medial tibial condyle subluxes anteriorly* (anteromedial instability): this is usually due to combined tears of the anterior cruciate and medial structures;
(2) *The lateral condyle subluxes anteriorly* (anterolateral instability): this is usually due to tears of the anterior cruciate plus the lateral structures;
(3) *The lateral tibial condyle subluxes posteriorly* (posterolateral instability) or
(4) *The medial tibial condyle subluxes posteriorly* (posteromedial instability);
(5) Combinations of these instabilities.
Types (3) and (4) are mainly due to tears of the posterior cruciate and lateral or medial structures.



Examining for valgus stress instability- Begin by examining the medial side of the joint, and the medial ligament in particular. Tenderness in injuries of the medial ligament is commonest at the upper (femoral) attachment and in the medial joint line. Bruising may be present after recent trauma, but haemarthrosis may be absent. Extend the knee fully.

a- Use one hand as a fulcrum, and
b- with the other attempt to abduct the leg. Look for the joint opening up, and the leg going into valgus.
c- *Moderate* valgus is suggestive of a major medial and posterior ligament rupture.
d- *Severe* valgus may indicate additional cruciate (particularly posterior cruciate) rupture. If in doubt, the thumb or index, placed over the joint line may be used to detect any opening up as it is stressed. If there is still some uncertainty, compare the two sides.



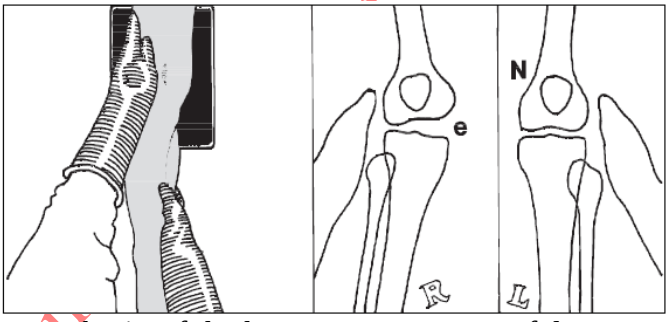
a- If no instability has been demonstrated with the knee fully extended, repeat the tests with the knee *flexed to 30°* and

b- The foot internally rotated. Some opening up of the joint is normal, and *it is essential to compare sides*.

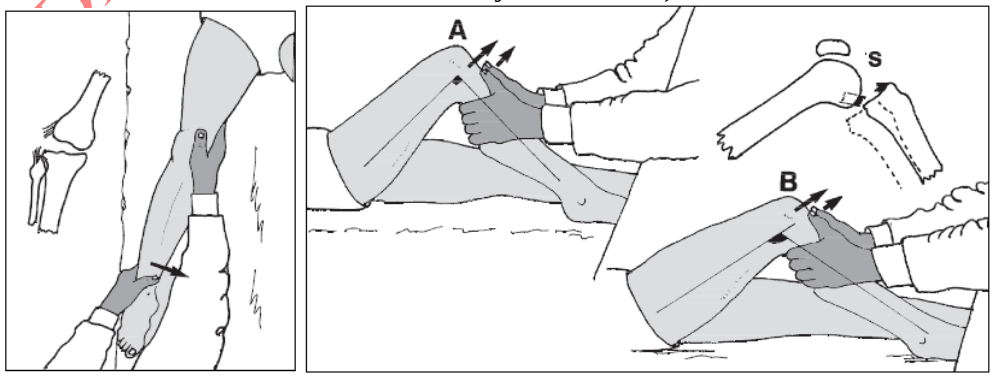
c- Demonstration of an abnormal amount of valgus suggests less extensive involvement of the medial structures (e.g. partial medial ligament tear.

d- If the knee is very tender and will not permit the pressure of a hand as a fulcrum, attempt to stress the ligament with a cross-over arm grip, with one hand placed over the proximal part of the tibia distal to the knee joint.

e- *Stress films.* If there is still some doubt, then compare radiographs of both knees, taken while applying a valgus stress to each. (In **(e)** there is evidence of opening up of the join, suggestive of a medial ligament tear when compared with the other side.) If a haemarthrosis is present (and this is not always the case), preliminary aspiration of the joint may allow a more meaningful examination of the joint.



Examination under anesthesia- If the knee remains too painful to permit examination, the joint should be fully tested under anesthesia; there should be provision to carry on with a surgical repair or with an arthroscopy should major instability be demonstrated (i.e. where there is the involvement of several major structures).



Examining for varus stress instability- First examine the lateral side of the joint, looking for tenderness over the lateral ligament and capsule: then attempt to produce a

varus deformity by placing one hand on the medial side of the joint and forcing the ankle medially. Carry out the test as in the case of valgus stress instability, first in full extension and then in 30° flexion, and compare one side with the other. Varus instability in extension as well as flexion, suggests tearing of the posterior cruciate ligament as well as the lateral ligament complex. Check the common peroneal nerve. Stress films and examination under anesthesia may be required.

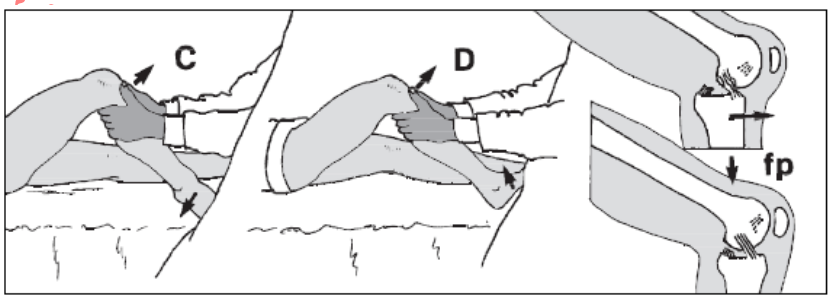
Anterior instability

A- *The anterior drawer test*- Flex the knee to 90°, with the foot pointing straight forwards, and steady it by sitting on or close to it. Grasp the leg firmly with the thumbs on the tibial tubercle.

B- Check that the hamstrings are relaxed, and jerk the leg towards you. Repeat with the knee flexed to 70°, and compare the sides. Note that significant displacement (i.e. the affected side more than the other) confirms anterior instability of the knee. When the displacement is marked (say 1.5 cm or more), the anterior cruciate is almost certainly torn **(s)**, and there is a strong possibility of associated damage to the medial complex (medial ligament and medial capsule) and even the lateral complex. If the displacement is less marked, and one tibial condyle moves further forward than the other, the diagnosis is less clear: it may suggest an isolated anterior cruciate ligament laxity or a tibial condylar subluxation (rotatory instability).

C- Repeat the test with the foot in *15° of external rotation*. Excess excursion of the medial tibial condyle suggests a degree of anteromedial (rotatory) instability, with possible involvement of the medial ligament as well as the anterior cruciate ligament.

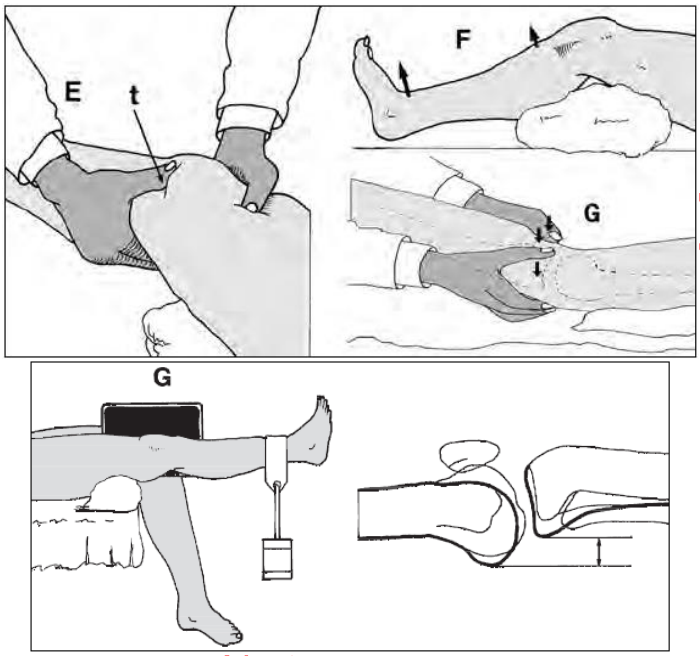
D- Now turn the foot into *30° of internal rotation*, and repeat the test. Anterior subluxation of the lateral tibial condyle suggests some anterolateral rotational instability, with possibly damage to the posterior cruciate and the posterior ligament as well as the anterior cruciate ligament. *Beware of the following fallacy:* a tibia *already* displaced backwards as a result of a *posterior cruciate ligament tear* may give a false positive **(fp)** in the drawer tests. This also applies to the following Lachman tests. Check by inspection of the contours of the knee prior to the examination.



E- *The Lachman tests*- These are also used to detect anterior tibial instability. In the *manipulative Lachman test*, the knee should be relaxed and in about 15° flexion. One hand stabilizes the femur while the other tries to lift the tibia forwards. The test is positive if there is anterior tibial movement (detected with the thumb in the joint **(t)**), with a spongy end point. Feagin

and Cooke recommend that the test be performed with the patient prone with the thigh supported with a sandbag **(G)**.

F- In the *active Lachman test*- the relaxed knee is supported at 30° and the patient asked to extend it. If the test is positive, there will be anterior subluxation of the lateral tibial plateau as the quadriceps contracts, and posterior subluxation when the muscle relaxes. It is considered that this is best seen from the medial side. Repeat, resisting extension by applying pressure to the ankle.

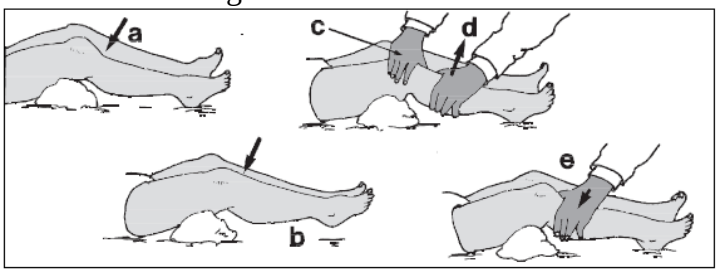


G- Radiological analysis of anterior cruciate function- The lower thigh is supported by a sandbag, and the leg extended against the resistance of a 7 kilo weight. The limb should be in the neutral position, with the patella pointing upwards, and the X-ray film cassette placed between the legs. On the films, draw two lines parallel to the posterior shaft of the tibia, with one tangent to the medial tibial plateau and the other tangent to the medial femoral condyle. Measure the distance between them.

Normal = 3.5 mm ± 2 mm.

Ruptured anterior cruciate = 10.2 mm ± 2.7 mm.

The latter figure is slightly increased if the medial meniscus is also torn. The diagnostic reliability of this examination is high.



Posterior instability

a- *Testing the posterior cruciate ligament*- Rupture, detachment or stretching of the posterior cruciate ligament may permit the tibia to sublux backwards, often with a

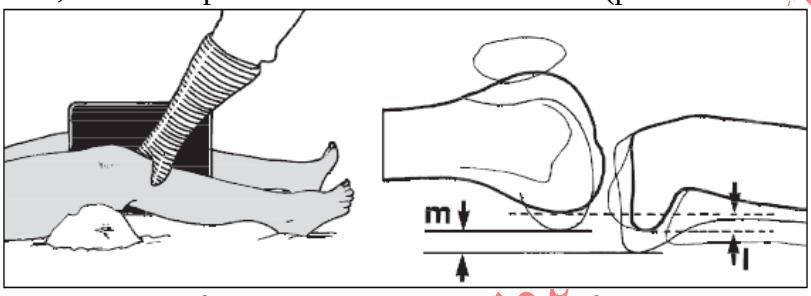
diagnostic deformity. (The knee should be flexed 20°, with a sandbag under the thigh.)

b- Ask the patient to lift the heel from the couch, while observing the knee from the side. Any posterior subluxation should normally correct.

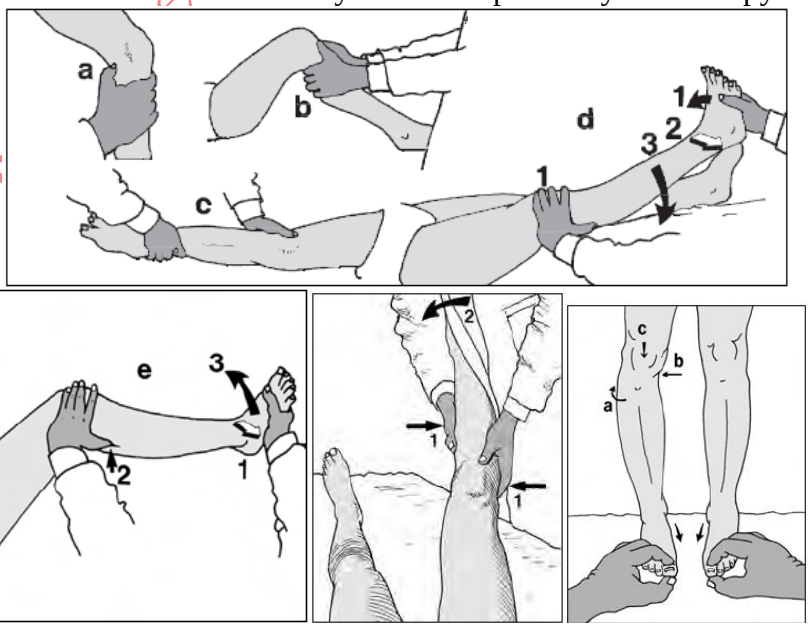
c- Now place the thumb on one side of the joint line and the index on the other to assess any tibial movement.

d- Try to pull the tibia forwards with the other hand. If the posterior cruciate ligament is torn, and the tibia subluxed posteriorly, the forward movement as the tibia reduces will be easily felt.

e- If the posterior cruciate is lax or torn, but subluxation has not yet occurred (uncommon), then backward pressure on the tibia will normally produce a detectable, excessive posterior excursion of the tibia (posterior drawer test).



Radiological examination of posterior cruciate ligament function- A sandbag is placed behind the thigh, and the proximal tibia forcibly pressed backwards (with a force equivalent to 25 kilos). This is repeated, and after the second preloading cycle, radiographs are taken while the same force is maintained. The gap between the medial femoral and tibial condyles **(m)** is measured, along with that between the lateral condyles **(l)**. A displacement in the order of 8 mm on each side is indicative of an uncomplicated posterior cruciate tear. Excessive movement on the lateral or medial sides indicates posterolateral or posteromedial instability. Note that MRI scans allow an accurate assessment of the state of the cruciate ligaments in 80% of cases, although this is inferior to clinical assessment. The cruciates may also be inspected by arthroscopy.



Rotatory instability-

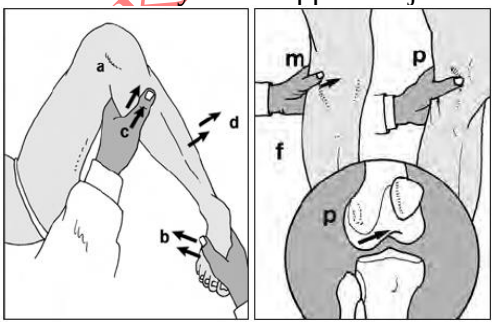
a- Begin by looking for bruising, tenderness

b- or oedema over the collateral ligaments. Perform the drawer tests, noting any variations.

c- Test for laxity on valgus stress (often positive in anterior subluxations of the medial tibial condyle), and on varus stress (usually positive when the lateral tibial condyle subluxes forwards or backwards).

d- Perform the *MacIntosh test* for anterior subluxation of the lateral tibial condyle (the pivot shift test). Fully extend the knee while holding the foot in internal rotation **(1)**. Apply a valgus stress **(2)**. In this position, if instability is present, the tibia will be in the subluxed position. Now flex the knee **(3)**: reduction should occur at about 30° with an obvious jerk. A positive test indicates an anterior cruciate abnormality, with or without other pathology.

e- Alternatively, perform the *Losee pivot shift test* (also for anterior subluxation of the lateral tibial condyle). The patient should be completely relaxed, with no tension in the hamstrings. Apply a valgus force to the knee **(1)**, while at the same time pushing the fibular head anteriorly **(2)**. The knee should be partly flexed. Now extend the joint **(3)**. As full extension is reached, a dramatic clunk will occur as the lateral tibial condyle subluxes forwards (if rotatory instability is resent). Note: the patient should relate this to the sensations experienced in activity. A further modification of the pivot shift or jerk test is preferred by some. To perform this, grasp the patient's foot between your arm and chest and apply a valgus force to the knee **(1)**. Lean over to internally rotate the foot **(2)**. Now flex the knee. If the test is positive (and because the tibia is firmly held), the lateral femoral condyle will appear to jerk anteriorly. Now extend the knee, and as the tibia subluxes, the femoral condyle will appear to jerk backwards.



To check for *posterolateral instability*, begin by performing the posterior drawer test with the patient's foot in external rotation, looking for excessive travel on the lateral side. Then perform the *external rotation recurvatum test*. To do this, stand at the end of the examination couch (with the patient in the supine position) and lift the legs by the great toes. The test is positive if the knee falls into external rotation **(a)**, varus **(b)**, and recurvatum **(c)**.

As a further check for *posterolateral instability*, Jakob's reverse pivot shift test may be employed.

a- Begin by flexing the knee to 90°.

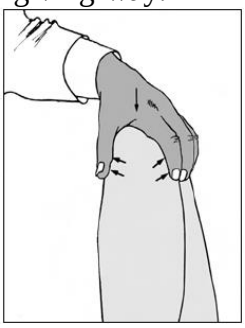
b- Now externally rotate the foot,

c- apply a valgus force and

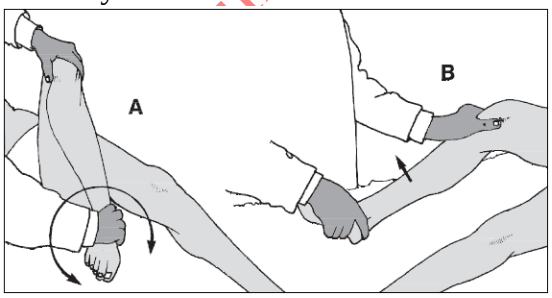
d- extend the joint. If the test is positive, the posteriorly subluxed lateral plateau suddenly reduces, usually at about 20°.

e- --

f- Alternatively, perform the *standing apprehension test for posterolateral instability*. The patient should be taking his weight through the slightly flexed knee. Grasp the knee, and with the thumb at the joint line press the anterior part of the lateral femoral condyle medially **(m)**. The test is positive **(p)** if movement of the condyle occurs (allowing the tibia to slip posteriorly under it), and if this is accompanied by a feeling of giving-way.

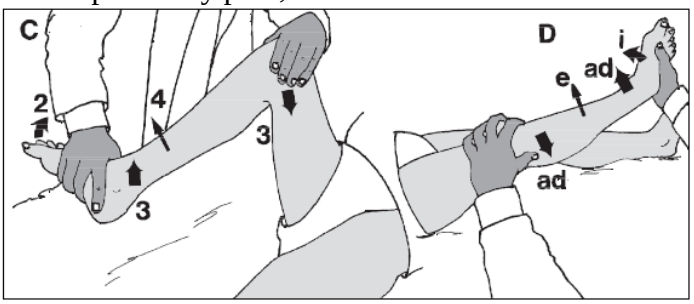


Examining the menisci Look for tenderness in the joint line, and note if there is a springy block to full extension. These two signs, in association with evidence of quadriceps wasting, are the most consistent and reliable signs of a torn meniscus. In recent injuries, look for tell-tale oedema in the joint line. Bruising is *not* a feature of meniscal injuries. Now fully flex the knee and place the thumb and index along the joint line. The palm of the hand should rest on the patella. This position is critical, as it allows you to localize the source of any clicks or other sensations emanating from the joint.



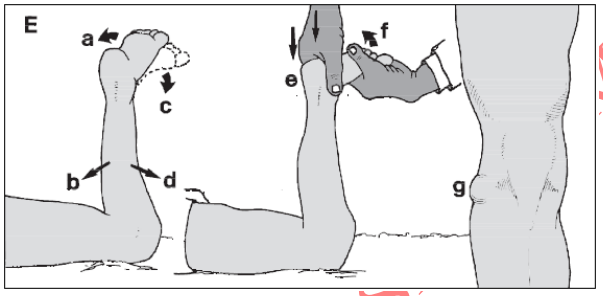
(A)- *Posterior meniscal lesions.* Sweep the heel round in a U-shaped arc, looking and feeling for clicks, accompanied by pain, coming from the joint. Watch the patient's face, not the knee, while carrying out this test.

(B)- *Anterior meniscal lesions.* Press the thumb firmly into the joint line at the medial side of the patellar ligament. Now extend the joint. Repeat on the other side of the ligament. A click, accompanied by pain, is often found in anterior meniscal lesions.



(C)- *McMurray manoeuvre for the medial meniscus.* Place the thumb and index along the joint line to detect any clicks. First **(1)**, flex the leg fully; then externally rotates the foot **(2)**, and abduct the lower leg **(3)**. Keeping up abduction pressure, extend the joint smoothly **(4)**. A click in the medial joint line, accompanied by pain, suggests a medial meniscus tear.

(D)- *Mc Murray manoeuvre for the lateral meniscus.* Repeat the last test with the foot internally rotated **(i)** and the leg adducted **(ad)**. Feel for any clicks accompanied by pain as the joint is extended **(e)**. A grating sensation may be felt in degenerative lesions of the meniscus. The normal limb should be examined to help eliminate symptom less, nonpathological clicks (e.g. from the patella clicking over the femoral condyles, or from soft tissues snapping over bony prominences). If a unilateral painful click is obtained, repeat the test with the sensing finger or thumb removed. The source of the click may be visible on close inspection of the joint line.



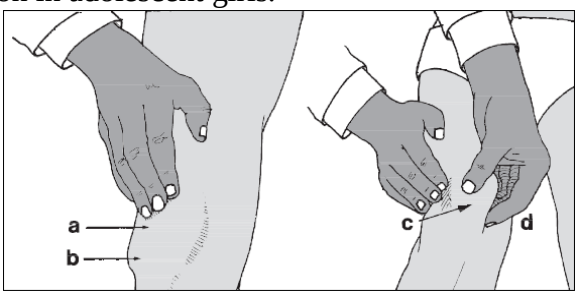
(E)- *Apley's grinding test*-. In the tests, the suspect meniscus is subjected to compression and shearing stresses; sharp pain is suggestive of a tear.

a- The patient is prone. The foot is externally rotated and
b- the knee flexed fully
c- then the foot is internally rotated and
d- The knee extended. The sides are compared. This demonstrates any limitation of rotation, or where any pain occurs.
e- Then, while standing on a stool, the examiner throws his weight along the axis of the limb and
f- Externally rotates the foot. Severe sharp pain is indicative of a medial meniscus tear. Repeat in a greater degree of flexion to test the posterior horn. To test the lateral meniscus, repeat the tests with the foot forcibly internally rotated. Note the presence of any *meniscal cysts*. These lie in the joint line, feel firm on palpation and are tender on deep pressure.
g- Cysts of the menisci may be associated with tears. Lateral meniscus cysts **(g)** are by far the commonest. Cystic swellings on the medial side are sometimes due to ganglions arising from the pes anserinus (insertion of sartorius, gracilis and semitendinosus).

The patella

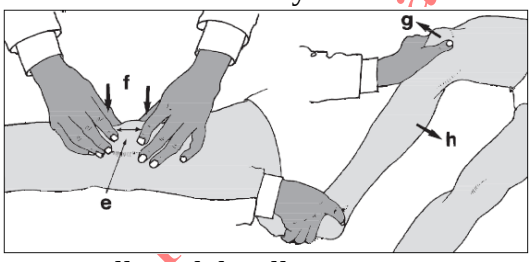
Examine both knees flexed over the end of the couch. This may show a torsional deformity of the femur or tibia, and a *laterally placed patella*, which will be predisposed to instability (e.g. recurrent dislocation) or chondromalacia patellae. Look for *genu recurvatum* and the position of the patella relative to the femoral condyles. A high-placed patella (*patella alta*) is a predisposing factor in recurrent lateral dislocation of the patella. Note if there is any *knock knee* deformity. Because this leads to an increase in the quadriceps angle (similar to the tibiofemoral angle and readily measured), it predisposes

the knee to recurrent dislocation, anterior knee pain and chondromalacia patellae. These are particularly common in adolescent girls.

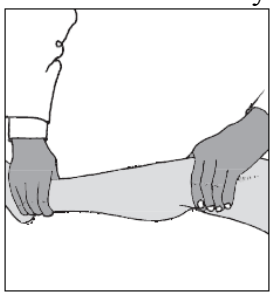


Tenderness-

- ***a-*** Look first for tenderness over the anterior surface of the patella and note if a tender, bipartite ridge is present.
- ***b-*** Lower pole tenderness occurs in Sinding–Larsen–Johannson disease. (Tenderness may also occur over the patellar ligament, quadriceps tendon and tibial tuberosity in other extensor apparatus traction injuries and variants of 'jumper's knee'.)
- ***c-*** Now displace the patella medially and
- ***d-*** palpate its *articular* surface. Tenderness is found when this is diseased, e.g. in chondromalacia patellae. Repeat the test, displacing the patella laterally. Two thirds of the articular surface is normally accessible in this way.

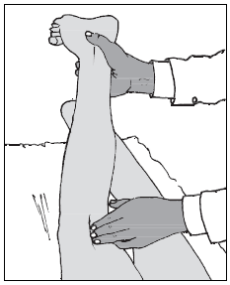


- ***e-*** Move the patella proximally and distally,
- ***f-*** At the same time pressing it down hard against the femoral condyles. Pain is produced in hondromalacia patellae and retropatellar osteoarthritis. Also test side-to-side mobility of the patella; this is reduced in retropatellar osteoarthritis.
- ***g-*** ***Apprehension test-*** Try to displace the patella laterally
- ***h-*** while flexing the knee from the fully extended position. If there is a tendency to recurrent dislocation, the patient will be apprehensive and try to stop the test, generally by pushing the examiner's hand away.



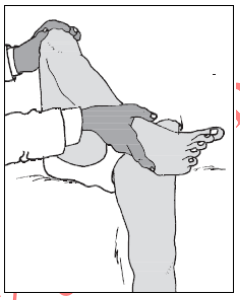
Articular surfaces- Place the palm of the hand over the patella and the thumb and index along the joint line. Flex and extend the joint. The source of crepitus from damaged articular surfaces can then be detected. Compare one side with the other. If in doubt,

auscultate the joint. Ignore single patellar clicks. Note also if there is any apparent broadening of the joint and palpable exostosis formation typical of osteoarthritis.



Popliteal region

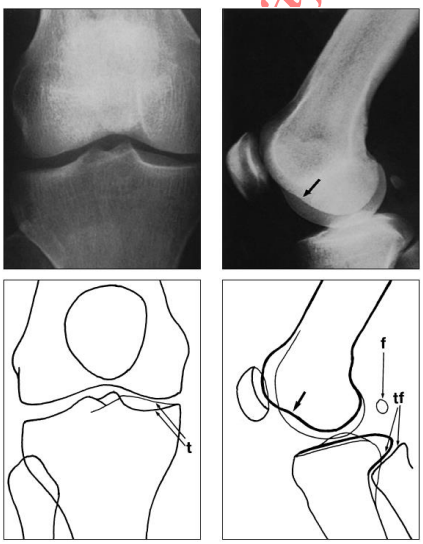
All the previous tests have involved examination of the joint from the front. Do not forget to examine the back of the joint, both by inspection and palpation. If the knee is flexed the roof of the fossa is relaxed, and deep palpation becomes possible. Semi-membranosus bursae become obvious when the knee is extended. Compare the sides. A bursa may be small at the time of examination, and transillumination is worth trying although not always positive. Note that semimembranosus bursae may be secondary to rheumatoid arthritis or other pathology in the joint.



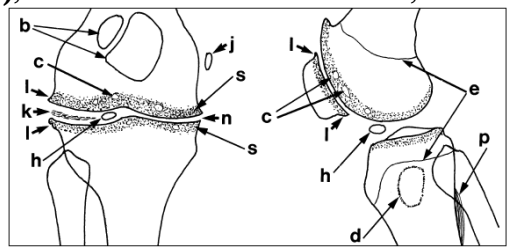
The hip

Always examine the hip; especially where there is complaint of severe knee pain without any obvious cause: remember that hip pain is often referred to the knee joint. The hip may be screened by testing rotation at 90° flexion, noting pain or restriction of movements.

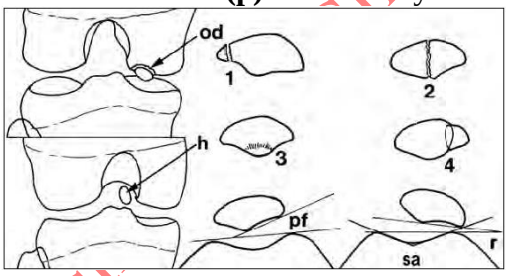
RADIOGRAPHS



In the AP the patellar shadow is faint. Medially, two tibial shadows **(t)** are formed by the anterior and posterior margins of the medial tibial plateau. *In the lateral* note the condylopatellar sulcus (marked with an arrow): this helps identify the lateral femoral condyle which is large and flat; in the diagram it is drawn in bold. The lateral condyle of the tibia (also in bold) may be distinguished from the medial by the tibiofibular articulation **(tf)**. The medial tibial condyle blends with the shadow of the tibial spines. Do not mistake the fabella **(f)**, an inconstant seasamoid bone, for a loose body.

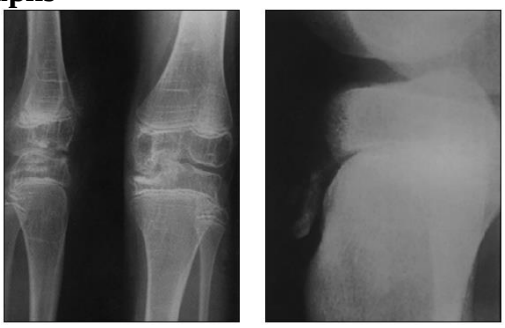


Representative pathology- Note joint space narrowing (indicating cartilage loss) **(n)**, lipping **(l)**, marginal sclerosis **(s)**, cysts **(c)**, loose bodies **(h)**, varus or valgus (all common in osteoarthritis). Do not mistake a bipartite patella, which affects the upper and outer quadrant **(b)**, or epiphyseal lines **(e)** for fracture. Note abnormal calcification as in **(j)** Pellegrini–Stieda disease, **(k)** calcified meniscus and pseudo gout. Look for alterations in bone texture (e.g. in Paget's disease, rheumatoid arthritis, osteomalacia, infections). Note any bone defects **(d)** or periosteal reaction **(p)** such as may occur in tumours or infection.

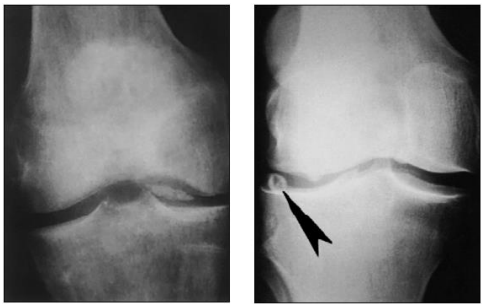


Other projections- *Intercondylar* radiographs often help in diagnosing osteochondritis dissecans (**od**) (as they show the common site of origin in the medial femoral condyle), and in locating loose bodies (**h**). Where the patella is suspect, a *tangential* (skyline) view may show (**1**) a marginal (medial) osteochondral fracture, common in recurrent dislocation of the patella, (**2**) other fractures, (**3**) occasionally, evidence of chondromalacia patellae, (**4**) bipartite patella. The lateral patellofemoral angle (**pf**), normally positive in a 20° radiographic projection, may be reduced to zero or reversed (**r**) in recurrent dislocation of the patella. Reduction of the sulcus angle (**sa**) — normal 132° to 144° — is highly significant in cases of suspected patellar instability.

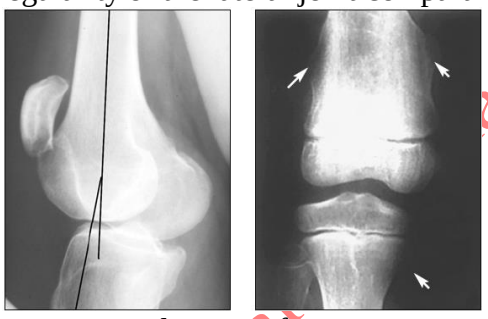
Representative radiographs



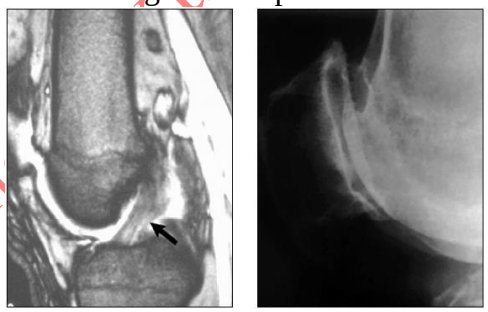
Left: Tuberculous arthritis with destruction of the medial joint compartment. Note the horizontal striations (Looser's zones) indicative of transient growth arrest. *Right:* Osgood–Schlatter's disease.



Left: Osteochondritis dissecans with involvement of a large portion of the medial femoral condyle. *Right:* The arrow indicates a loose body associated with osteoarthritis. Note the narrowing and irregularity of the lateral joint compartment.



Left: Patella alta with a minor degree of genu recurvatum. *Right:* diaphyseal (metaphyseal aclasis). Note the prominent exostoses on both sides of the distal femur and of the upper tibia; there are also changes in the proximal fibula.



Left: The CAT scan shows an intact anterior cruciate ligament. *Right:* Gross patellofemoral osteoarthritis, with cyst formation both in the femur and the patella.

Rubrics related to knee available in various Homoeopathic Repertories-

S. No.	Rubric	Total remedies
1	Clarke J. H., Clinical Repertory (English) - Clinical - H - housemaid's knee	7
2	Pulford A. And T. D., Repertory of Pneumonia - GENERALS - sitting - amel. - must sit up in bed with knees drawn up, rests head and arms on knees	1
3	ABDOMEN - Amelioration - lying - knees and elbows, on	1

4	SEXUAL IMPULSE - Concomitants after coition - knees, weakness in	2
5	COUGH - Amelioration - kneeling or getting on hands and knees	1
6	LOWER EXTREMITIES - Asleep, as if - joints - knee	2
7	LOWER EXTREMITIES - Band around, as of a - joints - knee	13
8	LOWER EXTREMITIES - Beating and throbbing - joints - knee	1
9	LOWER EXTREMITIES - Bent inward - knee	2
10	LOWER EXTREMITIES - Boils - knee joints	2
11	LOWER EXTREMITIES - Boring - joints - knee	21
12	LOWER EXTREMITIES - Breaking, brittle; pain as if - joints - knee	4
13	LOWER EXTREMITIES - Bruised - pain - joints - knee	24
14	LOWER EXTREMITIES - Burrowing or rooting pain - knee joints	3
15	LOWER EXTREMITIES - Constriction, cramp (contraction) - joints - knee	11
16	LOWER EXTREMITIES - Cracking - joints - knee	23
17	LOWER EXTREMITIES - Cramps - joints - knee	16
18	LOWER EXTREMITIES - Crawling, creeping, etc. - knee joints	1
19	LOWER EXTREMITIES - Cutting, lancinating - joints - knee	9
20	LOWER EXTREMITIES - Dislocation, easy - joints - knee	1
21	LOWER EXTREMITIES - Dislocative feeling - joints - knee	1
22	LOWER EXTREMITIES - Distension - knee joints	1
23	LOWER EXTREMITIES - Distortion - knee	5
24	LOWER EXTREMITIES - Drawing - joints - knee	52
25	LOWER EXTREMITIES - Drawn - up - knee	2
26	LOWER EXTREMITIES - Dryness - sense of - joints - knee	1
27	LOWER EXTREMITIES - Eruption - herpes, including tetters - joints - knee	4
28	LOWER EXTREMITIES - Eruption - pimples - joints - knee	7
29	LOWER EXTREMITIES - Excoriation - knee, in popliteal spaces	3
30	LOWER EXTREMITIES - Exudation into - knee	9
31	LOWER EXTREMITIES - Fatigue, pain as from - joints - knee	15
32	LOWER EXTREMITIES - Fatigue, pain as from - sense of - joints - knee	22
33	LOWER EXTREMITIES - Gait - knock knee	1
34	LOWER EXTREMITIES - Gnawing - joints - knee	2
35	LOWER EXTREMITIES - Gout-like pain - joints - knee	2
36	LOWER EXTREMITIES - Gurgling - knee joints	1
37	LOWER EXTREMITIES - Heaviness - joints - knee	12
38	LOWER EXTREMITIES - Humming - knee joints	1
39	LOWER EXTREMITIES - Inflammation - joints - knee	17
40	LOWER EXTREMITIES - Inversion of - knee	2
41	LOWER EXTREMITIES - Itching - joints - knee	17
42	LOWER EXTREMITIES - Jerks - joints - knee	6
43	LOWER EXTREMITIES - Knock together - of knees and chin	1
44	LOWER EXTREMITIES - Laming pain - joints - knee	20
45	LOWER EXTREMITIES - Loose sensation - knee	1
46	LOWER EXTREMITIES - Muscles - contraction, shortening of - joints - knee, hamstrings	17
47	LOWER EXTREMITIES - Nail driven in, as if - joints - knee	1
48	LOWER EXTREMITIES - Numbness - joints - knee	10

49	LOWER EXTREMITIES - Pain, simple - joints - knee	16
50	LOWER EXTREMITIES - Paralysis - joints - knee	8
51	LOWER EXTREMITIES - Pressure - joints - knee	28
52	LOWER EXTREMITIES - Pulsation - knee joints	2
53	LOWER EXTREMITIES - Quivering - joints - knee	4
54	LOWER EXTREMITIES - Rending, tugging, etc. - joints - knee	1
55	LOWER EXTREMITIES - Restlessness, impulse to move - joints - knee	16
56	LOWER EXTREMITIES - Rheumatic pain - knee joints	2
57	LOWER EXTREMITIES - Sensitiveness - knee joints	8
58	LOWER EXTREMITIES - Shooting - knee	6
59	LOWER EXTREMITIES - Short, as if - knee	13
60	LOWER EXTREMITIES - Soreness, ulcerative - joints - knee	1
61	LOWER EXTREMITIES - Spasm, tonic - joints - knee	1
62	LOWER EXTREMITIES - Spots - red - knee joints	3
63	LOWER EXTREMITIES - Sprained or dislocative pain, as if - joints - knee	27
64	LOWER EXTREMITIES - Stiff - joints - knee	38
65	LOWER EXTREMITIES - Stitches - joints - knee	72
66	LOWER EXTREMITIES - Stretched - or tight feeling in - knee joints	7
67	LOWER EXTREMITIES - Stubby - joints - knee	1
68	LOWER EXTREMITIES - Swelling - joints - knee	18
69	LOWER EXTREMITIES - Swollen sensation - joints - knee	6
70	LOWER EXTREMITIES - Tearing, shooting - joints - knee	63
71	LOWER EXTREMITIES - Tension - joints - knee	39
72	LOWER EXTREMITIES - Thrusting pain - knee joint	4
73	LOWER EXTREMITIES - Trembling - knee joint	29
74	LOWER EXTREMITIES - Twisting - knee joint	1
75	LOWER EXTREMITIES - Twitching - joints - knee	20
76	LOWER EXTREMITIES - Ulcers or sores - joints - knee	1
77	LOWER EXTREMITIES - Weak and weary - joints - knee	67
78	LOWER EXTREMITIES - Whizzing, whirring - knee joint	1
79	LOWER EXTREMITIES - Aggravation - drawing - up - knee	2
80	LOWER EXTREMITIES - Amelioration - lying - knee	1
81	SENSATIONS AND COMPLAINTS IN GENERAL - Sprains and dislocations - pain - in joints - knee	1
82	SLEEP - Falling to sleep, late - prevented by - knee, pain in	1
83	CHILL - Partial chill - partial chill - lower extremities - knees	11
84	CHILL - Partial coldness - partial coldness - of lower extremities - knees	28
85	CHILL - Partial coldness - coldness, chilliness; sense of - partial - lower extremities - knees	8
86	CHILL - Shivering - partial - on lower extremities - knees	2
87	CHILL - Chill, etc. - concomitants - lower extremities - knee, pain in	8
88	HEAT AND FEVER IN GENERAL - Partial heat - partial heat - lower extremities - in knees	48
89	SWEAT - Partial sweat - partial sweat - knees	9
90	CONDITIONS OF AGGRAVATION AND AMELIORATION IN GENERAL - Knee, elbow position, amel.	7

91	CONDITIONS OF AGGRAVATION AND AMELIORATION IN GENERAL - Lying - knee chest position, amel.	1
92	CONDITIONS OF AGGRAVATION AND AMELIORATION IN GENERAL - Lying - knee, elbow position, amel.	3
93	A - Abdomen - lying - on back, with knees drawn up amel	3
94	A - Angina pectoris - lies, knees, on body, bent backwards, with	1
95	A - Aura - knees, to hypogastrium	1
96	C - Chorea - face, of - cold, clammy, up to knee with	1
97	C - Coryza - knees, hot, with	1
98	C - Cough - lying - knees, on, with head on pillow amel	1
99	F - Feet - knee, to	1
100	G - Gait - knees, knock against each other	7
101	G - Groins - cord like swelling, to knee	1
102	G - Groins - knees, to	1
103	I - Imaginations, illusions, fancies, delusions - walks on knees, as if	1
104	K - Kidneys - lying on back, with knees drawn up amel	1
105	K - knees	15
106	L - Legs - below knees	9
107	L - Lying - back, on - knees, drawn up and spread apart with	1
108	L - Lying - hands and knees on amel	8
109	L - Lying - knees, on, body bent backwards, with	1
110	N - Nose - cold - knees, hot with	1
111	P - Poplitaei - bending knee agg	3
112	R - Respiration - sitting - head bent forward on knee, with amel	1
113	S - Sciatica - knees, to	1
114	S - Scrotum - numb, knees, up to	1
115	S - Sits, bed, in - elbows and knees, on	1
116	S - Sits, bed, in - with knees drawn up, resting her head and arms on knees	1
117	S - Sitting - elbows, knees, on amel	1
118	S - Sleeps - back, on - knees drawn up, with	5
119	S - Sleeps - knees, chest, on	1
120	S - Soles - knees, to	1
121	S - Spine - curvature - lies, back, on knees drawn up, with	1
122	S - Spine - vertebra - tuberculosis of, Pott' s disease - lies, back, on knees drawn up, with	1
123	S - Swallowing - head, bends forwards and lifts his knees up, while	1
124	T - Thighs - middle, knee to	1
125	Abdomen - Child's - knee were pushed against anterior wall from within	1
126	Abdomen - Pushed - out against anterior walls in morning, a child's knee were	1
127	Heart and circulation - Knocked together, heart and knees were	1
128	Neck and back - Crawling - beneath skin on right knee and back	1
129	Upper extremities - Paralyzed - arms and knees were	1
130	Upper extremities - Wasp sting at knee and elbow.	1
131	Lower extremities - Air - hot, going through knee joints	1
132	Lower extremities - Ants - were biting above right knee	1

133	Lower extremities - Band - about knees	1
134	Lower extremities - Bandaged - knees were	2
135	Lower extremities - Bandaged - firmly about the knees when sitting	1
136	Lower extremities - Beaten - in thighs and knees	1
137	Lower extremities - Beaten - in knees	1
138	Lower extremities - Beaten - in knee joint	1
139	Lower extremities - Beaten - in bend of left knee	1
140	Lower extremities - Beaten - in sore knee	1
141	Lower extremities - Bite of flea on inner side of right knee	1
142	Lower extremities - Biting - above right knee, ants were	1
143	Lower extremities - Biting - above the knee, flea were	1
144	Lower extremities - Blow - in left knee	1
145	Lower extremities - Blow - obliquely above left knee in wave-like intervals	1
146	Lower extremities - Blowing - on the knees, wind were	1
147	Lower extremities - Blowing - on him from bend of knees, freezing cold wind were	1
148	Lower extremities - Boiling - water or molten metal under skin in hollow of knee and down back of leg	1
149	Lower extremities - Bound - too tightly, knees were	1
150	Lower extremities - Broken - bones above knee were	1
151	Lower extremities - Broken - in knee	2
152	Lower extremities - Bruised - above knees	1
153	Lower extremities - Bruised - in knees	1
154	Lower extremities - Bubbles bursting in hollow of right knee	1
155	Lower extremities - Bubbling - from knee to heel, something were	1
156	Lower extremities - Bugs were crawling from feet to knees	1
157	Lower extremities - Burst - below the knee, ready to	1
158	Lower extremities - Burst - in knee, something would	1
159	Lower extremities - Bursting - bubbles in hollow of right knee	1
160	Lower extremities - Claw of bird were clasping the knee	1
161	Lower extremities - Cold - in knees	2
162	Lower extremities - Cord - around leg midway between hip and knee	1
163	Lower extremities - Cord - tied around leg under knee	1
164	Lower extremities - Cords - of knee shortened	1
165	Lower extremities - Crawled from knees to toes, something had	1
166	Lower extremities - Crawling - beneath skin on right knee and back	1
167	Lower extremities - Crawling - from feet to knee, bugs were	1
168	Lower extremities - Creak on motion, knee joint would	1
169	Lower extremities - Creeping - above right knee	1
170	Lower extremities - Crushed - inwardly, in left knee	1
171	Lower extremities - Crushed - in knees and ankles, bones had been	1
172	Lower extremities - Dead - up to knees, feet were	1
173	Lower extremities - Dislocated - above the knee	1
174	Lower extremities - Dislocated - knee were	1
175	Lower extremities - Dislocated - in right knee	1
176	Lower extremities - Drawn - cords of legs behind knee were	1

177	Lower extremities - Flea - were biting above the knee	1
178	Lower extremities - Flea - bite on inner side of right knee	1
179	Lower extremities - Forced - asunder, left knee were being	1
180	Lower extremities - Give - way, knees would	5
181	Lower extremities - Give - way after emission, knees would	1
182	Lower extremities - Giving - way in knees and legs	1
183	Lower extremities - Grasped - above the knee, left limb were severely	1
184	Lower extremities - Grasped - by someone in anterior part of right knee	1
185	Lower extremities - Grasped - by both hands in evening, knee were	1
186	Lower extremities - Hairs were being pulled out on inside of left knee	1
187	Lower extremities - Kneeling a long time, he had been, in right knee	1
188	Lower extremities - Knife - right knee were ripped with	1
189	Lower extremities - Larger - knees were	1
190	Lower extremities - Loose - ankles or knee joints were	1
191	Lower extremities - Loosened - internal ligaments in right knee were	1
192	Lower extremities - Molten metal or boiling water under the skin in the hollow of knee and down back of leg	1
193	Lower extremities - Out of joint, knee were	2
194	Lower extremities - Paralysis - extends from above knee down lower leg	1
195	Lower extremities - Paralysis - extends from above knee to foot	1
196	Lower extremities - Paralysis - of right knee	1
197	Lower extremities - Paralyzed - extending to knees, thighs were	1
198	Lower extremities - Paralyzed - extending to calves and knees, thighs were	1
199	Lower extremities - Paralyzed - left leg were from knee to hip	1
200	Lower extremities - Paralyzed - arms and knees were	1
201	Lower extremities - Pins - in knees	1
202	Lower extremities - Pithy - extending from feet to knees	1
203	Lower extremities - Pulled - inside of left knee, hairs were being	1
204	Lower extremities - Ripped with a knife, right knee were being	1
205	Lower extremities - Short - knees were too	1
206	Lower extremities - Short - muscles in bend of knees were too	1
207	Lower extremities - Short - cords of knee were too	1
208	Lower extremities - Short - under the knees, tendons were too	1
209	Lower extremities - Shortened - cords of knees were	1
210	Lower extremities - Sink under her, knees would	1
211	Lower extremities - Sore - and beaten in knees	1
212	Lower extremities - Sprained - above knee	1
213	Lower extremities - Sprained - knees were	5
214	Lower extremities - Stiffness in hollows of knees from a long walk, agg. Morning on rising	1
215	Lower extremities - Sting of a wasp at knee and elbow	1
216	Lower extremities - Stone - a heavy, were tied to feet and knees	1
217	Lower extremities - Support - the body, knees would not	1
218	Lower extremities - Swollen - knees were	2
219	Lower extremities - Swollen - knees were, immensely	1
220	Lower extremities - Swollen - in bends of knees	1

221	Lower extremities - Tendons - were too short in hollow of knee	2
222	Lower extremities - Tied - around leg under knee, cord were	1
223	Lower extremities - Tied - tightly below the knees	1
224	Lower extremities - Tight - about knee, something were	1
225	Lower extremities - Tight - a few inches below the knee, pantaloons were too	1
226	Lower extremities - Tightness at bend of knee	1
227	Lower extremities - Turned - outward only during walking, right knee joint and leg below the knee were	1
228	Lower extremities - Twisted - around or off, legs and knees would be	1
229	Lower extremities - Ulcerate - when walking, knee would	1
230	Lower extremities - Ulcerated - above knee while standing and walking	1
231	Lower extremities - Ulcerated - knees were	2
232	Lower extremities - Walk - stiffness in hollow of knees, from a long walk, morning on rising	1
233	Lower extremities - Walks on knees	1
234	Lower extremities - Water - feet were in cold, up to knees	1
235	Lower extremities - Water - boiling or molten metal under skin in hollow of knee and down back of leg	1
236	Lower extremities - Wind - cold, makes knees cold	1
237	Lower extremities - Wind - were blowing on the knees	1
238	Lower extremities - Wind - freezing cold, blowing on him from bend of the knees	1
239	Lower extremities - Wrenched - when going upstairs, right knee were	1
240	Skin - Biting - above knee, a flea were	1
241	Skin - Crawling - beneath skin on right knee and back	1
242	Skin - Flea - were biting knee	1
243	ABDOMEN - Colic pain - amelioration - from - lying with knees drawn up	1
244	LOCOMOTOR SYSTEM - Lower Extremities - Gait - Spastic; knees knock against each other when walking	1
245	LOCOMOTOR SYSTEM - Thighs, legs - Sweat - extending below knees in a.m.	1
246	LOCOMOTOR SYSTEM - Knees - Pains - Digging, in left knee	6
247	LOCOMOTOR SYSTEM - Knees - Reflexes - Stiffness of knees	7
248	RESPIRATORY SYSTEM - Asthma - concomitants with - nausea, cardiac weakness, vertigo, vomiting, weak stomach, cold knees	1
249	SKIN - Erysipelas - Leg, below knee	1
250	SKIN - Herpes - Of - flexures of knees	5
251	SKIN - Herpes - Of - knees	2
252	SKIN - Pruritus - Of - bends of elbows, knees	2
253	SKIN - Pruritus - Of - knees, elbows, hairy parts	2
254	SKIN - Pruritus - Of - thighs, bends of knees	1
255	FEVER - Chilliness, coldness - In hands - back, feet and knees	2
256	FEVER - Chilliness, coldness - In knees	3
257	FEVER - Chill - Concomitants - Pain in - knees, ankles, wrists, hypogastrium	1
258	NERVOUS SYSTEM - Epilepsy - Aura - begins - in - knees, ascends to	1

	hypogastrium	
259	NERVOUS SYSTEM - Insomnia - causes - coldness of - knees	2
260	NERVOUS SYSTEM - Sleep - Position - on hands and knees	1
261	CONDITIONS OF AGGRAVATION AND AMELIORATION - Lying - hands and knees amel.; on	8
262	LOWER LIMBS - Joints - knee	14
263	MIND - DELUSIONS - mushroom; he is commanded by a - confess his sins; to fall on his knees and to	1
264	MIND - DELUSIONS - walking - knees, he walks on his	3
265	MIND - GESTURES, makes - hands; involuntary motions of the - grasping - knees	1
266	MIND - JUMPING - bed, out of - fell and knees gave out	1
267	MIND - SITTING - inclination to sit - elbows on knees, bent double; with	1
268	MIND - SITTING - inclination to sit - head on hands and elbows on knees; with	2
269	HEAD - JERKING of the head - forward - knees upward during cough; and	2
270	HEAD - PAIN - Temples - right - alternating with - Knee; pain in right	2
271	HEAD - PAIN - Temples - left - alternating with - Knee; pain in right	1
272	NOSE - CORYZA - accompanied by - Knees; hot	1
273	FACE - TWITCHING - accompanied by - Feet up to knees; cold and clammy	1
274	THROAT - PAIN - swallowing - head forward and lift up knee; has to bend	1
275	ABDOMEN - COLDNESS - extending to - Knees	1
276	ABDOMEN - ITCHING - Inguinal region - extending to - Knee	1
277	ABDOMEN - LYING - back; on - amel. - knees drawn up; with	3
278	ABDOMEN - PAIN - bending - forward - amel. - knees drawn up; with	1
279	ABDOMEN - PAIN - lying - back; on - amel. - knees drawn up; with	3
280	ABDOMEN - PAIN - Iliac region - extending to - Knee	1
281	ABDOMEN - PAIN - Ilium - Crest of ileum - extending to - Knee	1
282	ABDOMEN - PAIN - Inguinal region - extending to - Knee	5
283	ABDOMEN - PAIN - extending to - Knee	1
284	RECTUM - DYSENTERY - cold feet to knees in dysentery	1
285	BLADDER - URINATION - dysuria - knee-elbow position; can pass only in	2
286	BLADDER - URINATION - retarded, must wait for urine to start - knees and pressing head against floor; can pass urine only when on the	1
287	KIDNEYS - PAIN - swelling of right knee, with	1
288	KIDNEYS - PAIN - extending to - Knee	3
289	MALE GENITALIA/SEX - NUMBNESS - Scrotum - extending to - Knees	1
290	MALE GENITALIA/SEX - PAIN - Testes - lying - back; on - amel. - knees drawn up; with	1
291	FEMALE GENITALIA/SEX - PAIN - labor pains - extending to - Knees and up to sacrum	1
292	FEMALE GENITALIA/SEX - PAIN - lying - back; on - agg. - separating knees as far as possible; and	1
293	FEMALE GENITALIA/SEX - PAIN - Ovaries - extending to - Knees	2
294	FEMALE GENITALIA/SEX - PAIN - Ovaries - extending to - Thighs -	1

	Inner surface - Down knee; and	
295	FEMALE GENITALIA/SEX - PAIN - Uterus - extending to - Knees	1
296	RESPIRATION - ASTHMATIC - head on knee-position	1
297	RESPIRATION - DIFFICULT - sitting - bent forward - amel. - elbows resting on knees	1
298	COUGH - JERKING of head forward and knees upward; with	2
299	COUGH - VIOLENT - jerking of head forward and knees upward; spasmodic	2
300	CHEST - ANGINA pectoris - lies on knees with body bent backwards	1
301	BACK - CURVATURE of spine - lies on back with knees drawn up	3
302	BACK - PAIN - extending to - Knees	3
303	BACK - PAIN - Lumbar region - elbows and knees amel.; on	1
304	BACK - PAIN - Lumbar region - extending to - Knee	9
305	BACK - TUBERCULOSIS - Vertebrae; of - lying on back with knees drawn up	1
306	Extremities - abscess - knees	11
307	EXTREMITIES - AIR - Knees - warm air through knees; sensation of	1
308	Extremities - ankylosis - knees	1
309	EXTREMITIES - ARTHRITIC nodosities - Knees	6
310	Extremities - arthrosis - knees	2
311	EXTREMITIES - BANDAGED, sensation as if - Knees	15
312	EXTREMITIES - BANDAGED, sensation as if - Legs - Knees; below	1
313	EXTREMITIES - BENDING - knees - agg. - Hollow of knee	3
314	EXTREMITIES - BLOOD - rush of blood to - Knees	2
315	EXTREMITIES - BUBBLING sensation - Knees	5
316	EXTREMITIES - BUBBLING sensation - Knees - Hollow of knees	2
317	EXTREMITIES - CALLOSITIES - Knees; on	1
318	EXTREMITIES - CARIES of bone - Knees	2
319	Extremities - chilliness - knees	18
320	EXTREMITIES - CLUCKING - Knee, sitting	1
321	EXTREMITIES - CLUCKING - Knee, sitting - Hollow of knee	1
322	EXTREMITIES - COLDNESS - Feet - dysentery; cold feet to knee, in	1
323	EXTREMITIES - COLDNESS - Feet - extending to - Knees	11
324	Extremities - coldness - knees	59
325	EXTREMITIES - COLDNESS - Knees - swollen knee	1
326	EXTREMITIES - COLDNESS - Knees - Hollow of knees	2
327	EXTREMITIES - COLDNESS - Legs - right - extending to - Knee; up to	2
328	Extremities - compression - knees	6
329	Extremities - constriction - knees	16
330	EXTREMITIES - CONSTRICTION - Knees - Bends of knees	1
331	EXTREMITIES - CONTRACTION of muscles and tendons - Knee, hollow of	58
332	EXTREMITIES - CONVULSION - Feet - extending to - Knees	1
333	Extremities - convulsion - knees	2
334	EXTREMITIES - CRACKING in joints - Knees	56
335	Extremities - cramps - knees	37

336	EXTREMITIES - CRAMPS - Knees - Hollow of knees	14
337	EXTREMITIES - CRAMPS - Legs - Calves - drawing up knee	1
338	Extremities - dislocation; easy - knees	2
339	EXTREMITIES - ENLARGEMENT - sensation of - Knees	2
340	Extremities - eruptions - knees	26
341	EXTREMITIES - ERUPTIONS - Knees - Hollow of knees	26
342	EXTREMITIES - EXCORIATION - Knee, bend of	4
343	EXTREMITIES - EXCRESCENCES - fungous - Knees	11
344	EXTREMITIES - EXTENSION - Legs - agg. - Knee; hollow of	2
345	EXTREMITIES - FEET; complaints of - Sole of - extending to - Knees	1
346	EXTREMITIES - FISTULOUS openings - Knees	1
347	Extremities - flexed - knees	10
348	Extremities - formication - knees	12
349	EXTREMITIES - FORMICATION - Knees - right knee; under skin of	1
350	EXTREMITIES - FORMICATION - Knees - Hollow of knees	1
351	Extremities - gangrene - knees	1
352	Extremities - give way - knees	1
353	Extremities - heat - knees	67
354	EXTREMITIES - HEAT - Knees - Hollow of knees	1
355	Extremities - heaviness - knees	49
356	EXTREMITIES - HEAVINESS - Knees - Hollow of knees	1
357	Extremities - inflammation - knees	48
358	EXTREMITIES - INFLAMMATION - Knees - Below knees	1
359	Extremities - inversion - knees	2
360	EXTREMITIES - IRRITATION of skin - Legs - Knees; below	1
361	Extremities - itching - knees	59
362	Extremities - jerking - knees	15
363	EXTREMITIES - JERKING - Legs - Knees; below	1
364	EXTREMITIES - KNEES; complaints of	124
365	EXTREMITIES - KNOCKED together - Knees	12
366	Extremities - lameness - knees	23
367	EXTREMITIES - LIMPING - pain in knee; from	1
368	EXTREMITIES - LOOSENESS - sensation of looseness - Knee joints	1
369	EXTREMITIES - LYING - amel. - Knees	1
370	EXTREMITIES - MOISTURE - Knees - Hollow of knees	1
371	Extremities - nodules - knees	1
372	Extremities - numbness - knees	23
373	EXTREMITIES - NUMBNESS - Knees - Hollow of knee	1
374	EXTREMITIES - NUMBNESS - Thighs - extending to - Knee	1
375	EXTREMITIES - PAIN - Ankles - extending to - Knee	5
376	EXTREMITIES - PAIN - Elbows - aching - alternating with - Knees; pain in	1
377	EXTREMITIES - PAIN - Elbows - alternating with - Knees; pain in	1
378	EXTREMITIES - PAIN - Feet - jumping to knee	1
379	EXTREMITIES - PAIN - Feet - extending to - Knee	9
380	EXTREMITIES - PAIN - Feet - Soles - extending to - Knees	2
381	EXTREMITIES - PAIN - Feet - Soles - extending to - Knees; above	2

382	EXTREMITIES - PAIN - Forearms - right - and left knee	1
383	EXTREMITIES - PAIN - Hips - left - extending to - Knee	1
384	EXTREMITIES - PAIN - Hips - extending to - Knee	34
385	EXTREMITIES - PAIN - Hips - extending to - Knee - Hollow of knee	1
386	EXTREMITIES - PAIN - Hips - Trochanter - extending to - Knee; hollow of	1
387	Extremities - pain - knees	379
388	EXTREMITIES - PAIN - Knees - right - followed by - left knee	3
389	EXTREMITIES - PAIN - Knees - supporting body with knee	1
390	EXTREMITIES - PAIN - Knees - Bends of knees	1
391	EXTREMITIES - PAIN - Knees - Hollow of knees	126
392	EXTREMITIES - PAIN - Knees - Hollow of knees - bending knee agg.	5
393	EXTREMITIES - PAIN - Knees - Patella - bending knee agg.	3
394	EXTREMITIES - PAIN - Legs - extending to - Knee	1
395	EXTREMITIES - PAIN - Legs - Bones - Tibia - bending knee agg.	1
396	EXTREMITIES - PAIN - Legs - Calves - evening - sitting with knees bent	1
397	EXTREMITIES - PAIN - Legs - Calves - extending to - Knees	1
398	EXTREMITIES - PAIN - Legs - Calves - extending to - Knees - Hollow of knees	2
399	EXTREMITIES - PAIN - Legs - Knees; below	4
400	EXTREMITIES - PAIN - Lower limbs - Sciatic nerve - extending to - Knee	7
401	EXTREMITIES - PAIN - Lower limbs - Sciatic nerve - extending to - Knee - Hip to knee; from	4
402	EXTREMITIES - PAIN - Nates - extending to - Knee	2
403	EXTREMITIES - PAIN - Shoulders - right - accompanied by - Knee; pain in left	1
404	EXTREMITIES - PAIN - Thighs - right - extending to - Knee	1
405	EXTREMITIES - PAIN - Thighs - bent; when knees are	1
406	EXTREMITIES - PAIN - Thighs - cough agg.; during - extending to - Knee	1
407	EXTREMITIES - PAIN - Thighs - extending to - Knee	14
408	EXTREMITIES - PAIN - Thighs - Anterior part - extending to - Knee	2
409	EXTREMITIES - PAIN - Thighs - Inner side - Knees; above	13
410	EXTREMITIES - PAIN - Thighs - Knees; above	54
411	EXTREMITIES - PAIN - Toes - extending to - Knee	1
412	EXTREMITIES - PAIN - Toes - First - extending to - Knee	1
413	EXTREMITIES - PAIN - Upper limbs - right - and - left knee	1
414	Extremities - paralysis - knees	13
415	EXTREMITIES - PARALYSIS - Thighs - sensation of - extending to - Knees	2
416	Extremities - perspiration - knee	14
417	Extremities - pulsation - knees	17
418	EXTREMITIES - PULSATION - Knees - Hollow of knees	3
419	Extremities - relaxation - knees	4
420	Extremities - restlessness - knees	18
421	Extremities - roughness - knees	1
422	EXTREMITIES - SCRATCHING - sensation of - Knees	1
423	Extremities - sensitive - knees	17

424	Extremities - shocks - knees	9
425	EXTREMITIES - SHORT, sensation as if - Knees	13
426	Extremities - shuddering - knees	4
427	EXTREMITIES - SITTING - while - agg. - Knees - Hollow of knees	1
428	EXTREMITIES - STANDING - while - agg. - Knees - Hollow of knees	3
429	Extremities - stiffness - knees	108
430	EXTREMITIES - STIFFNESS - Knees - Hollow of knees	11
431	EXTREMITIES - STIFFNESS - Thighs - Posterior part - extending to - Knee	1
432	Extremities - suppuration - knees	2
433	Extremities - swelling - knees	90
434	EXTREMITIES - SWELLING - Knees - Hollow of knees	4
435	EXTREMITIES - SWELLING - Wrists - alternating with swelling of knee	1
436	Extremities - tension - knees	72
437	EXTREMITIES - TENSION - Knees - Hollow of knees	62
438	EXTREMITIES - TENSION - Thighs - bearing the weight upon the leg, with knee bent	1
439	EXTREMITIES - TENSION - Thighs - bending knee agg.	2
440	EXTREMITIES - THIGHS; complaints of - extending to - Knee; middle of	1
441	EXTREMITIES - THRILLING sensation - Knees	1
442	Extremities - tingling - knees	10
443	Extremities - trembling - knees	64
444	Extremities - tumors - knees	1
445	EXTREMITIES - TUMORS - Knees - Hollow of knees	3
446	EXTREMITIES - TWISTING sensation - Knees	3
447	Extremities - twitching - knees	45
448	EXTREMITIES - TWITCHING - Knees - chin would be knocked together; as if knees and	1
449	EXTREMITIES - TWITCHING - Knees - Hollow of knees	7
450	EXTREMITIES - TWITCHING - Knees - Hollow of knees - bending knee agg.	1
451	EXTREMITIES - TWITCHING - Legs - Knee; below	1
452	Extremities - ulcers - knees	10
453	EXTREMITIES - UNSTEADINESS, joints - Knees	14
454	Extremities - varices - knees	2
455	EXTREMITIES - VIBRATION; sensation of - Knees	1
456	EXTREMITIES - WALKING - knees; on	1
457	EXTREMITIES - WEAKNESS - sensation of - Knees	22
458	Extremities - weakness - knees	188
459	EXTREMITIES - WEAKNESS - Knees - Hollow of knees	15
460	EXTREMITIES - WEAKNESS - Lower limbs - accompanied by - Knees; pain in	1
461	SLEEP - POSITION - back; on - foot rests on opposite knee with one leg drawn upward	1
462	SLEEP - POSITION - back; on - knees bent	6
463	SLEEP - POSITION - hands - and knees; on hands	3

464	SLEEP - POSITION - knees - chest position; knee	15
465	SLEEP - POSITION - knees - elbows bent; knees and	7
466	SLEEP - SLEEPLESSNESS - coldness, from - Knees, of	3
467	SLEEP - SLEEPLESSNESS - pain; from - Knee	2
468	CHILL - BEGINNING in - Knees	4
469	SKIN - BITING - fleas were biting; as if - Knee; the	1
470	SKIN - BITING - fleas were biting; as if - Knee; the - Above the knee	1
471	GENERALS - CHOREA - Feet - cold clammy feet up to knee; with	1
472	GENERALS - CONVULSIONS - epileptic - aura - Knees, in	2
473	GENERALS - LYING - knees, body bent backward; on	1
474	GENERALS - SITTING - must sit up in bed with knees drawn up, rests her head and arms upon knees	2

Repertorial analysis of all the rubrics related to knee-

1- Repertorization based on prominence of remedies-

sulph.	rhus-t.	puls.	nux-v.	nat-m.	sep.	kali-c.	ars.	chin.	caust.
8350	**7405**	**7294**	**7169**	**7159**	**6845**	**6409**	**6250**	**6185**	**5680**

2- Repertorization based on sum pf symptoms-

led.	petr.	coloc.	plat.	chin.	nit-ac.	arg-met.	spig.	anac.	zinc.
1605	**1331**	**1133**	**1091**	**1066**	**1008**	**997**	**986**	**968**	**965**

3- Repertorization based on rare remedies-

sulph.	rhus-t.	puls.	nat-m.	nux-v.	sep.	caust.	chin.	bry.	nit-ac.
65	**58**	**54**	**53**	**53**	**53**	**49**	**49**	**46**	**46**

4- Miasms present in total 474 rubrics related to knee-

a- Psora- 79%
b- Sycosis- 76%
c- Tubercular- 65%
d- Cancerous- 64%
e- Syphilis- 63%

Conclusion-

After studying the disorders of knee joint in terms of homoeopathy, we find that most of the complaints are Psoric. Due to being late in treating it correctly, the condition grows worsening and other miasms start harboring and manifesting their role actively. This leads to gross pathological changes and worsens the prognosis. If diagnosed in terms of homoeopathy in time, the knee complaints can surely be cured permanently.

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