

DEFINITION

1. **Internal derangement of the knee (IDK)** is the term used to cover a group of disorders involving disruption of the normal functioning of the ligaments or cartilages (menisci) of the knee joint.

CLASSIFICATION

2. The normal knee joint has two collateral ligaments, two cruciate ligaments and two semilunar cartilages (menisci). Any of these may be involved in a derangement, some being more easily damaged than others. In some instances more than one structure is disrupted.
3. The following disorders may be met with:
 - 3.1. Sprain or tear of the medial collateral ligament.
 - 3.2. Sprain or tear of the lateral collateral ligament.
 - 3.3. Partial or complete rupture of the anterior cruciate ligament.
 - 3.4. Rupture of the posterior cruciate ligament.
 - 3.5. Tear of the medial semilunar cartilage. This may take the form of a longitudinal spilt (bucket handle tear), or an anterior or posterior horn tear.
 - 3.6. Tear of the lateral semilunar cartilage. The same variations occur as with a medial cartilage tear.
 - 3.7. Tear of a degenerate meniscus.
 - 3.8. Cyst of a semilunar cartilage, usually the lateral.
 - 3.9. Congenital discoid meniscus, usually the lateral.
4. The commonest derangement met with is injury to the medial collateral ligament. The medial meniscus and anterior cruciate ligament are next in frequency. The lateral ligament, lateral meniscus and posterior cruciate ligament are less liable to damage.

CLINICAL MANIFESTATIONS

5. The precise clinical picture depends on the nature and severity of the derangement. Acute pain and swelling of the knee are the usual presenting symptoms, together with functional impairment of varying degree. Generally the pain is most intense at the site damaged. Rapid onset of swelling is likely to indicate a haemarthrosis, which is particularly associated with anterior cruciate ligament rupture. Locking of the knee is a common feature of a medial meniscus tear.

6. Arthroscopy is the most effective investigation for establishing the precise nature of the derangement in injuries to the menisci and to the cruciate ligaments. Complications of this procedure are extremely rare.
7. Intra-articular mechanical damage to the knee joint predisposes to the later development of osteoarthritis of the joint. Osteoarthritis is particularly likely to occur after meniscal injury, especially if combined with anterior cruciate ligament rupture. It may be a sequel of meniscectomy.

AETIOLOGY

8. **Physical trauma** is the cause of the vast majority of IDKs. The mechanics of the knee are such that individual derangements tend to be caused by particular types of trauma, although severe injuries may produce multiple derangements; for example, a particular rotational injury may tear the medial ligament, medial meniscus and anterior cruciate ligament.
9. The majority of acute knee injuries result from a valgus and/or twisting strain. Most commonly, they involve the medial joint structures and the anterior cruciate ligament.
10. The type of physical trauma causing IDK may be a sports injury, a road traffic accident or an occupational stress; by far the most common at the present time is a **sports injury**, usually from participation in **contact sports**. Professional soccer players are especially prone to suffer IDKs.
 - 10.1. The most frequent cause of damage to the medial collateral ligament is forced valgus injury to the knee; this occurs in sportsmen when the athlete is hit from the lateral side and the knee is driven medially. Thus, it is most often found in contact sports, such as soccer, rugby and ice hockey.
 - 10.2. Lateral collateral ligament injuries are much less common, as varus stress to the knee occurs much less frequently than valgus stress. They are usually caused by extreme violence, such as road traffic accidents.
 - 10.3. Anterior cruciate ligament injury occurs from forced valgus stress to the fully extended knee. It is found in sports such as soccer, rugby, netball and basketball; it is also common in skiing.
 - 10.4. Posterior cruciate ligament injury is liable to occur in motor car accidents caused by high velocity trauma, with posterior dislocation of the tibia on a flexed knee, as in a dashboard impact. It is a relatively uncommon sporting injury, but may occur in sports where there is frontal impact, such as American football.
 - 10.5. Meniscus tears occur when substantial rotational stresses are applied to the flexed knee. They are particularly common in footballers, when the player is tackled from the side; they are also liable to occur in other sports, such as hockey, tennis, badminton, squash and skiing.

11. **Occupational trauma** is a recognised cause of meniscal injuries. It occurs in men who work in a squatting position, and used to be well known in miners prior to full mechanisation. Workers in jobs involving kneeling and twisting, such as carpet fitters and electricians, are at risk of meniscal damage.
12. **Age-related degeneration** of a semilunar cartilage may be met with in an older patient, say over age 50. It may present as spontaneous occurrence of knee pain without any history of injury.
13. Meniscal cysts often appear to follow an injury, and there may be a history of trauma in the past. If there is a previous history of direct injury at the site of the cyst, a traumatic origin could not be denied. However, in most instances the aetiology is obscure. Some meniscal cysts appear to be congenital.
14. Discoid lateral meniscus is a true congenital **malformation** and is more liable to injury than is a normal meniscus. The condition frequently presents with symptoms in early childhood.

CONCLUSION

15. **Internal derangement of the knee** is the term used to describe the various types of disruption of the ligaments and cartilages of the knee. By far the most frequent cause is **sports injury**, with footballers especially at risk. Some disorders of the cartilages may occur without evidence of prior injury. **Osteoarthritis of the knee** is commonly a late sequel of cartilage or cruciate ligament damage.

REFERENCES

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April 2000