



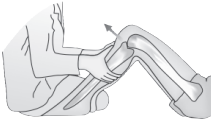
Arthroscopy

Introduction

Thousands of years ago, star gazing to unravel the secrets of the skies was a favorite pass time of the yesteryear Greek scientists. The human eye could not match this enthusiasm and belied all their interests. Then came Galileo with his phenomenal invention of a telescope which opened up the secrets of astronomy and behold the beautiful galaxy was now suddenly seen in all its splendor and glory.

Something similar happened in the field of surgery. The morbidity and mortality associated with long incision wide surgical approaches was getting increasingly alienated. The patients and the surgeons yearned for something small and less morbid. They realized that had to open less see more and do more. How could that be possible they wondered. Again that wonder tool called the telescope made this a reality. Peeping inside a joint through a telescope suddenly exposed the joint in all its grandeur. That joint which had a myriad of fascinating structures within it could be accessed for diagnosis and thereafter treatment by a telescopic like instrument that was christened as arthroscopy. Like telescope, arthroscopy revolutionized the way we look and treat joint conditions. Great deeds could now be performed through small nicks courtesy arthroscopy. Joints now heaved a sigh of relief that no longer they need to be subjected to mutilating knives of a marauding surgeon.

Table 1.1: Clinical tests to diagnose various knee ligament injuries

| <i>Tests</i> | <i>How to perform</i> | <i>Inference</i> |
|---|---|---|
| Adduction or varus: Abduction or valgus stress test (Fig. 1.2A)  | <p>Patient is supine, knee is flexed to 30°</p> <p>For abduction test: One hand is on the lateral aspect of the knee and the other at the ankle, force is applied outwards.</p> <p>For adduction test: Change hand to the medial side of the knee and give an adduction force.</p> | <p>Positive in injury to the medial structures of the knee like tibial collateral ligament.</p> <p>Positive in injuries to lateral structures of knee like fibular collateral ligament.</p> |
| Lachman's test (Fig. 1.2B)  | <p>This is an anterior drawer's test done at 20–30° of knee flexion with patient in supine position.</p> | <p>Indicates ACL tear. This test is used in acute injuries of knee to test ACL tear where knee cannot be flexed to 90°.</p> |
| Anterior Drawer's test (Fig. 1.2C)  | <p>Patient is in supine position. Hip is flexed to 45° and knee to 90°. Examiner sits on the dorsum of the foot and pulls the tibia forwards. The anterior drawer's test is done in 3 positions:</p> <p>a. Foot in neutral position—if positive, it indicates ACL tear, etc.</p> <p>b. Foot in 15° internal rotation—if positive, indicates damage to anterolateral structures.</p> <p>c. Foot in 15° external rotation—if positive, indicates damage to anteromedial structures.</p> | <p>If the tibia shifts anteriorly more than 6–8 mm, then it indicates torn ACL and the test is considered as positive. This should always be compared with the normal knee.</p> |

Contd.

How to manage these injuries? Treatment methods

Conservative treatment: Most of the Grade I and II PCL tears can be treated non-operatively.

Surgery: This is indicated in Grade III injuries with posterior translation > 10 mm. Reconstruction is done by using medial head of gastrocnemius, etc.

Avulsion of the PCL from the femoral or tibial ends is more common unlike in ACL tears. Here reattachment of the avulsed ligament usually gives good results. Reconstruction is reserved for:

- Midsubstance tears.
- Old tears.

Graft Options for PCL Reconstruction

- Central one-third of patellar tendon.
- Patella tendon allograft.
- Achilles tendon allograft.
- Semitendinosus or gracilis graft.
- Two-tailed femoral graft is the graft of choice.
- Some prefer anterolateral femoral reconstruction with a tibial inlay grafting.

COMBINED KNEE LIGAMENT INJURIES— COMPLEX INJURIES

Rupture of the cruciate and collateral ligaments either singly (rare) or in combination (common) makes the knee unstable. Depending upon the combination of injuries, the knee instability could be either one plane, two planes or both (Table 1.2). Table 1.3 depicts the knee instabilities in different planes, the various tests and the structures of the knee injured.

Anterolateral instability: This is due to injury of anterolateral structures. Reconstruction is done by using iliotibial band or biceps femoris transfer.

Quick diagnostic points**Medial meniscal injuries**

| | |
|------------------------------|----------------------------|
| Medial joint line tenderness | +ve in 74 percent of cases |
| Apley's grinding test | +ve in 46 percent of cases |
| Painful hyperextension | +ve in 43 percent of cases |
| Steinmann I sign | +ve in 42 percent of cases |
| McMurray's | +ve in 35 percent of cases |

Hence, no one test is diagnostic. That is why multiple tests are required for diagnosis. See for tests (Table 1.4 and Figs 1.10A to G)

Treatment

Conservative: This is indicated in patients soon after injury with no locking and with infrequent attacks of pain and in tears less than 10 mm, partial thickness tears.

Measures

- Abstinence from weight bearing.
- Rest, ice packs, compressive bandage.
- Buck's skin traction.
- Joint aspiration.
- Quadriceps exercises.
- If symptom persists, a cylindrical cast may be considered.

Manipulation under anesthesia: If joint is locked due to the torn menisci, manipulation under anesthesia is recommended.

Role of Arthroscopy**Surgery**

Indications: Surgery is indicated, if joint cannot be unlocked and if symptoms are recurrent.

Methods

- *Arthroscopic menisci repair:* This is the treatment of choice of late. Repair is indicated if the tear is > 10 mm or is unstable on probing. Repair is successful in the outer third (red-red zone) edge of the vascular rim (red-white zone) and even in a few avascular zone (white-white zone) (Fig. 1.11).