

LIGAMENT HEALING

ACL

Mid-substance tear: Healing capacity is poor need reconstruction
Avulsion injury: Heals well with repair

PCL

Has intrinsic capacity to heal [cf. ACL]
Healing can occur in 75%

MCL

Good intrinsic healing

Prolong immobilisation: is deleterious

Site of healing: Proximal tear: quick healing and can cause stiffness
Distal tear: slow to heal and does not cause stiffness

Treatment: ROM brace for 6 weeks

MCL in 0° and 30° valgus test.

Positive in 0° means: Posterior Cruciate Ligament
Postero-medial capsule

Positive in 30° flexion only means isolated MCL ligament laxity

Based on tenderness, Laxity and endpoint

Grade I : Tenderness +++; No Laxity, End point present

Grade II: Tenderness ++; Laxity ++, End point present

Grade III: Tenderness+; Laxity +++, No end point

Anterior Drawer test

Normal: at 90°, anterior border of the tibia is 1 cm anterior to the femur

Grade 1	Less than 1 cm
2	At the level of femur
3	No end point

Posterolateral structures

Mechanism: Hyperextension, varus and twisting.

It can be with or without PCL or ACL

1. History of injury and previous treatment
2. Gait: varus hyperextension thrust gait
3. Posterior sag and Posterior Drawer test
4. Prone ER [dial test]: at 30° and 90°
Houghston: Varus-hyperextension
Quadriceps active test
Jacob.s reverse pivot: Flexion and External rotation with valgus and then extend
5. Check Lateral popliteal nerve [10%]

Classification of knee dislocation

KD-I: Associated with multiple-ligament injuries but cruciates intact
[Check one cruciate can be involved]

KD-II: Associated with a bicruciate ligament injury only

KD-III : Associated with a bicruciate+ either the PM or PL ligament

KD-IV: Associated with tears of both cruciates + Both PL and PM

KD-V: Associated with a periarticular fracture and multiple-ligament injuries.

[PM = Posteromedial structures PL = Posterolateral structures]

Treatment

Reduce and splint

Vascular: Vascular surgeon inform if doubtful arteriogram

Obvious vascular: Venous graft and fasciectomy

When fasciectomy: External Fixator for easy access for dressing.

Unilateral anterior and two pins on each side and knee

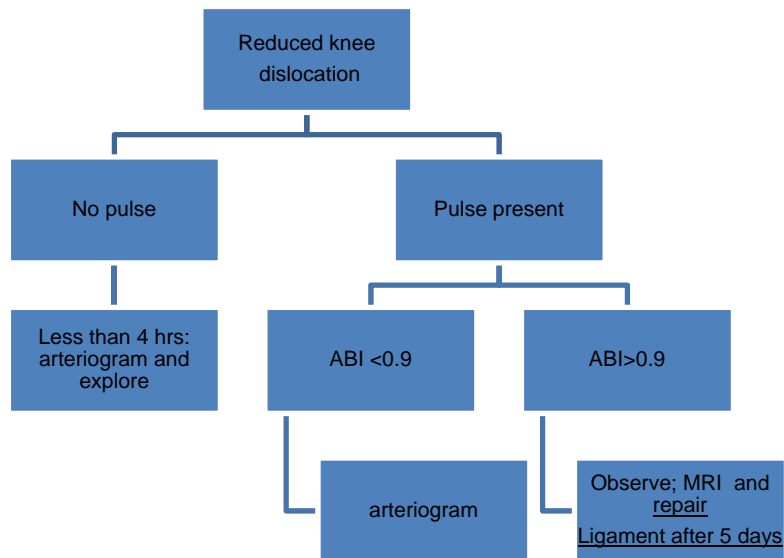
are held in 15 to 20° flexion

External Fixator for 6 wks and delayed reconstruction

Early Vs late repair

PL or PM, early repair is better.

All ligaments can be repaired early 5 days



Principle of Management of ligamentous injury

1. Multiple ligaments: Early repair is better than late
2. When PCL and ACL: The PCL : Tackle first and then ACL [same sitting or second sitting]
3. In contrast to the ACL/MCL injury pattern
Reconstruct ACL and ROM brace for MCL
4. The early repair of the involved corner gives the best long-term result, especially for posterolateral injuries.
4. The presence of ligament avulsions allows for simplified surgical treatment with reattachment and should make one consider early surgery
5. Mid-substance ACL tears are more common and with this situation, the ACL reconstruction
should be staged 6 to 8 weeks later.

Postero-medial instability

Aim: Repair PCL [usually avulsion from tibia]

Repair posteromedial corner

Repair peripheral tear of meniscus

Repair any avulsion of MCL

Technique:

Incision centered over medial epicondyle and along posteromedial aspect of the tibia.

Protect: Saphenous vein and nerve.

The proximal portion of pes anserinus is reflected with the posterior flap.

This allows visualisation of medial gastrocnemius which is retracted.

All retractors anterior to the gastrocnemius to prevent damage to vessels.

Divide the Deep layer of MCL and capsule.

Postero-lateral instability

Supine, tourniquet, sand bag under the buttocks, Knee flexion and hip in internal rotation.

Skin incision centered over fibular head

Dissection between Biceps tendon and iliotibial band

Identify: Common Peroneal Nerve and protect

Dissection anterior to lateral gastrocnemius

The dissection plan is already formed secondary to the injury

Repair: Major structure

Repair from deep to superficial

For PCL attachment, posteromedial approach is preferred.

Isolated MCL injury

Valgus injury

Examine in 30° [Isolated] Vs 0° [combined]

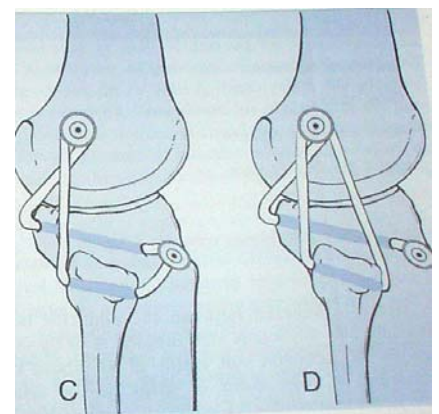
Pellegrini Stieda lesion [is calcification at the femoral attachment]. Its appearance indicates chronic injury.

MRI is useful but does not add more than clinical [femoral avulsion more common than tibial]

Hinged brace 6-8 wks

When combined: Reconstruct PCL + Posterolateral corner

1. Houghston: Proximal advancement is not a good option.
2. Clancy: Biceps femoris tenodesis : to reconstruct LCL.
3. Warren 2 tail: Reconstruct Popliteus and LCL using part



of biceps femoris tendon

When gross varus thrust and instability due to ACL:

Always in stages: Upper tibial osteotomy first and then ACL

All in one stage: UTO + 4 strand hamstring

