

MENISCAL TEARS

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AIMS

- Meniscus
- Importance
- Diagnosis
- Treatment Options

What is the Meniscus

- Derived from Greek *meniskos*, "crescent"
- Is a crescent-shaped fibrocartilaginous structure.
- In humans they are present in the knee, acromioclavicular, sternoclavicular, and temporomandibular joints as well as the radio-carpal joint.

What is the Meniscus

- In the knee, there is a lateral and medial meniscus.
- They are concave on the top and flat on the bottom, articulating with the tibia and mobile structures
- Lateral more mobile than medial

- The blood flow of the meniscus is from the periphery to the central meniscus.
- Blood flow decreases with age and the central meniscus is avascular by adulthood leading to very poor healing rates.

Importance

- Articular Cartilage Protection
- Shock absorption
- Load Distribution
- Stability
- Nutrition
- Proprioception

Load Protection

- Compressive, shear and tensile forces during loading
- Tensile (hoop) stresses in the circumferential fibres
- 70% of load laterally absorbed by the LM
- 50% of load medially absorbed by the MM

What if you lose the meniscus

- Unicompartmental OA in 30 to 70% after subtotal loss
- Relative risk upto 14 times in matched controls

Meniscus

History / Examination

- **Twisting Injury,**
- **Gradual Swelling,**
- **Can Carry on Playing,**
- **Pain (Instability)**

Meniscus

History / Examination

But can occur with minimal trauma

- **Kneeling,**
- **Squatting**
- **Lifting something heavy**

- **In older adults, degenerative changes of the knee may contribute to a torn meniscus.**

Meniscus

History / Examination

- **A popping sensation**
- **Swelling or stiffness**
- **Pain, especially when twisting or rotating your knee**
- **Difficulty straightening knee fully**
- **Instability – knee giving way**
- **Experiencing what feels like a block to moving your knee, as if your knee were locked in place**

Meniscus

Investigations

- **Xrays**
- **Ultrasound – in the clinic ?torn flap**
- **MRI scans – gold standard**
- **CT scans and arthograms – previous surgery**

Meniscus

Management

- **Once picked up the treatment depends on various factors**
- **Age, Activity Level, Type of tear,**
- **Symptoms – Beware the incidental tear on MRI scan**

Meniscus

Management

- **Alignment**
- **?Multiligament Injury**
- **?ACL deficient Knee**

Meniscus

Management

- **Rest**
 - Avoid activities that aggravate your knee pain
 - ?Crutches to deload knee ?brace.
- **Ice**
 - Reduce knee pain and swelling. Use a cold pack, a bag of frozen vegetables or a towel filled with ice cubes for about 15 minutes at a time. Do this every four to six hours the first day or two, and then as often as needed.
- **Painkillers**
 - Can help ease knee pain – avoid NSAIDs

Meniscus

Management

- **Physiotherapy**
 - Strengthen the muscles around the knee.
- **Arch supports or other shoe inserts**
 - Help to distribute force more evenly around knee or decrease stress on certain areas of your knee.
- **Activity Modification**
 - Avoid activities that aggravate knee pain — especially sports that involve pivoting or twisting — until the pain disappears

Meniscus

Surgery

- **Arthroscopy**

Meniscectomy or Partial Meniscectomy

Ideally try to SAVE the Meniscus

MENISCAL REPAIR

Meniscus

Surgery

- **Repair -**

Success Depends On

Proper Tear Selection

Proper Patient Selection

Biological Stimulation of the tear Site

Mechanical Stabilisation of the Tear

Post-operative Protective Program

Meniscus

Surgery

- **Repair -
Which Tears to Repair?**

Meniscus

Surgery

- **Repair -**

Which Tears to Repair?

Red On Red (Fully In Vascular Zone) - Excellent

Red on White (Border of Vascular Zone) – Excellent

White on White (In the Avascular Zone) - Poor

Meniscus

Surgery

- **Patient -**
 - Ideally less than 50**
 - Single Longitudinal Tear**
 - Intact ACL**

Meniscus

Surgery

- **Vascular Enhancement Techniques -
Biological Stimulation of the tear site**

?Microfracture of Notch

?Fibrin clot

Meniscus

Surgery

- **Stabilisation -**

- Suture Orientation**

- Good Suture grip and fixation**

- All Inside – Newer techniques**

- Outside in – Anterior Horn**

- Inside out – Classic**

- Need to be able to use all techniques**

Meniscus

Surgery

- **Other Techniques –**
 - **Meniscal Scaffolds**
 - **Acellular Porous Device**
 - **Collagen Meniscal Implants**
 - **Meniscal Transplants**

Meniscus

Surgery

- **Other Techniques –**

- **Meniscal Scaffolds**

- **Age less than 50**
- **Persistent Pain – Prev PM**
- **Articular cartilage less than or equal to GD3**
- **BMI**
- **Intact rim**
- **Alignment – No laxity**
- **Zaffagnini et al**
- **Verdonk et al**

Meniscus

Surgery

- **Other Techniques –**
 - **Meniscal Transplants**
 - Age less than 50
 - Similar Indications ?rim
 - ?mean survival 10 years
 - 20% failure at 5 years

Meniscus

Surgery

- **Other Techniques –**
 - **Results show some promise**
 - **Especially with the scaffolds**
 - **Transplants – Randomised Controlled Study in Warwick**
 - **Goal to affect Natural History**

Meniscus

Surgery

- **Long process –**
 - **?Osteotomy and Rehabilitation**
 - **?Ligament Reconstruction**
 - **MENISCAL TRANSPLANT**
 - **ARTICULAR CARTILAGE**

Summary

Meniscus Key Structure in the Knee

Preserve the Meniscus

Summary

**Critical to assess alignment and other
evidence of ligament laxity**

Thank You