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.
• 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
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
• Arthroscopy

Menisectomy 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

- Repair -

Which Tears to Repair?
Meniscus

- 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
• Patient -
  Ideally less than 50

Single Longitudinal Tear

Intact ACL
Meniscus

• Vascular Enhancement Techniques - Biological Stimulation of the tear site

  ?Microfracture of Notch

  ?Fibrin clot

Surgery
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
Other Techniques –

- Meniscal Scaffolds
  - Age less than 50
  - Persistant Pain – Prev PM
  - Articular cartilage less than or equal to GD3
  - BMI
  - Intact rim
  - Alignment – No laxity
  - Zaffagnini et al
  - Verdonk et al
Other Techniques –

- Meniscal Transplants
  - Age less than 50
  - Similar Indications ?rim
  - ?mean survival 10 years
  - 20% failure at 5 years
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
Critical to assess alignment and other evidence of ligament laxity
Thank You