The Discoid Meniscus

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The Discoid Meniscus

• Define what it is.
• The normal meniscus.
• Historical perspective.
• Present day classification.
• The “discoid meniscus syndrome.”
• Investigations and management.
• Outcome.
The Discoid Meniscus

• Abnormally large, hypertrophied meniscus.

• Mainly lateral.

• Congenital lesion.
The Discoid Meniscus

- Incidence 0.4% - 17%.
- 1.2% - 5.2% of all menisectomies.
- Often a cause of problems in childhood.
- More in females. Frequently bilateral.
- More common in Asia.
The Discoid Meniscus

- Association with:
  - high fibular head.
  - fibular muscular defects.
  - hypoplasia of lateral femoral condyle.
  - hypoplasia of lateral tibial spine.
  - lateral joint widening.
  - abnormally shaped lateral malleolus.
  - enlarged inferior lateral genicular artery.
The Lateral Meniscus

- Normal posterior attachments:
  - i) posterior intercondylar area of the tibia.
The Lateral Meniscus

• Normal posterior attachments:
  – ii) Coronary ligament.
The Lateral Meniscus

- Normal posterior attachments:
  - iii) Posterior meniscofemoral ligament:
  - “Wrisberg Ligament”
Wrisberg Ligament
The Lateral Meniscus

- Normal posterior attachments:
  - v) Anterior meniscofemoral ligament (Humphry)
  - vii) Popliteus (Last 1948).
The Lateral Meniscus

• Hiller & Langman 1964:

“The meniscofemoral ligaments are often the sole attachments of the posterior horn of the lateral meniscus.”
The Lateral Meniscus

• Normal movements.
  – Essential to maximise congruency.
  – Dictated by:
    • knee movement
    • weight bearing
    • meniscal attachments
    • arrangement of fibres
The Lateral Meniscus

- Normal movements (Vedi et al. 1999)

- Lateral meniscus > Medial meniscus.

- Anterior horn > Posterior horn.
The Lateral Meniscus

- Normal movements (Vedi et al 1999)

- Anterior movement with extension.

- Medial movement with extension.
Historical Review

- First described by Young 1889.

- Smillie 1948:
  - persistence of the fetal state.

- Kaplan 1957.
Kaplan 1957


JBJS 39-A pp 77 - 87.
Kaplan 1957

• Embryological study:
  – At no stage in development is it discoid.

• Comparative study:
  – Animals do not have discoid menisci.
  – Animals do not have posterior attachments.
  – This is a function of our erect posture.
Kaplan 1957

- The absence of the normal posterior attachments allows abnormal movements of the meniscus which causes the discoid meniscus to develop.
Kaplan 1957

- These abnormal movements cause characteristic clicking.

- The treatment should be complete excision through two incisions.
Watanebe et al 1979

• The arthroscopic classification of discoid meniscus.

• Atlas of Arthroscopy.
Watanabe Classification

• The classification in use today:
  – Complete
  – Incomplete
  – Wrisberg-ligament type.
Watanabe Classification

- Complete & Incomplete
  - Posterior attachments intact.
  - Differ in amount of coverage of plateau.
lateral meniscofemoral ligament (Wrisberg)
area of increased risk of meniscal tear
posterior cruciate lig.
Watanabe Classification

• Wrisberg-Ligament type.
  – Absence of normal posterior attachments.
  – Wrisberg ligament still present.
lateral meniscofemoral ligament (Wrisberg)
The Discoid Meniscus Syndrome

- The snapping or popping-knee syndrome.
The Discoid Meniscus Syndrome

• Hyashi et al. JBJS 1988

  – pain during ordinary activities.
  – limping.
  – giving-way.
  – locking.
  – snapping.
The Discoid Meniscus Syndrome

• Complete & Incomplete.

• Forces predispose to early degeneration.
  – Chondroid metaplasia (Washington JBJS 1995).
  – Cyst formation (Kaplan 1957).

• Hence they are prone to tear.

• Only cause problems when torn.
The Discoid Meniscus Syndrome

• Complete & Incomplete.
• Tear in all zones.
  – longitudinal (ant + post).
  – horizontal (middle segment).
  – peripheral detachments.
  – bucket handle.

• Hayashi et al. JBJS 1988.
The Discoid Meniscus Syndrome

• Complete & Incomplete.

• Locked knees had:
  – longitudinal tears of posterior segment.

• No cases of the Wrisberg-Ligament type.

• Hayashi et al. JBJS 1988.
The Discoid Meniscus Syndrome

- Wrisberg-Ligament type.


  - Pain in the lateral aspect of the joint.
  - Audible click with flexion & extension.
  - Palpable snap near full extension.
Locking

- Multiple papers listing clinical features and the arthroscopic findings.

- Complete & incomplete cause locking when torn.

- Wrisberg-Ligament type causes locking any time.

- Wrisberg-Ligament type is always symptomatic.
Investigations - Plain Films

- squared off lateral femoral condyle.
- widened lateral joint space.
- cupping of the lateral tibial plateau.

• Very unreliable.
Investigations - Arthrography

- Extremely good at diagnosing Discoid Meniscus.
- Very good at diagnosing tears.
- Hall’s Classification.
Investigations - MRI

• “Discoid Meniscus-MR Imaging Appearance.”

  – Continuity between ant + post horns on >3 contiguous 5mm thick sagittal images.
Investigations - MRI

- Characteristic appearance on coronal scans.
- Good for tears.
- Investigation of choice.
Management

• Total Menisectomy.
Management


- Partial excision preferable if the meniscus is not hypermobile i.e. not Wrisberg.
Management

• Saucerisation.

• “preservation of even part of the meniscus is desirable whenever possible.”
Management

- Partial meniscectomy controversial.
- Better results after total meniscectomy.
Management


- Better results for partial vs. total.
Management

• “Congenital discoid lateral meniscus in children. A follow-up study and evolution of management.”

• Aichroth, Patel & Marx.

• JBJS 1991
Management

• Intact complete or incomplete.

• Leave alone.
Management

- Torn complete or incomplete.
- Partial arthroscopic menisectomy back to a stable rim.
Management

• Wrisberg-ligament type.

• Total menisectomy.
Management

• **Arthroscopy:**
  – Difficult.
  
  – May not be able to get into lateral compartment.
  
  – Should only be performed by experienced surgeons

• **Co-existent Osteochondritis Dissecans.**
Management


• Re-attachment of Wrisberg-ligament type.

• Not been repeated.
Outcome

- Early results for total/partial meniscectomy are good: 60-70% good or excellent.

- The big question is the long-term incidence of osteoarthritis in the child’s menisectomised knee.
Outcome

- Aichroth et al, 1991
- 62 knees @ 5.5 year f/up.
- Ave age 10.5 years.
- 48 total, 6 partial, 8 left alone.
- OA does not occur early in this group of patients c.f. adults.
Outcome


• 15 cases, ave age 10.5, 18 year f/up.

• Total menisectomies.

• No degenerative change.
Outcome

- 30 knees, 3 year follow-up.
- Ave age 11 years.
- 12 total, 18 partial.
- Partialis better than totals. None poor.
- 4 cases of degenerative change.
Outcome

• Raber et al, 1999.

• 11 knees, total menisectomy.
• Ave age 9 years. 20 year follow-up.
• 10 of 11 knees had OA @ this follow-up.
• 2 had had osteochondritis dissecans.
• Avoid total menisectomy if possible.
• No long-term study on partial menisectomy in this group of patients.
Summary - Discoid Meniscus

• Rare.
• Watanabe classification.
• Wrisberg-ligament type is even rarer.
• Snapping-knee-syndrome is Wrisberg alone
• Complete & Incomplete may be asymptomatic and left alone.
• If torn they may cause a locked knee.
Summary - Discoid Meniscus

- Wrisberg-ligament type can lock the knee.
- Incomplete/complete: partial menisectomy.
- Wrisberg-ligament type: total.
- Expect excellent early results.
- Long-term risks of OA.
Thank You