Treatment Options for Cystic Lesions of the Talus

Robert B. Anderson, MD
OrthoCarolina
Charlotte, North Carolina

OCL of the Talus

• Numerous types/locations
  – Classification can be based on xray/MRI/scope
• What defines a “cyst”
  – Subchondral defect vs. “blowout”
  – Large cystic lesion with Type I-IV = Loomer lesion (Type V)
• Valve theory of Van Diyk

Beware of Imaging/Classification/Staging

• MRI/CT and arthroscopic staging systems have been advocated, yet unproven clinically
• MRI and arthroscopic correlation reported 81-83% (Mintz ’03, Lee ’08)
• CT scan useful for determining true size of lesion/cyst – edema on MRI overestimates

McGahan, Pinney: Current Concepts Review; FAI Jan ’10
Treatment of Cystic Lesion

- MRI/CT and arthroscopic findings are necessary in determining best treatment option
- Arthroscopic vs open intervention?

“Virgin” Lesions in Athletes

- My preference = debride (chondroplasty) and obtain stable cartilage edge; curette/microfracture

Painful Recurrent Lesions

Never trust the findings or results of a “prior” scope unless you did the one “prior”… or have a video
Painful Recurrent Lesions

- Assuming no other cause for pain than OCL
  - Obtain/repeat MRI/CT
  - If no “major” cyst (<1cm):
    - redo arthroscopy
      - Often unstable cartilage rim
      - Frayed fibrocartilage - microfracture
      - Anterior impingement

Case Example

- Recurrent pain and suspected symptomatic OCD
  - NFL player 2 years s/p microfracture
  - No “major” cyst: redo arthroscopy

Redo Arthroscopy
Redo Arthroscopy

Results of Redo

- Repeat scopes don’t do as well as primary but...
  - 75% G/E compared to 86% (Schuman et al, JBJS-B, ’02)
  - Sawa et al; FAI ’07: reasonable to repeat scope

  If > 1 year of relief achieved with simple debridement, I will re-do

  Open treatment in career athletes are a major blemish

What to do with “painful” Recurrent/Persistent/Progressive Cystic Lesion and Failed Repeat Microfracture?
Beware of the Large Cystic Lesion
(aka Loomer lesion, Type V)

- Lesions with subchondral cyst formation have less favorable results with standard arthroscopic techniques (Kumai '99; Robinson '03; Kolker '04)
- Zengerink et al FA Clinics '06: Lesions >1 cm require open treatment

Beware of the Large Cystic Lesion
(aka Loomer lesion, Type V)

- Choi et al AJSM '09: defects >150mm² on MRI do worse
- Multiple alternatives developed to fill defect but often require a malleolar osteotomy

Treatment of Type V Lesions

- Retrograde drilling/filling
- Mosaicplasty
- Osteochondral Autograft Transplantation System (OATS)
- ACI (Carticel)- staged surgical procedure
  – MACI, FMACI
- Bulk Allograft Transplantation
Chronic Cystic Lesions – Treatment Decision

- Depends on size of cyst
  - If less than 1 cm = debride/curette
  - If > 1 cm = fill void
- Status of articular surface
  - If cartilage cap intact and medially based = retrograde drilling and grafting
Large Chronic Cystic Lesions with Articular Defect

• Osteochondral Autograft Transplantation System (OATS)
  – If < 11 mm – knee autograft
  – If >11 mm – talar allograft
• Mosaicplasty
• ACI

Results of OATS

• Gross et al: Allograft OATS, FAI 2001
  – 6/9 did “okay, three went on to fusion
• OATS for type V cystic OLTs (Scranton, Frey, Fedor; JBJS-Br, 2006)
  – 50 patients
  • 90% G/E results with autogenous OATS
  • 26/50 had malleolar osteotomy
  • No malleolar non-unions
  • 1 donor site pain – arthroscopic scar release
  • 15 minor reoperations

I have not been happy with OATS

• Knee pain with autografts
• Poor incorporation with allografts
• Cartilage viability with allografts
• Need for malleolar osteotomy

• What other options are there?
  – Have to consider expense, 2-stage surgeries
Other Options

- **ACI**
  - Implantation of in vitro cultured autologous chondrocytes using a periosteal tissue cover or membrane
  - 2 stages – requires harvest
  - Often requires an osteotomy
  - What to do with the defect?
  - Costly…

Other Options

- **ACI**
  - Ferkel (AJSM ’09)
    - 32 patients - first 31 pts reported; avg age = 35; average follow-up = 36 months (24-58)
    - 9 medial and 2 lateral lesions
    - All patients failed previous surgery
    - 6 patients had “sandwich” procedure with bone grafting of large cystic underlying defect and use of two periosteal grafts back to back
    - 2nd look arthroscopy on 10/11 (91%) patients; all lesions were covered by “cartilage-like” surface
    - 82% G-E, 18% fair; AOFAS preop 47, postop 84

Very LargeLesions?

- **Bulk allograft (level IV studies)**
  - Rankin JBJS ’09
    - 15 pts – 11 G/E, 2 fusions
  - Hahn et al: FAI ’10
    - 13 pts in f.u.
  - Gortz et al: FAI ’10
    - 12 ankles – 5 G/E, one fusion
Bulk Allograft

• 24 y/o man – runner; failed 3 surgeries

Bulk Allograft

• Last resort….

What else???
*Cartilage Allografts*

• *DeNovo* (Zimmer)
  – Living juvenile cartilage particles
  – Arthroscopy
  – Debride/drill
  – OCL
Cartilage Allografts

• DeNovo
  – “sandwich” technique for cysts = bone graft the defect first

• DeNovo
  – Calcaneal bone graft impacted into cyst
  – Use obturator as delivery vehicle

• DeNovo
  – Lay cartilage material over the bone with use of fibrin glue
Cartilage Allografts

- **DeNovo**
  - Avoid over-filling

- **Biocartilage (Arthrex)**
  - “dead” cartilage allograft
  - On the shelf – much less expensive
  - Will it work???
Cystic Lesions

• The Future?
  – MACI?
    • Giza et al
    • Also avoids osteotomy
  – Cost may still be an issue

ACI (MACI)

• Early results encouraging
  – M Sullivan, Sydney

Is the transfer of cartilage really necessary?

• What is the origin of pain?
  – Studies have shown that cartilage does not elicit pain
  – Rather due to pressure phenomenon in cyst
If transfer of cartilage not necessary

- Fill the hole!
  - Iliac crest plug
  - I avoid biologic fillers
    - Ca Sulfate with PLA
      - Did not incorporate well

Promote growth of overlying pseudo-cartilage?

Biologic or Bony Filler
Biologic or Bony Filler

Example: Biologic Filler

Cystic Lesions of the Talus

• Questions remain!!!
  – What is the natural history?
  – What creates the symptoms?
  – What is the best treatment?
Cystic Lesions of the Talus

- Summary
  - Get CT and MRI
  - Repeat scope burns no bridges – try to avoid osteotomy
    - Try the sandwich technique
  - Need a good prospective studies with new cartilage allografts!

Thank You!

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Generic Postop Recommendations after Scope Debridement

- NWB for 2-4 weeks if lesion <1.5cm
  - 6-8 weeks if >1.5cm
  - Boot to WB
- Begin ROM as soon as portals sealed over (7-10 days) – unless ligaments stabilized
- Pool therapy helpful
Talar OCL - Etiology

Still no clearly defined and universally accepted etiology
• Trauma remains most commonly accepted
  – Based on Berndt and Hardy work of 1959

But do we really know?

Talar OCL - Etiology

• Posteromedial: possible overuse, recurrent injury from instability
• Anterolateral: acute trauma

But are we sure?

Talar OCL - Location

• Highly variable
  – Loomer et al, AJSM 1993
• Medial > Lateral but in central portion, not truly posteromedial or anterolateral
  – Raikin et al, FAI 2/07
Talar OCL - Incidence

- Completely unknown
  - Coincidental finding or associated with ankle injuries?
  - Increased awareness due to # of MRIs now obtained?

Diagnostic Findings “Soft”

- Vague symptoms of “giving way”, catching, stiffness
- Physical findings nonspecific
  - Rarely tenderness or effusion
  - Possible ligamentous laxity
    - Medial and/or lateral

“Virgin” Chronic Lesions

- Vast majority - debride (chondroplasty) and obtain stable cartilage edge; drill or microfracture
“Virgin” Chronic Lesions

- Type III and IV - depends on lesion
  - Vast majority = debride/curette
  - If large detached lesion with viable bone = repair with absorbable pins or screws

Example: 27 y/o DE

OCL + Ligament Instability

- Correct instability at time of scope (do not stage)
- Postop: protection of ligament repair more important than early motion
Posterior Talar OCDs or Loose Bodies

- Posterior Arthroscopy – Prone Position
  - Logistical issues if anterior pathology present

Prone Ankle Scope

Is the transfer of cartilage really necessary?

- What is the origin of pain?
  - Is it the bone/cyst itself?
- Pressure phenomenon
Is the transfer of cartilage really necessary?

• What happens to transferred cartilage plugs?
  – Zone of cartilage death from the harvest alone
  – Impaction death

Case Presentation #2
Allograft Talar OATS

• 23yo athletic male with medial talar OCL
• Failed conservative treatment and prior scope
• Lesion >11mm therefore multiple grafts needed and allograft felt to be better option
Results

• Allograft OATs
  – Gross et al: FAI ’01
    • 9 pts: 6 survived at 11 yrs
    • 3 fusions due to resorption
Management of Bone Cysts

- Tibial/Talar/Calcaneal Cysts
  - Etiology?
  - Size?
  - Contained or non-contained?
  - Accessible?

D.F.

- 34 y/o man with ankle pain
- Twisting injury 9 months prior
D.F.

- Arthroscopic debridement
  - Removal of loose body
- Anteromedial arthrotomy
  - Inject of MIIG
D.F.

- Arthroscopic debridement
  - Removal of loose body
- Anteromedial arthrotomy
  - Inject of MIIG

D.N.

- 31 y/o woman with recurrent ankle injuries
- Failed prior arthroscopy
D.N.
- 31 y/o woman with recurrent ankle injuries
- Failed prior arthroscopy

D.N.
- Arthroscopic debridement
- Percutaneous curettage and injection of MIIG

R.B.
- 36 y/o man with history of gout and ankle injury
Persistent/Recurrent Cyst and Pain after Scope

Just because there's an OCL doesn't mean it's the cause...

• Impingement syndrome (soft tissue or bone)
• Osteoarthritis
• Occult fracture
• Lateral instability
• Tarsal coalition
• Peroneal tendon pathology
• Subtalar pathology

Results of Scope Debridement

• Tol, FAI February 2000
  – Metaanalysis (381 pts, 18 studies)
    • Non-op: 45%
    • Excision: 38%
    • Excision and curettage: 78%
    • Excision, curettage, drilling: 88%

  – 50 cases treated arthroscopically
  – 65-75% G/E
  – F/u 71 months
Disclosures

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**DJO:** royalties