Peroneal Problems: My Approach

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Overview

- Diagnosis/Imaging
- Conservative Treatment
- Surgical Technique
  - Tenosynovitis
  - Peroneus Quartus
  - Hypertrophic Peroneal Tubercle
  - Subluxation
  - Revision

Brevis > Longus

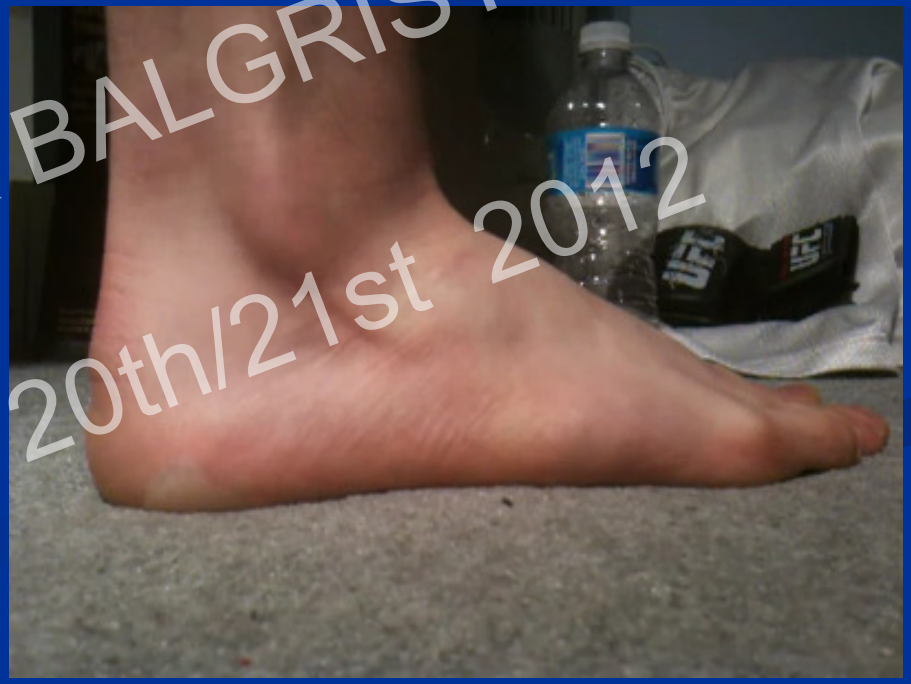
- **Brevis**
  - Anterior Location
    - Increased compression secondary longus
    - Damage from the posterolateral fibular ridge if subluxation

Disorders of the Peroneals

- History
  - Posterolateral pain and swelling
  - Acute inversion injury
    - Possible acute tear
  - Instability/Weakness
    - Chronic injury
  - "Snapping"
    - Subluxation

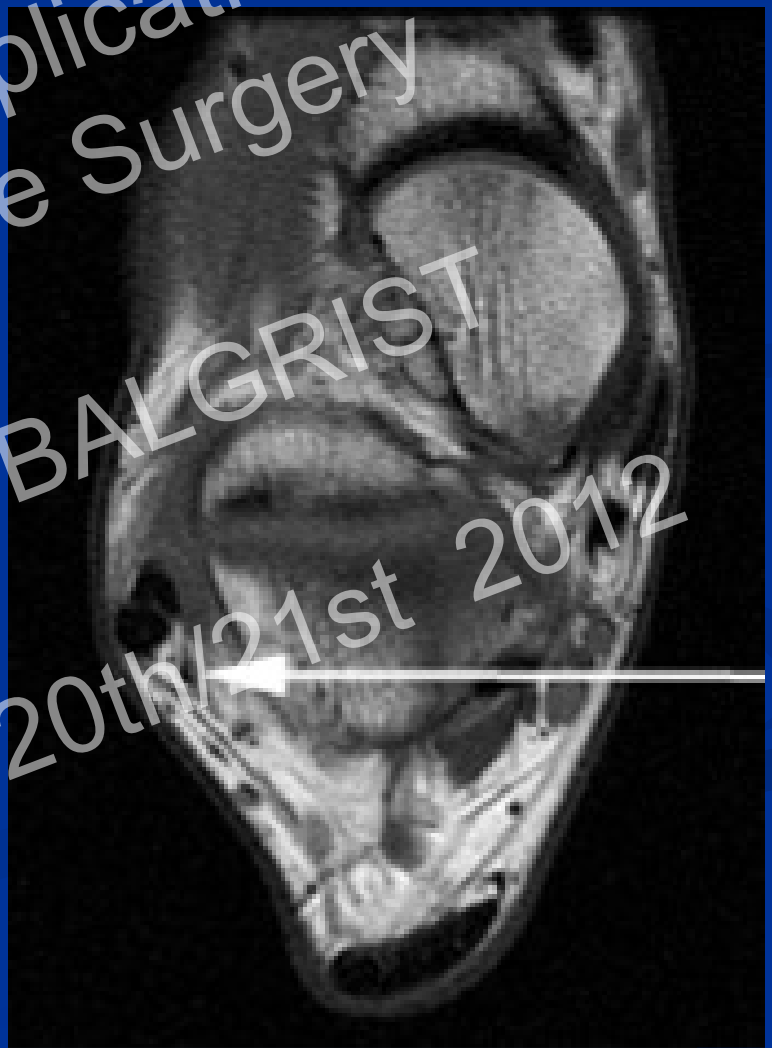
Disorders of the Peroneals

- Physical Examination
  - Posterolateral Swelling
  - Pain with resisted eversion
  - Subluxation/Apprehension with resisted eversion
- Critical to assess
  - Hindfoot alignment
  - Objective Laxity



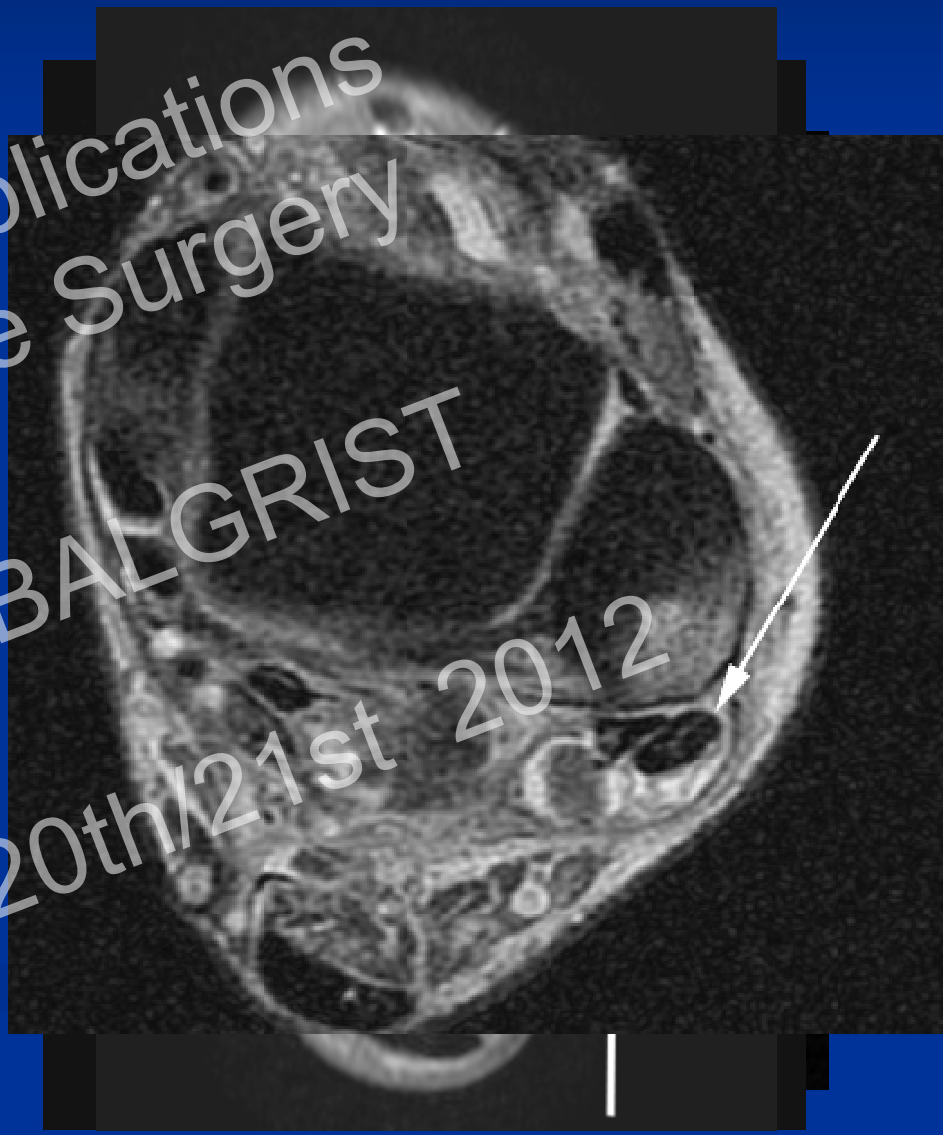
Imaging

- Suspected Tendonitis/Tendinosis/Tear
  - MRI
    - Normal
      - Low signal on all sequence
    - Peroneus Quartus
      - 13-26% of patients
      - If present – plan excision

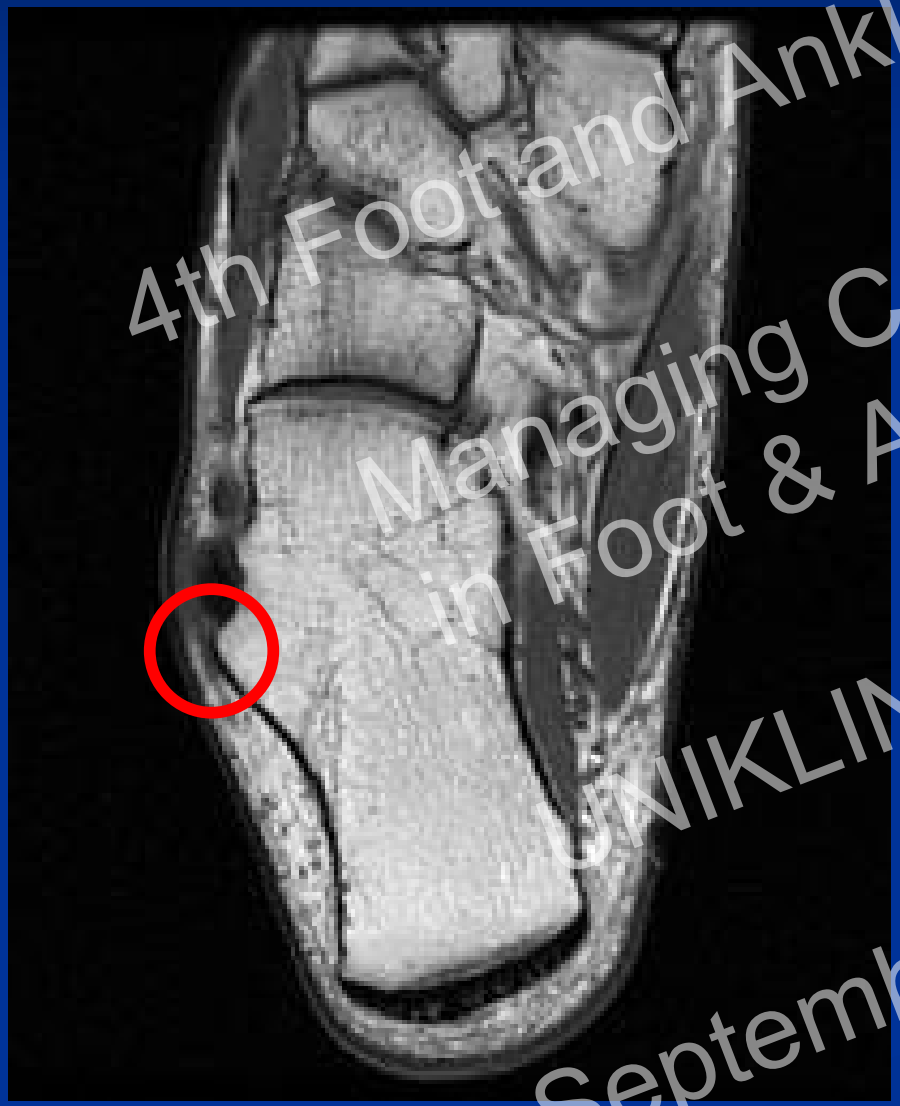


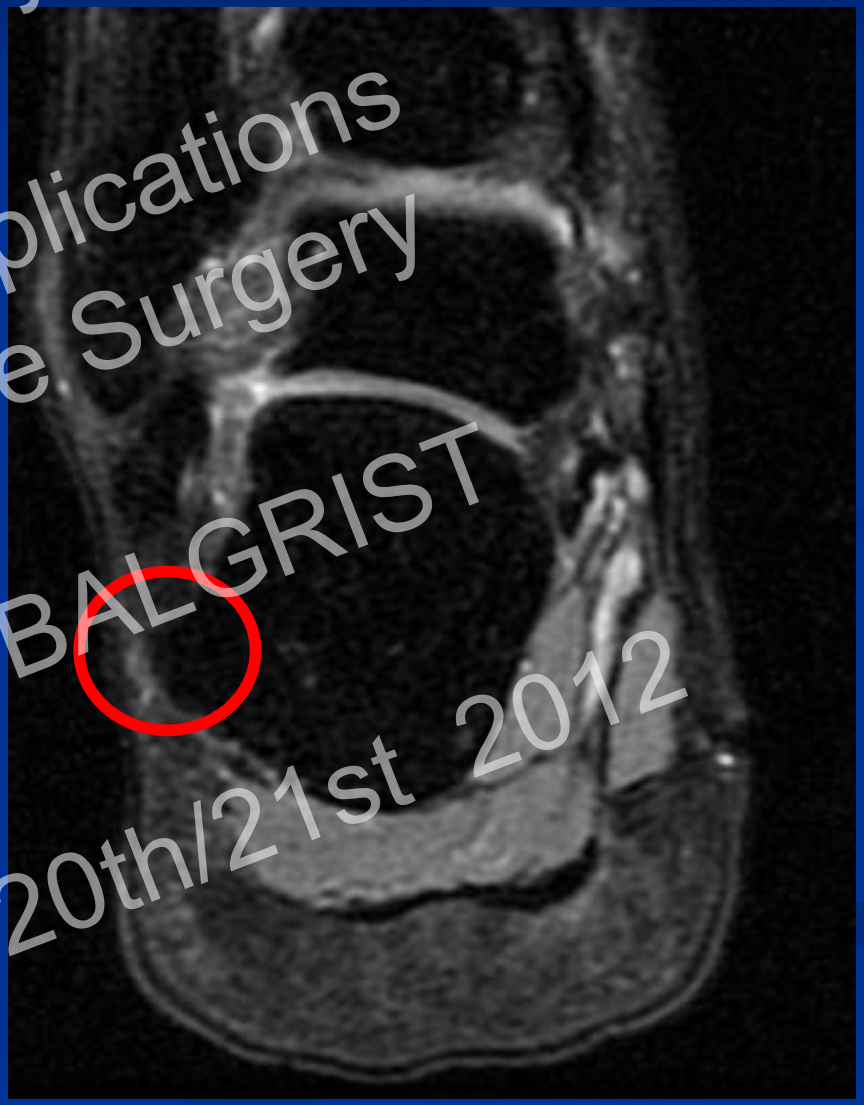
Imaging

- Pathologic Findings
  - MRI
    - > Diameter than PTT
    - Intermediate signal on 3 consecutive images
      - Low signal on all sequence
    - Fluid > 3mm in width
    - Bisected/Split Brevis
    - Laterally subluxated tendon



Hypertrophic Peroneal Tubercle





Imaging

- Peroneal Tendon Subluxation
  - Dynamic Ultrasound
  - Excellent for Intrasheath Subluxation

Conservative Treatment- Tenosynovitis/Partial tear

- Limited literature evidence upon which to base effectiveness
  - Attempted on all patients has delay has no obvious detriment
- Initial Treatment
  - RICE
  - Immobilization (2-6) weeks
- If Improvement
  - Lace up ankle brace with malleolar support
  - Physical therapy

Conservative Treatment

- Acute SPR injury
  - 25%-57% success rate with conservative treatment
    - Cast > Taping

(Stover CN, Bryan DR. Traumatic dislocation of the peroneal tendons. Am J Surg 103:180-186, 1962)

(McLennan JG. Treatment of acute and chronic luxations of the peroneal tendons. Am J Sports Med 8(6):432-6, 1980)

(Escalas F, Figueras JM, Merino JA. Dislocation of the peroneal tendons. Long-term results of surgical treatment. J Bone Joint Surg Am 62(3):451-3, 1980)

  - Offered to all non-athletic patients, however, counseled on moderate success rate.
- Athletic/active patients
  - Acute surgical repair

Conservative Treatment

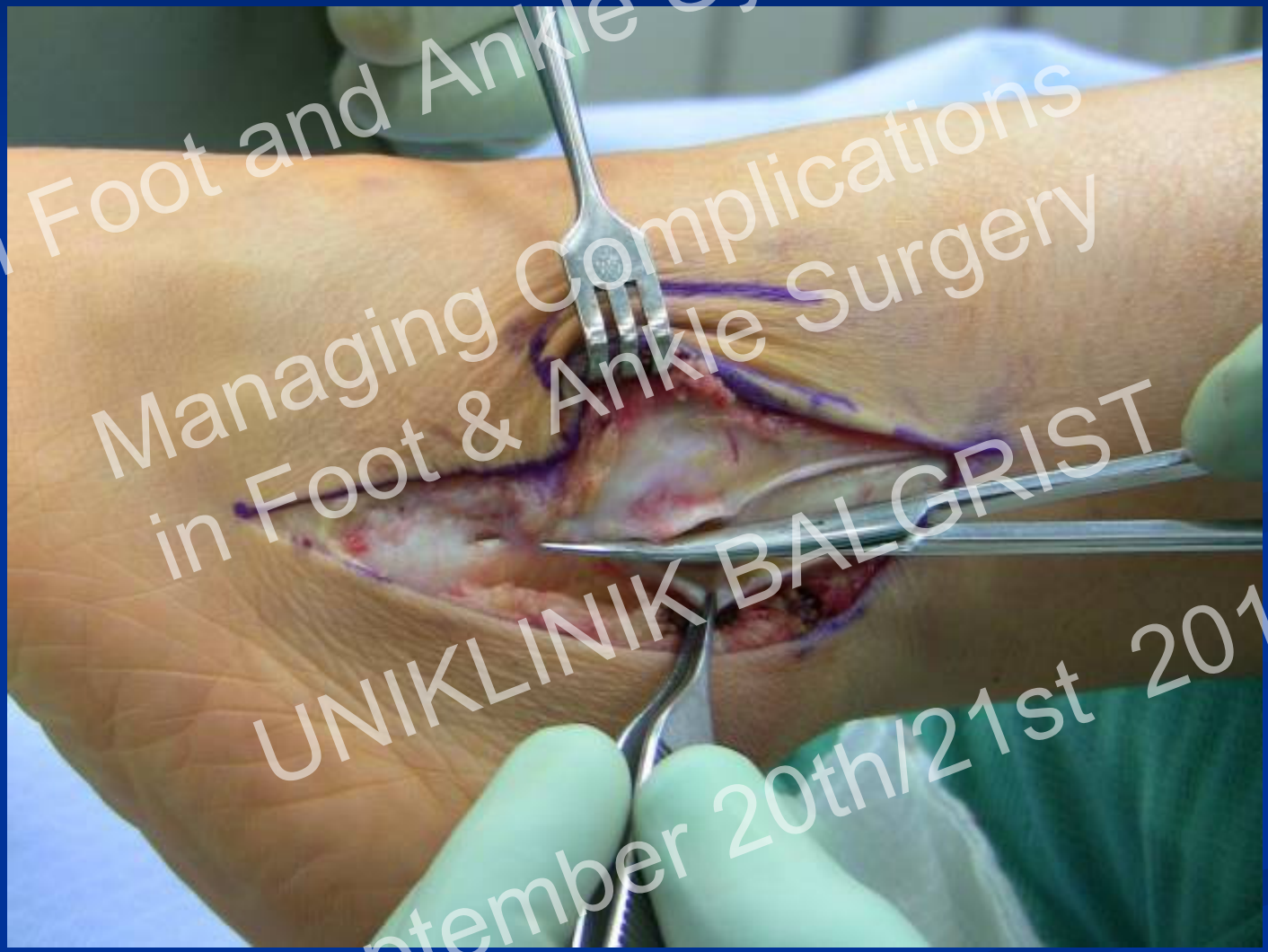
- Chronic peroneal subluxation
  - No obvious role for conservative treatment
    - Recurrent subluxation => chronic tears
  - Symptomatic patients
    - Surgical reconstruction

Surgical Treatment - Synovitis

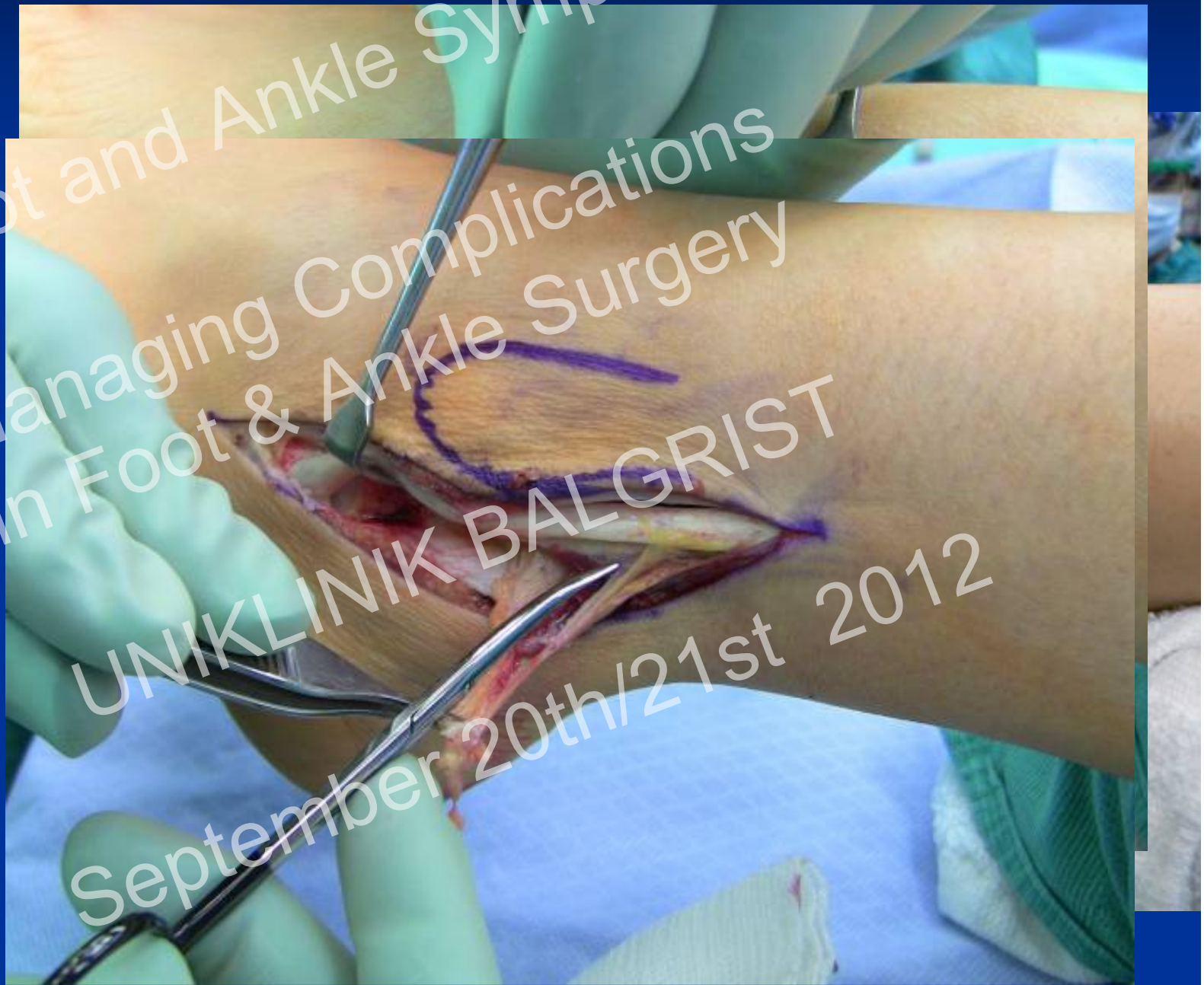
- Goals
  - Synovectomy
  - Tendon Repair
    - If Required
  - Groove Deepening
  - Peroneal Tubercle excision
    - If Prominent
  - Imbricate Retinaculum

Incision

Retinaculum incised



Synovitis



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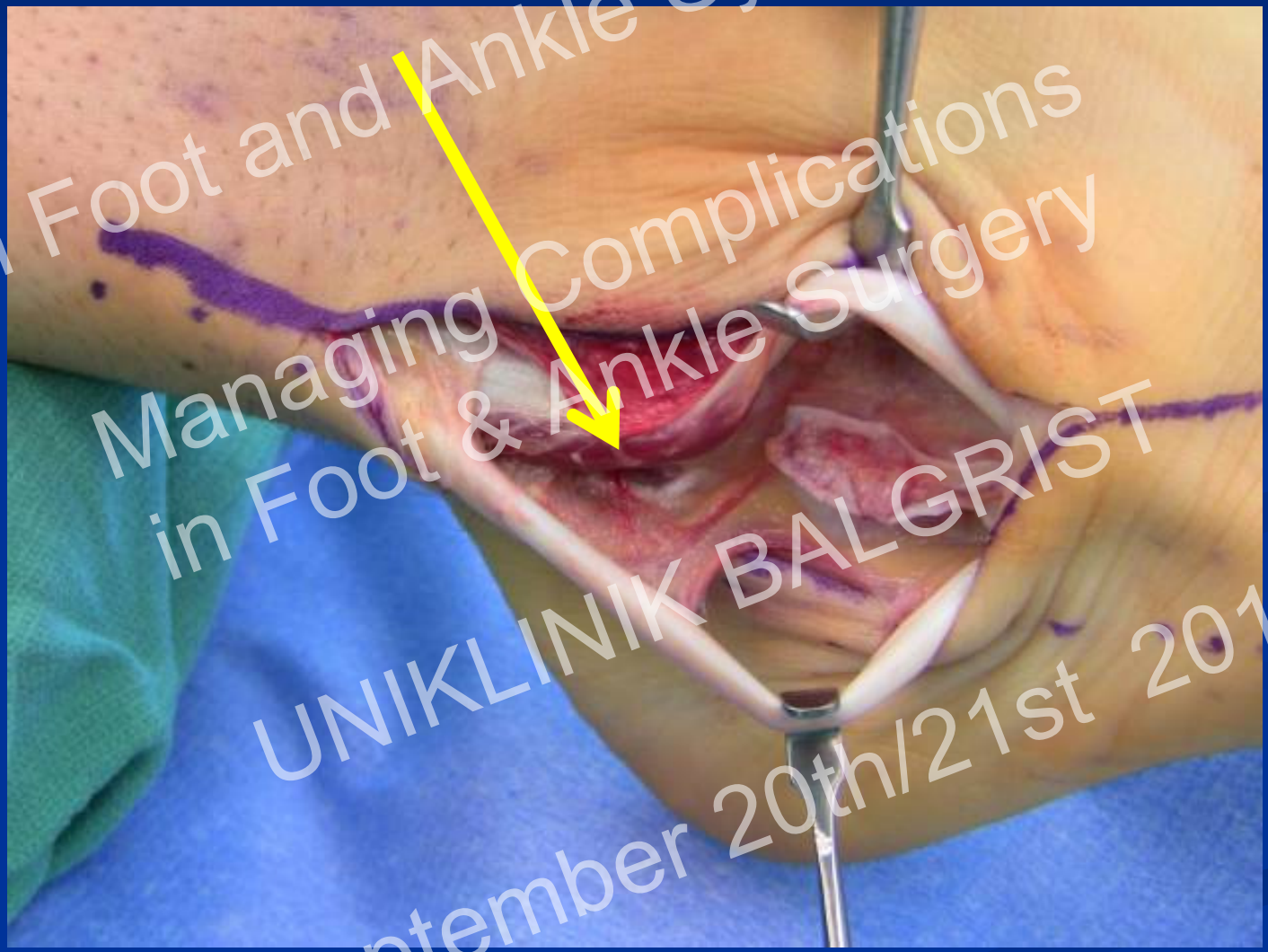
Synovectomy

Excision of Space Occupying Tissue

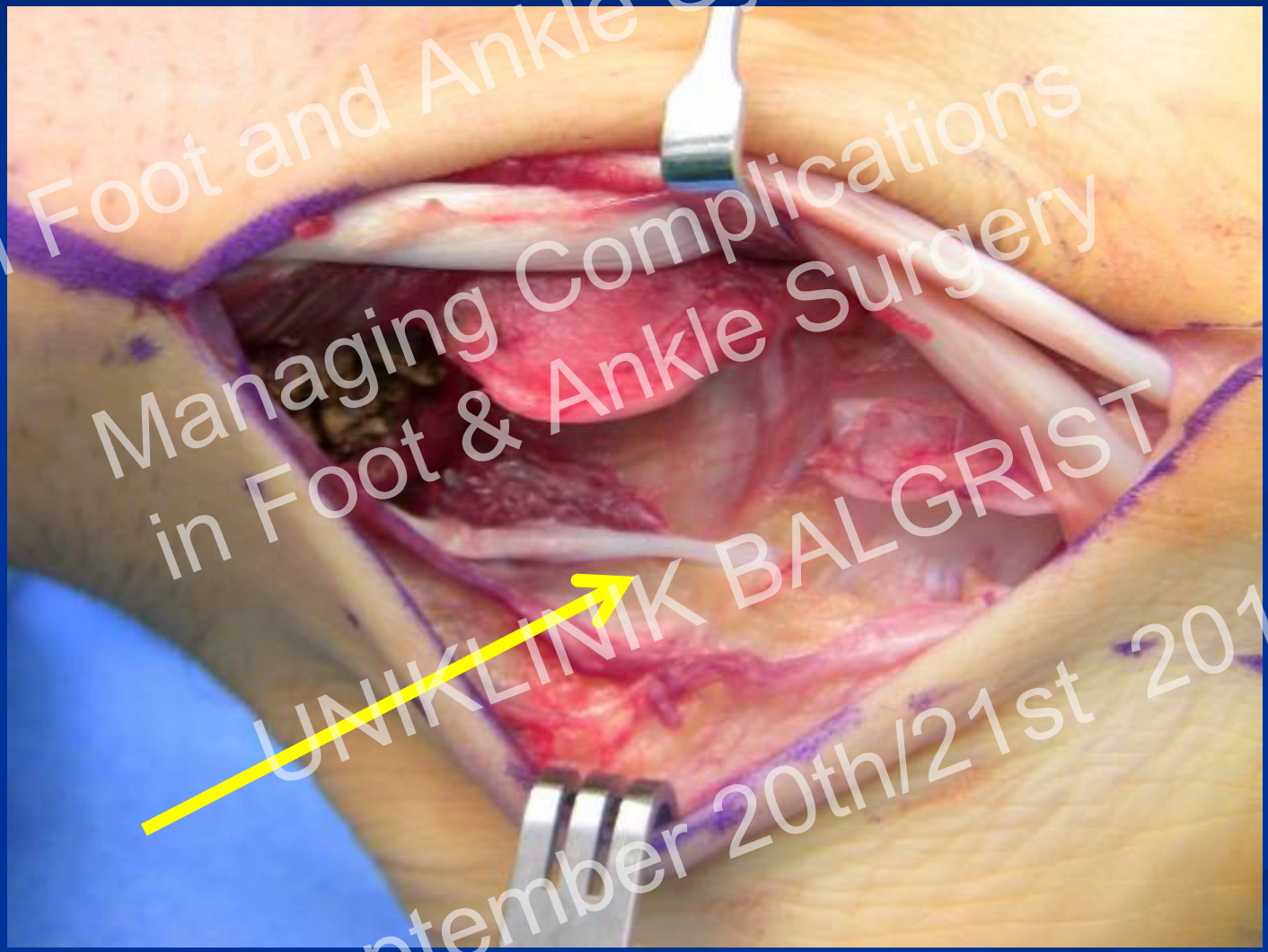
- Low lying brevis
  - Muscle present within the distal fibular groove
    - May predispose to synovitis/tear
- Peroneus Quartus
  - Accessory muscle that attaches to lateral wall of calcaneus
    - May predispose to synovitis/tear

Low lying PB

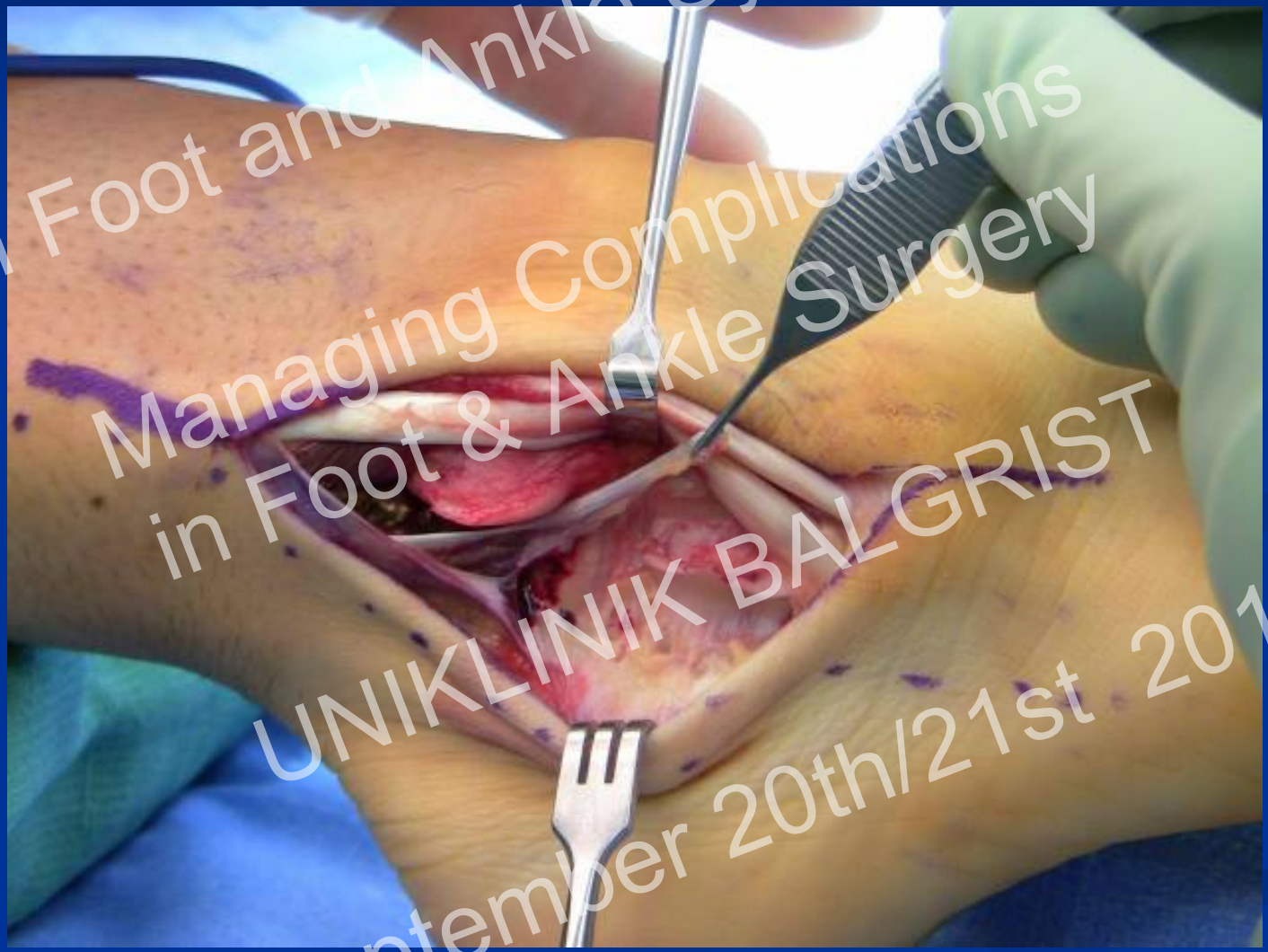


Debridement of Muscle

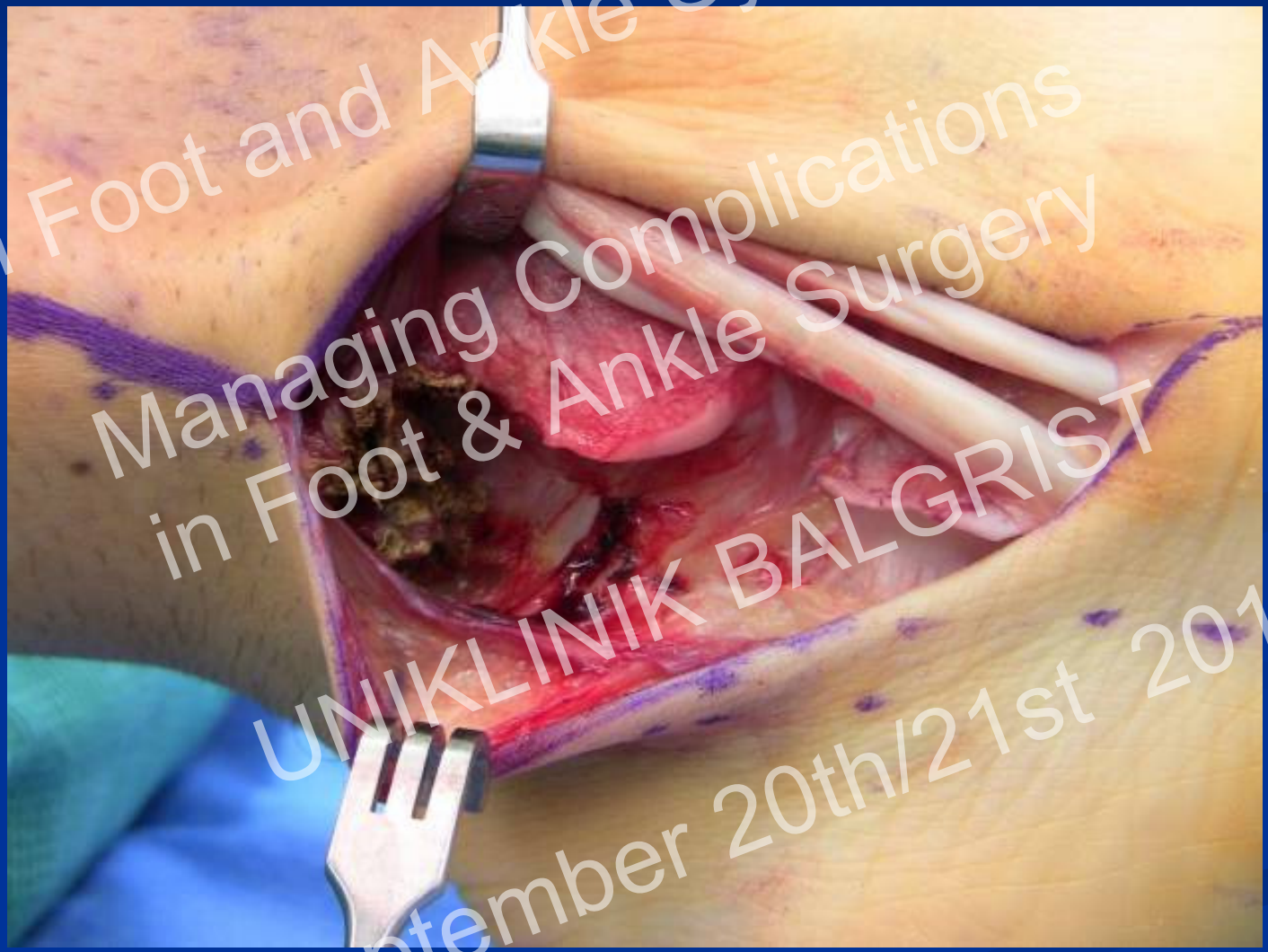
Peroneus Quartus



Peroneus Quartus – Release From Insertion



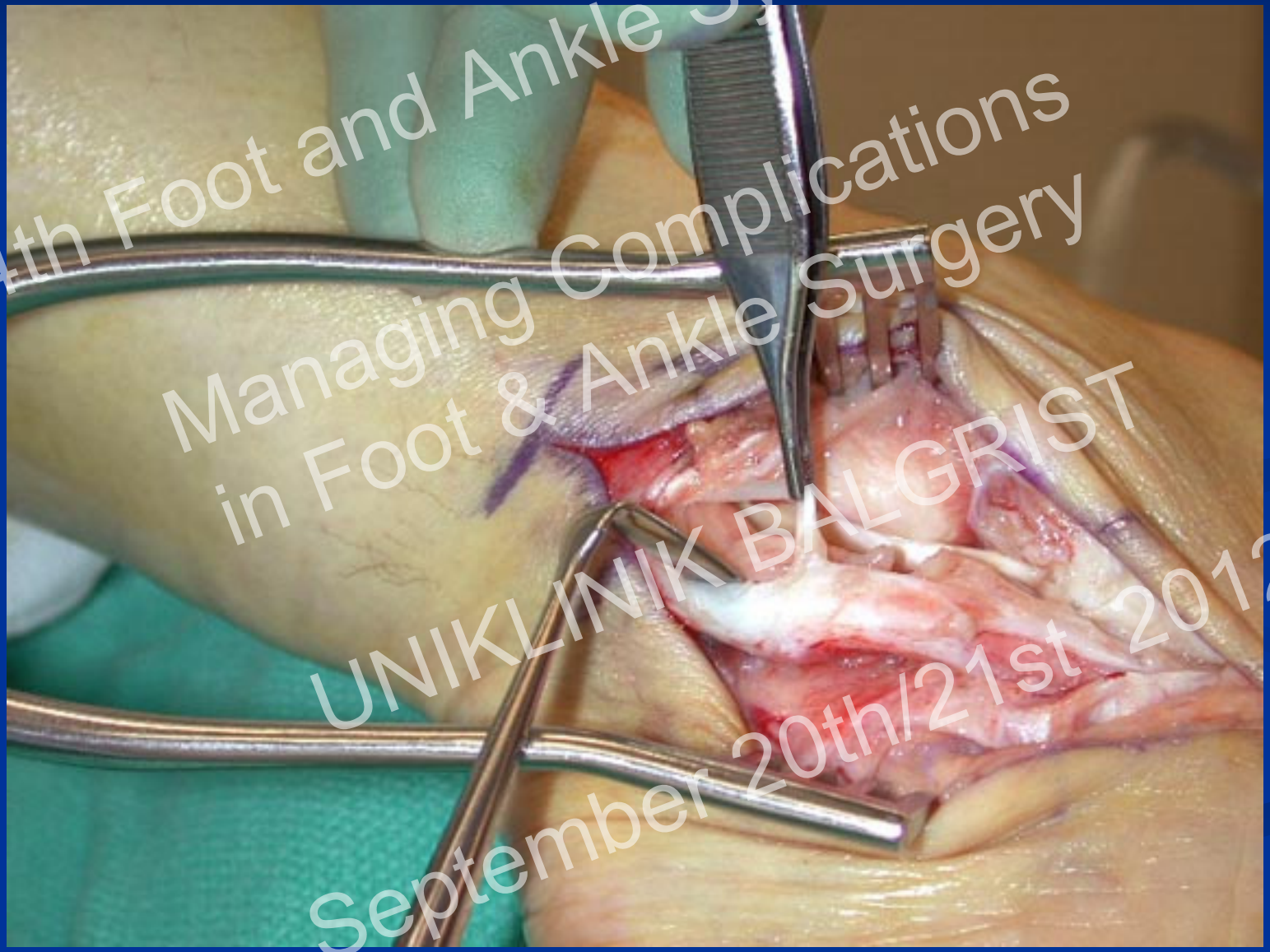
Peroneus Quartus - Excision



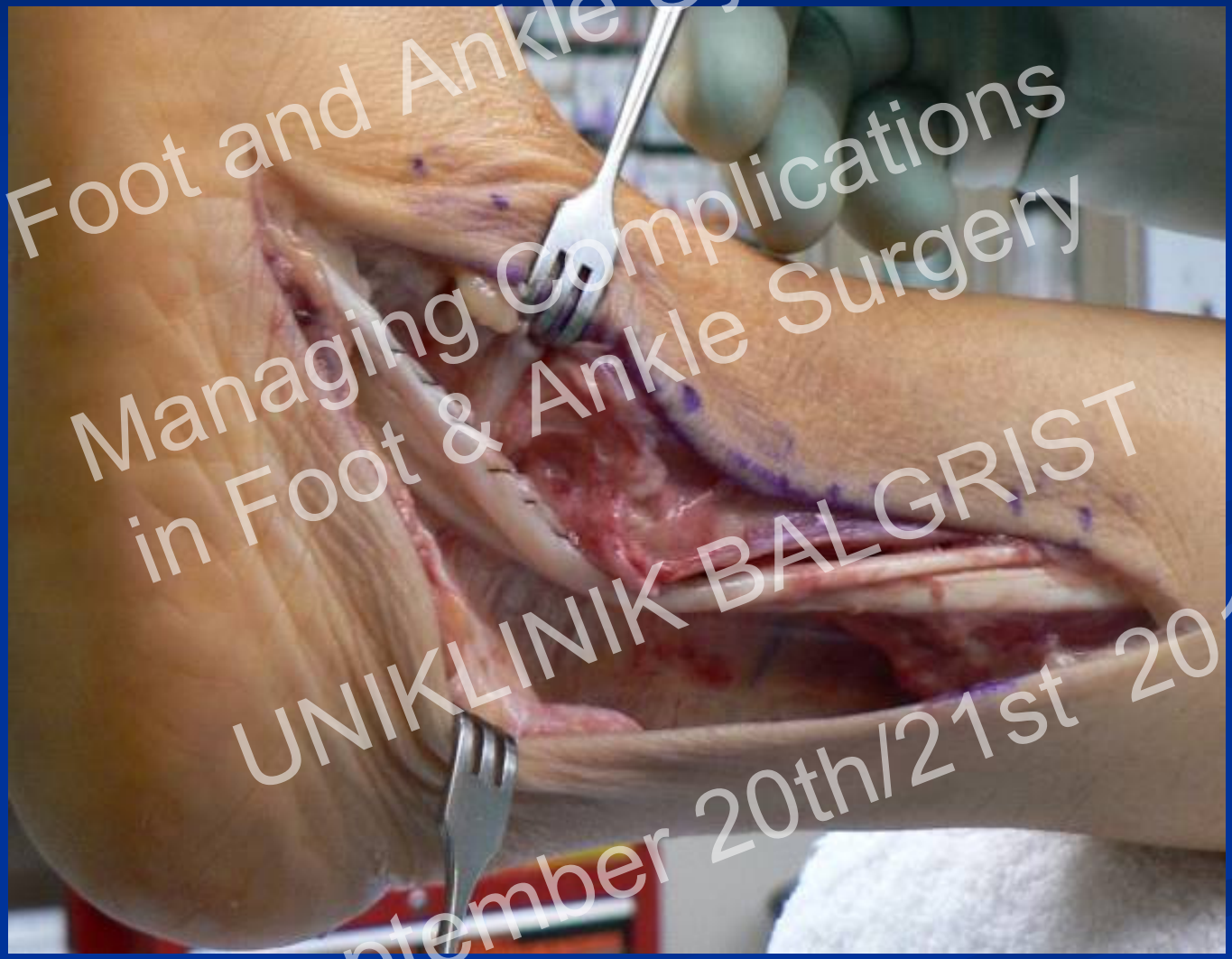
Tendon Tear

- >50% viable tendon
  - Excision of diseased tissue
  - Tubularization of remaining tendon
    - Begin proximal to tear
    - End distal to tear
  - 4-0 nylon or 4-0 PDS suture
    - I prefer smaller absorbable suture
    - Some thought that use of PDS incites an inflammatory response which may be superior for healing

>50% viable PL



Tendon Repair Appearance PB



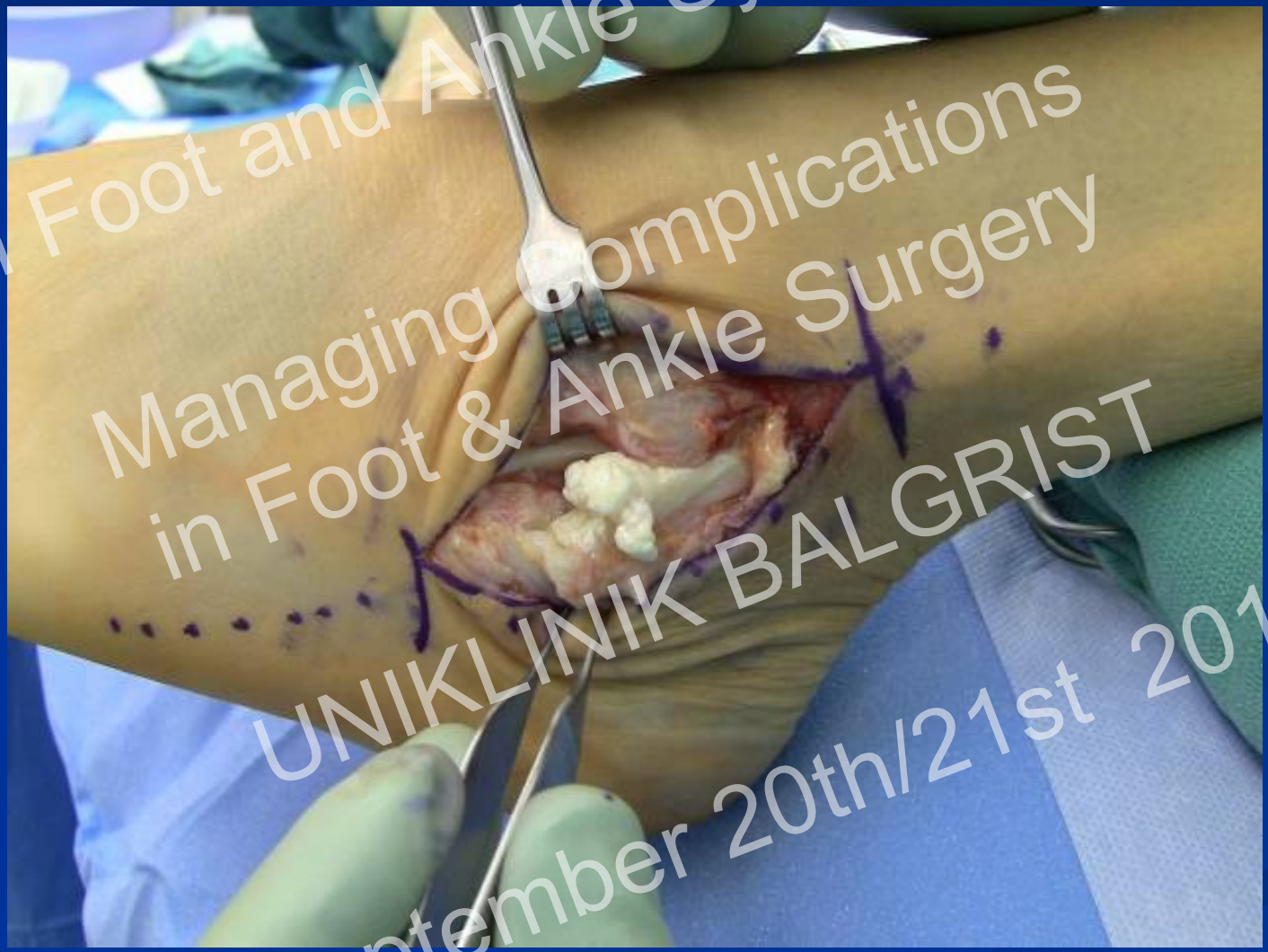
Tendon Tear

- <50% viable tendon
  - Excision of diseased tissue
  - Side to side tenodesis
    - Assumes viability of other tendon
  - Dermal matrix reconstruction?

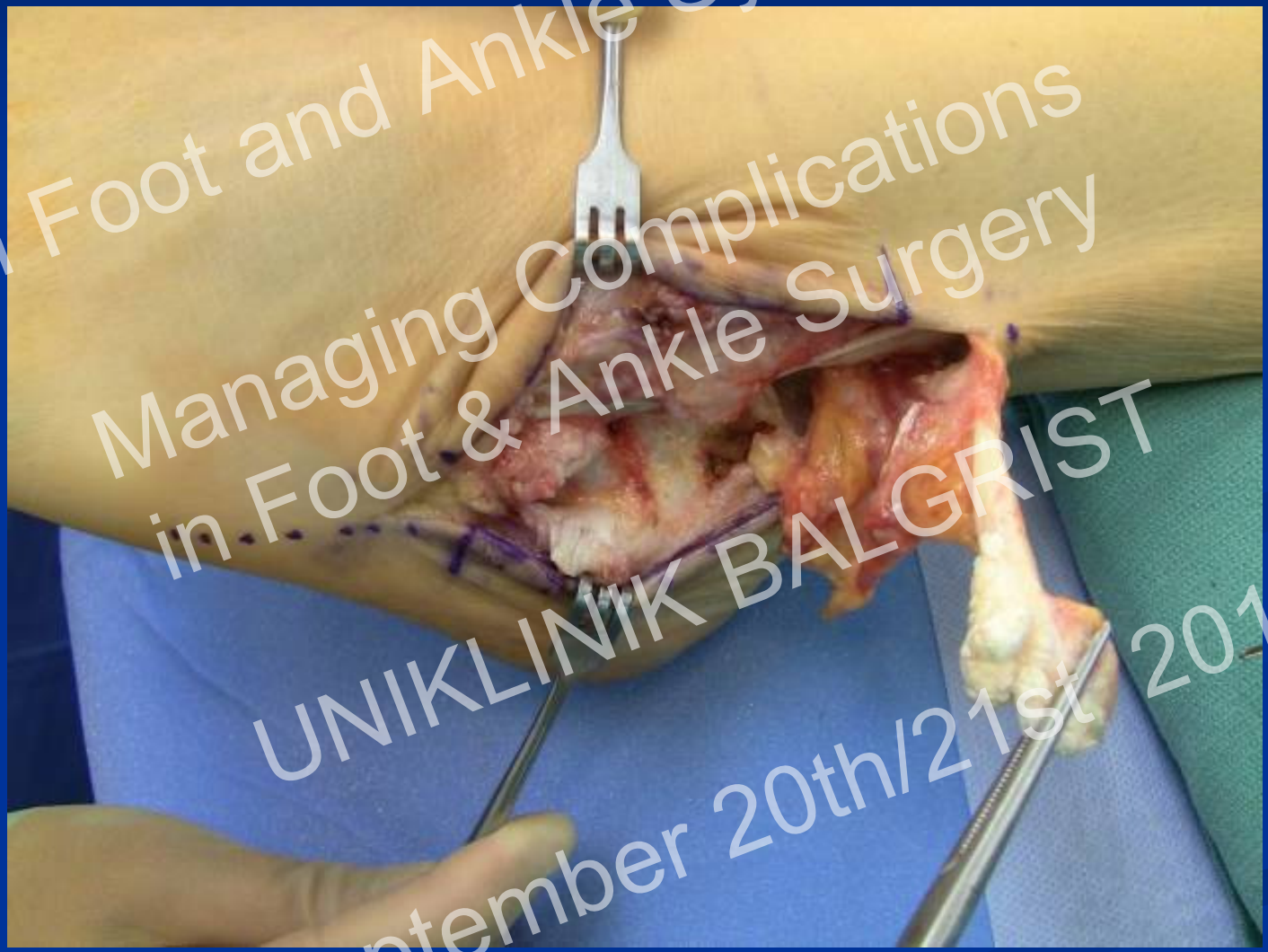
(Rapley J, Crates J, Barber A. Mid-Substance Peroneal Tendon Defects Augmented With an Acellular Dermal Matrix Allograft. Foot Ankle Int. 2010; 31(2): 136-140.)

- 11 cases of complete midsubstance peroneal tear – min 12 mos F/U
  - GraftJacket used to span the defect – 7/11
  - 5-/5 at least in all patients
  - Painless ROM
- Proximal tendon must be viable

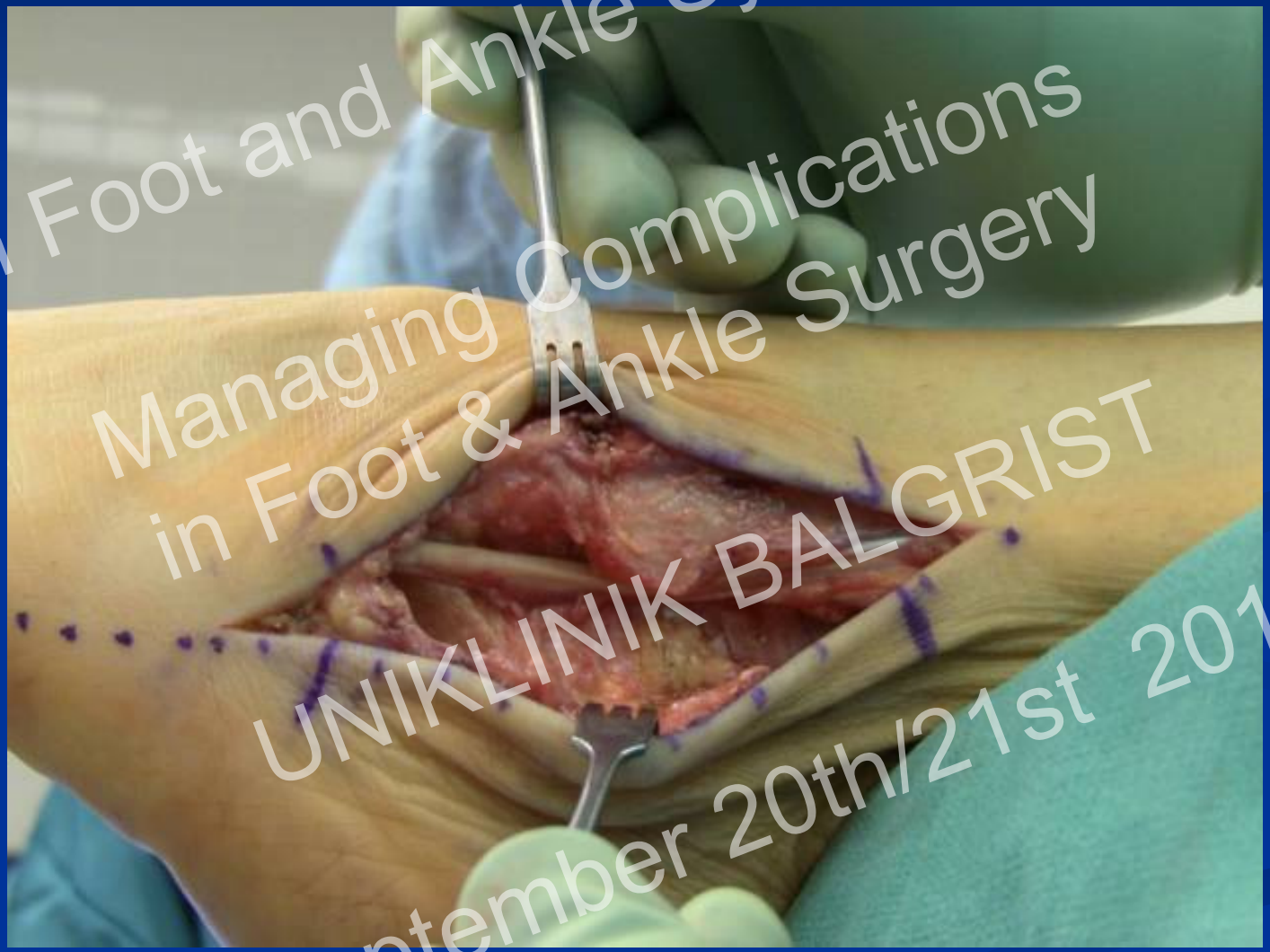
Complete rupture of PL



Excision of non-viable tissue

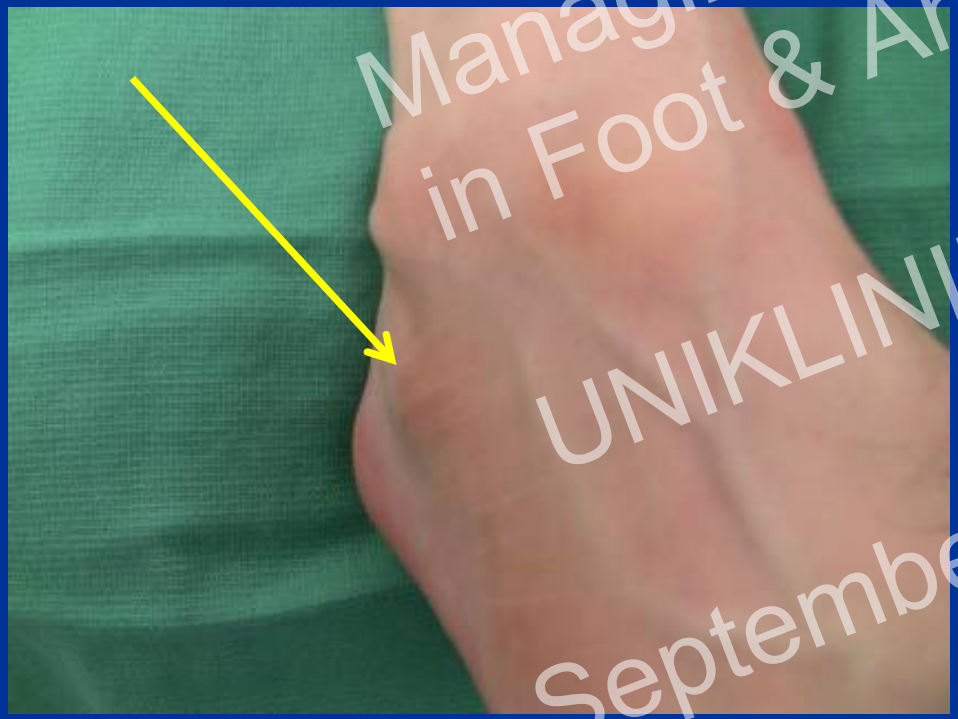


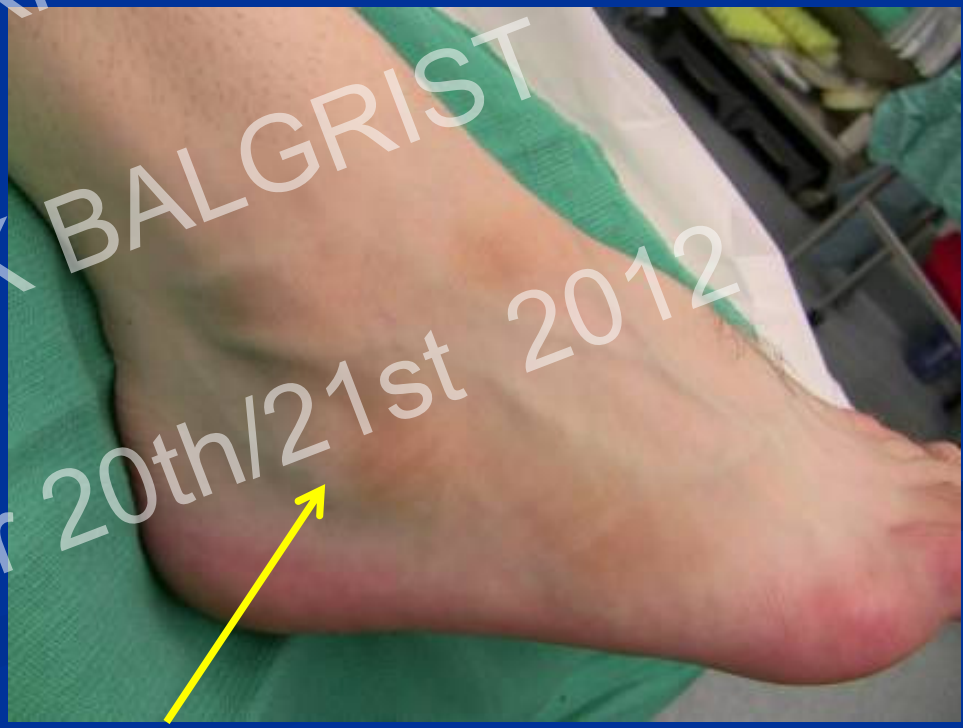
Minimal proximal tendon. Distal tenodesis performed



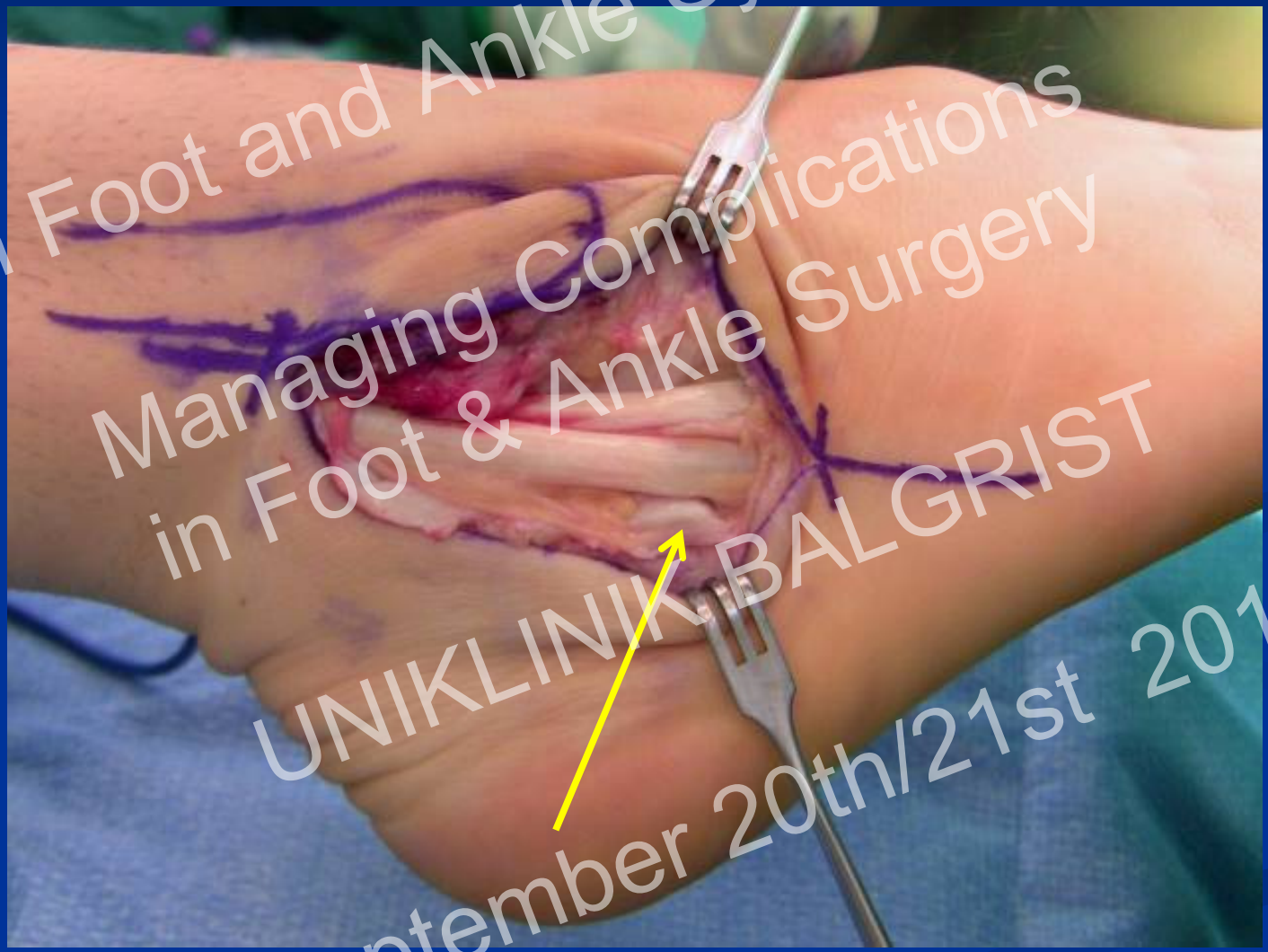
Hypertrophic Peroneal Tubercle

- Complain of "bump" on side of foot
  - Difficult shoewear
  - Associated with PL synovitis and tear

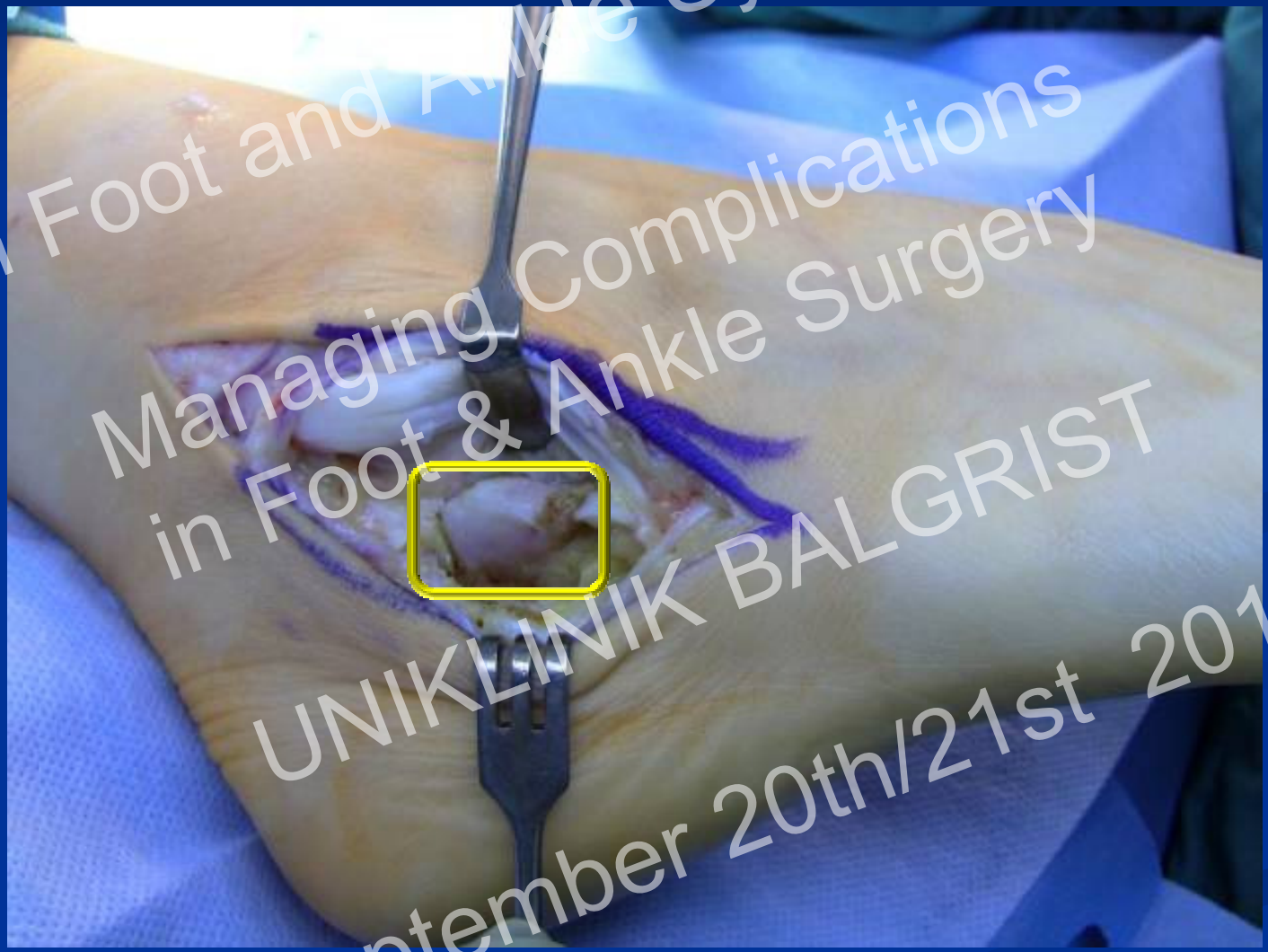




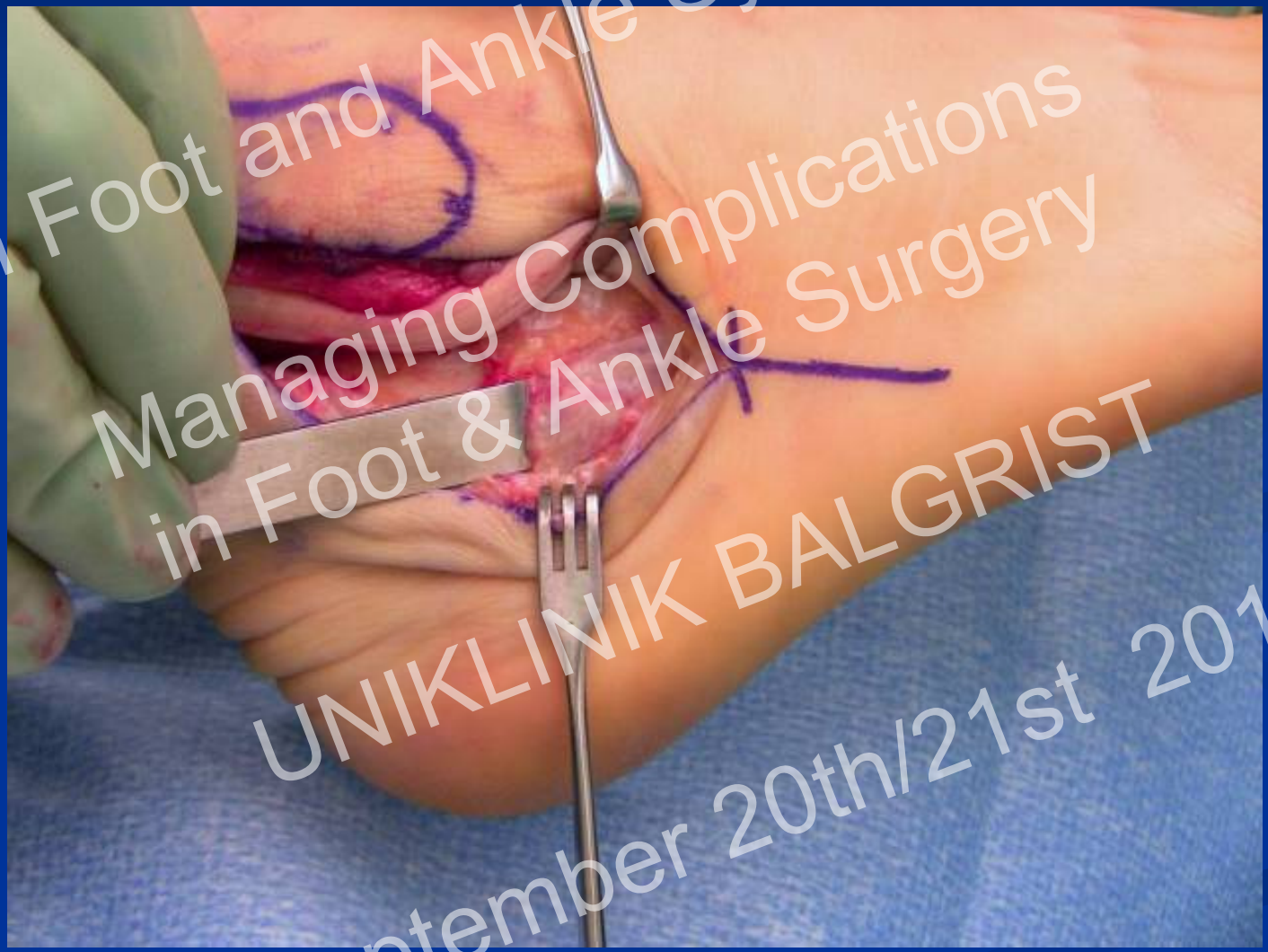
Exposure – Posterior to PL



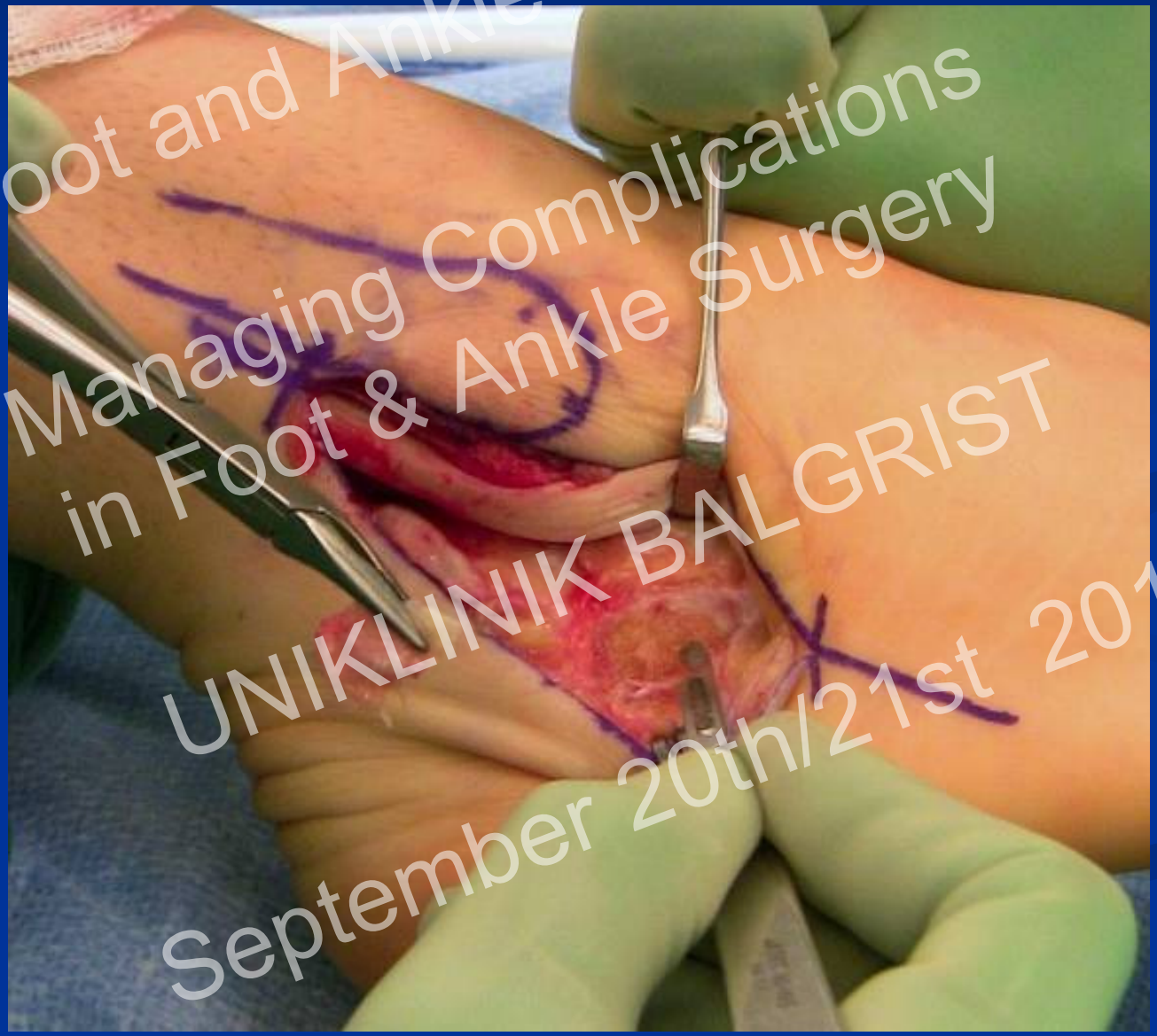
They can also be huge



Osteotome to create co-planar surface



Following Resection – Rasp to smooth surface + bone wax



Groove Deepening

- Significant reduction in pressure within peroneal groove
  (Title CI, Hung-Geun J, Parks BG, Schon LC Foot Ankle Int 2005)

- May minimize recurrence

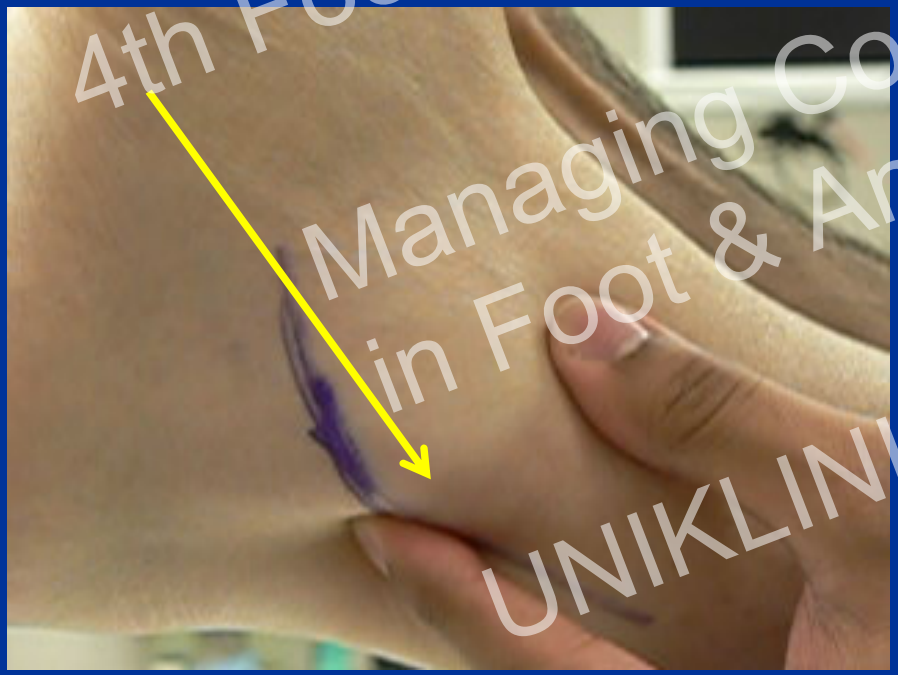
Groove Deepening

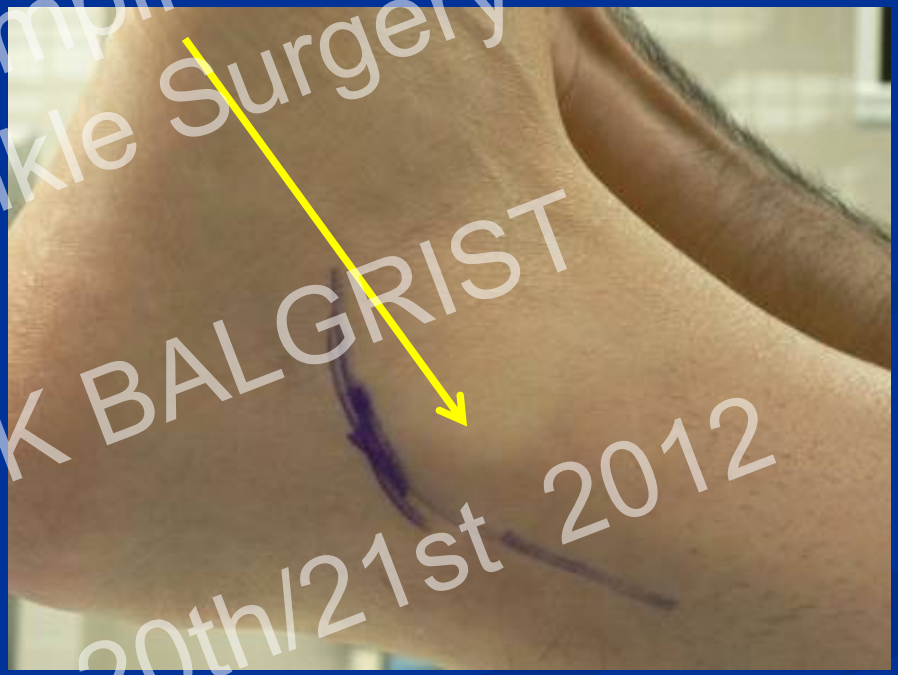
- Benefit
  - Decreased pressures with middle and distal peroneal groove
  - Enhanced peroneal stability
- Can be utilized in addition to all peroneal pathology
  - My preference
    - Tear/Tendinosis
      - If both tendons preserved
    - Subluxation

Groove Deepening

- Treatment of choice for chronic peroneal tendon subluxation
  - Multiple Methods Described
  - My Method of Choice
    - Burr followed by bone wax to create smooth surface
      - Simple, effective, no risk of bone "popping back"
      - Detriment – removed normal smooth surface of posterior fibula

Technique





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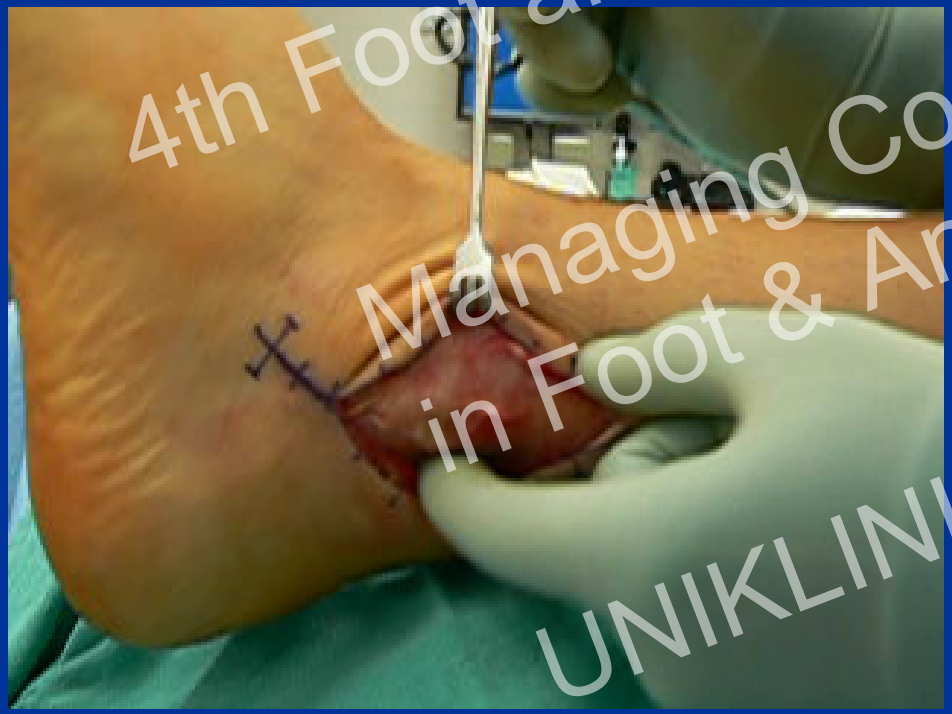

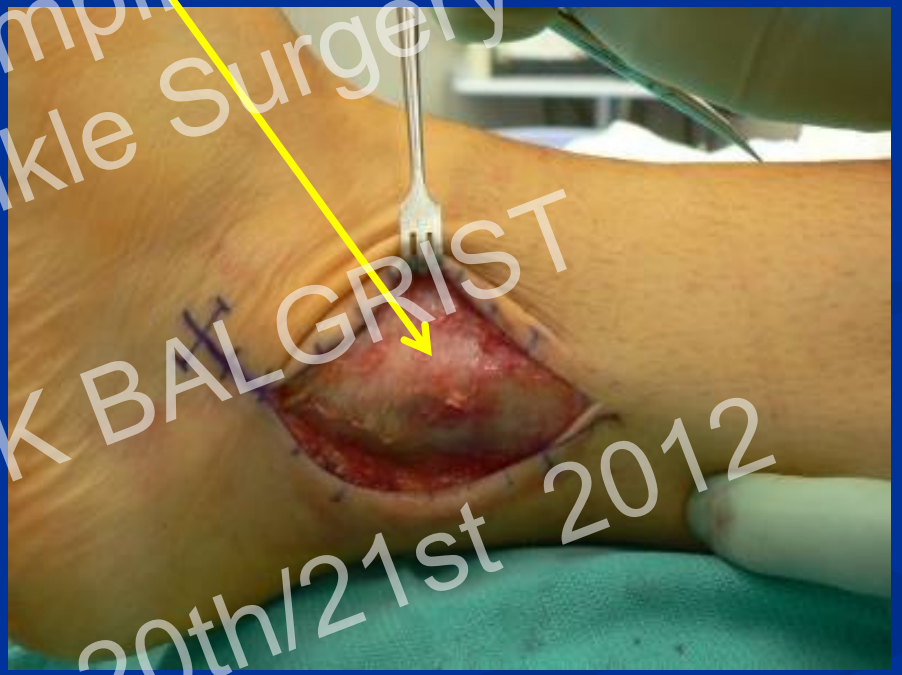

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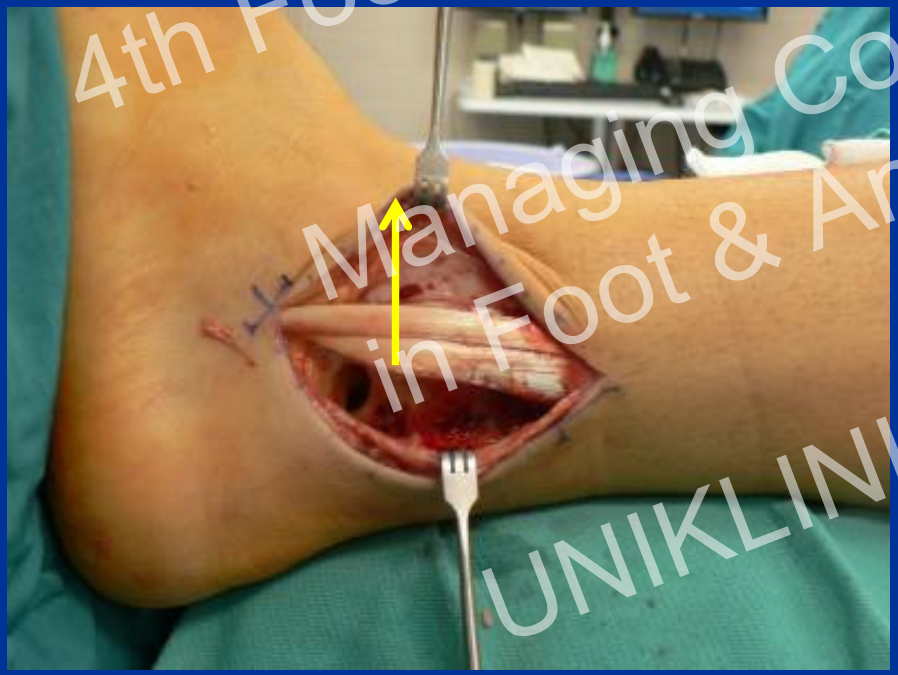

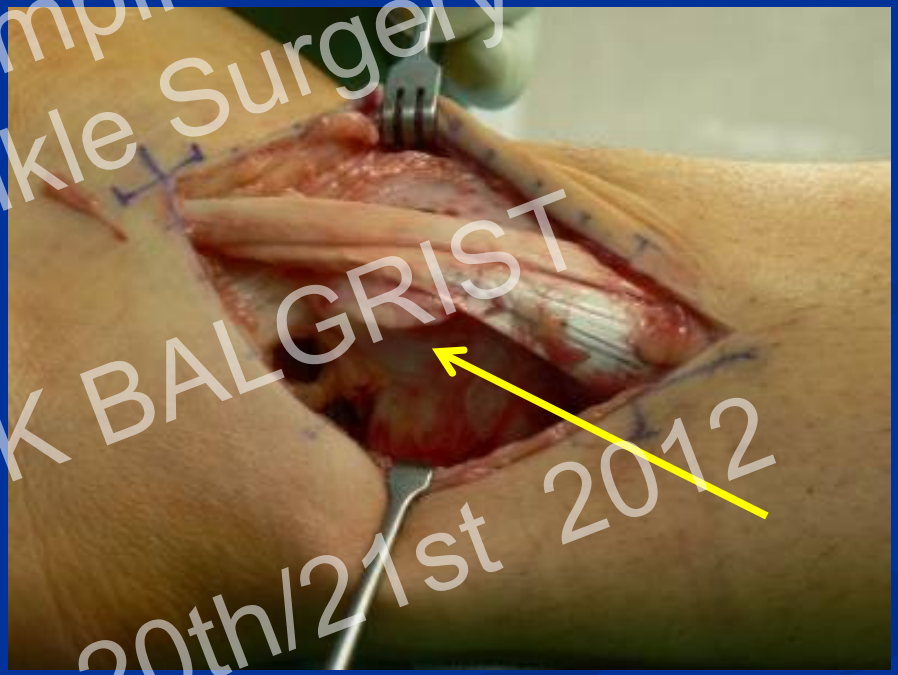

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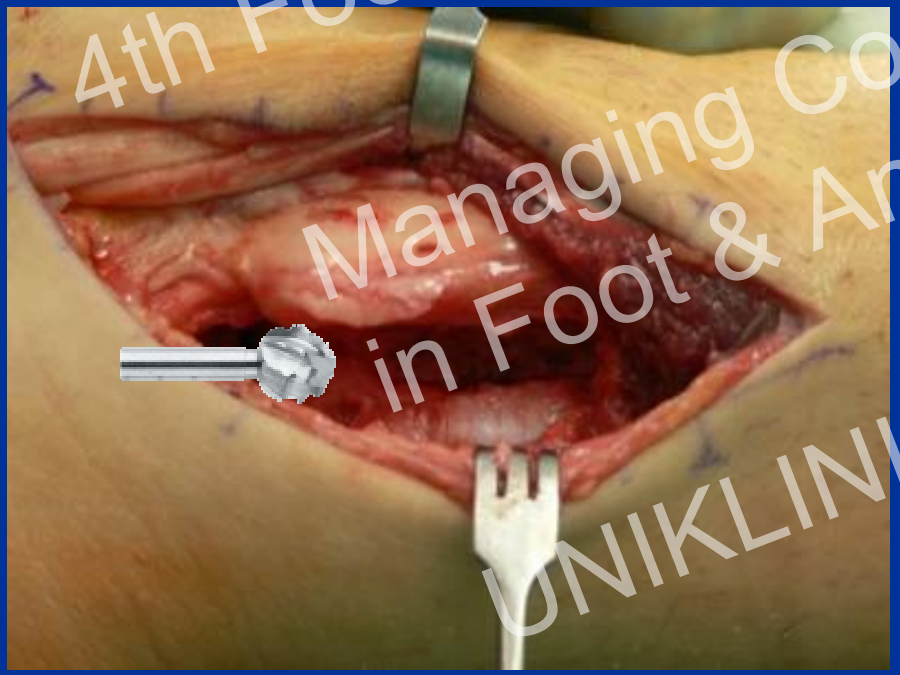
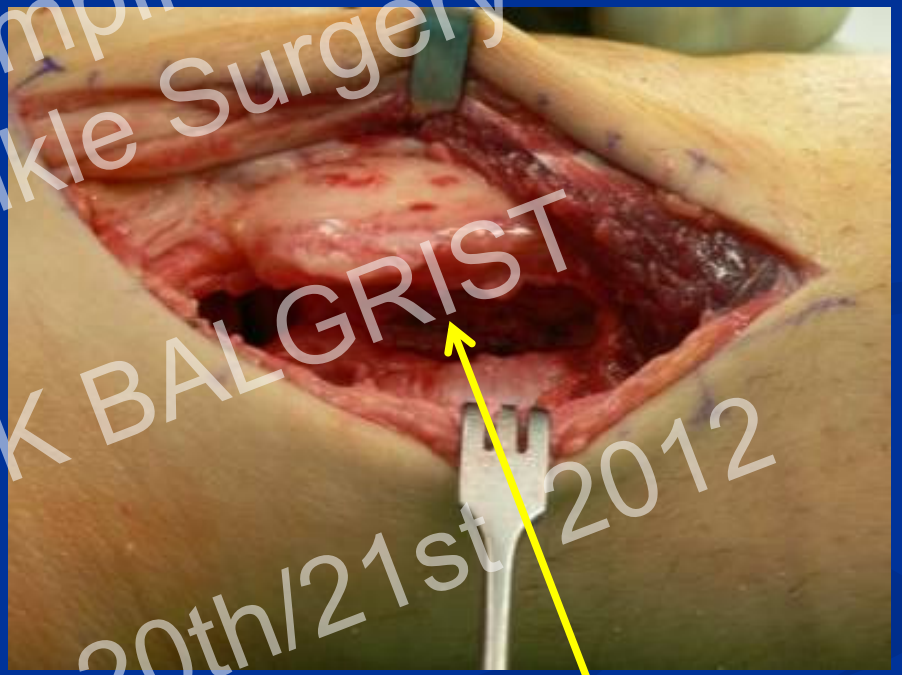
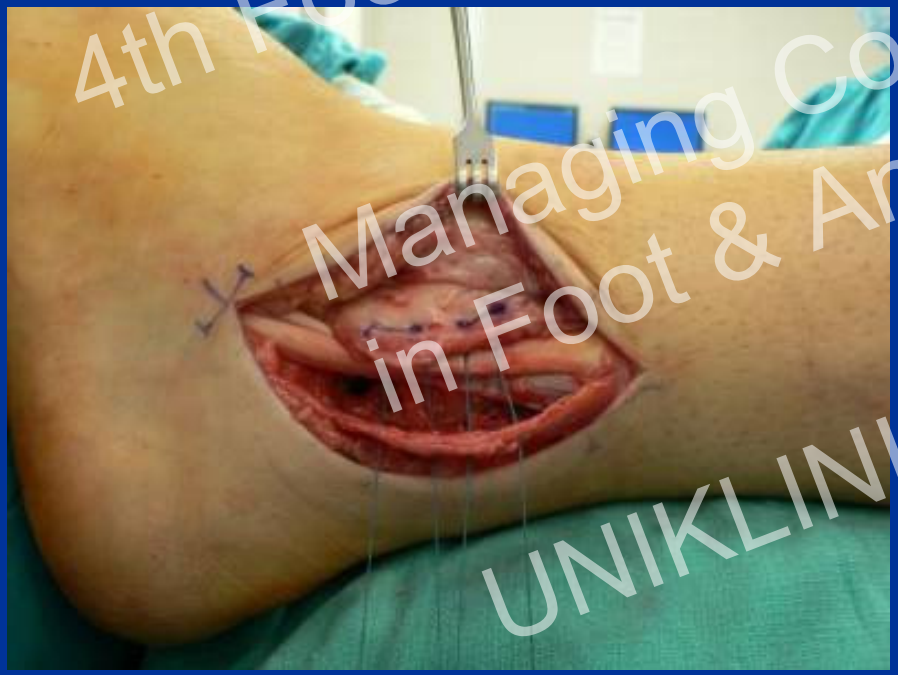
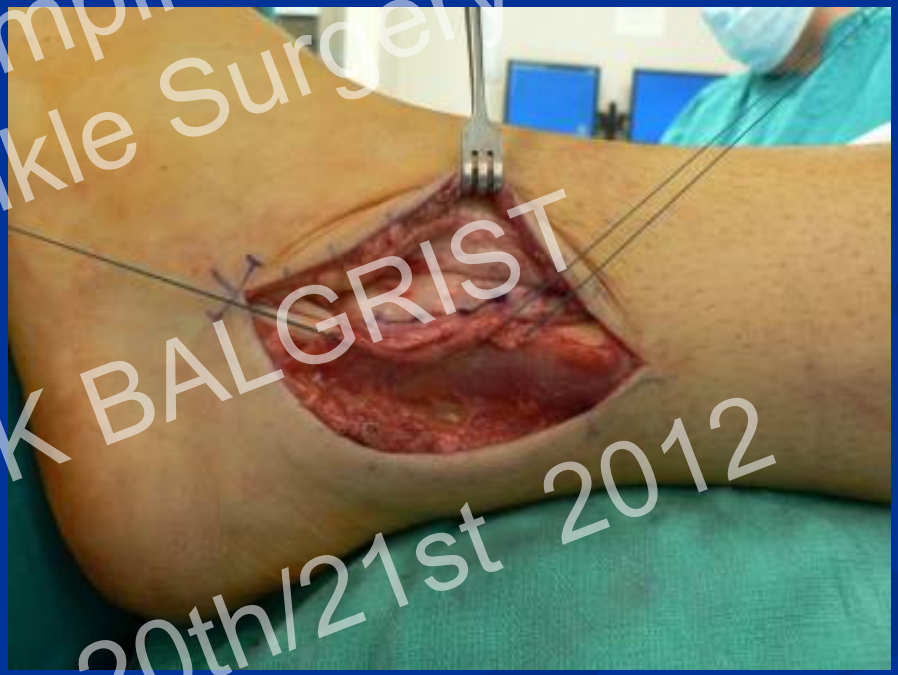
Groove Deepening





SPR imbrication





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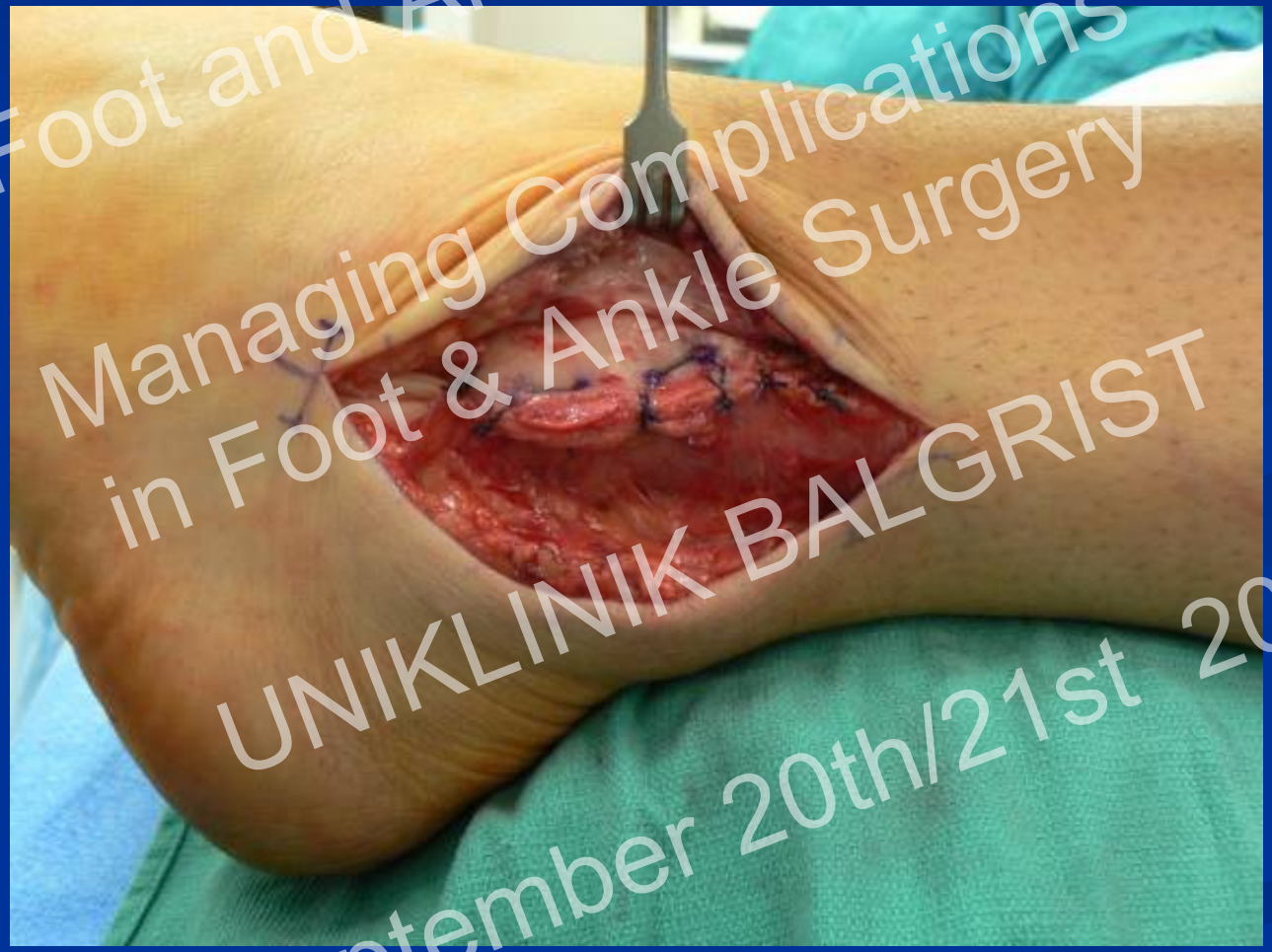

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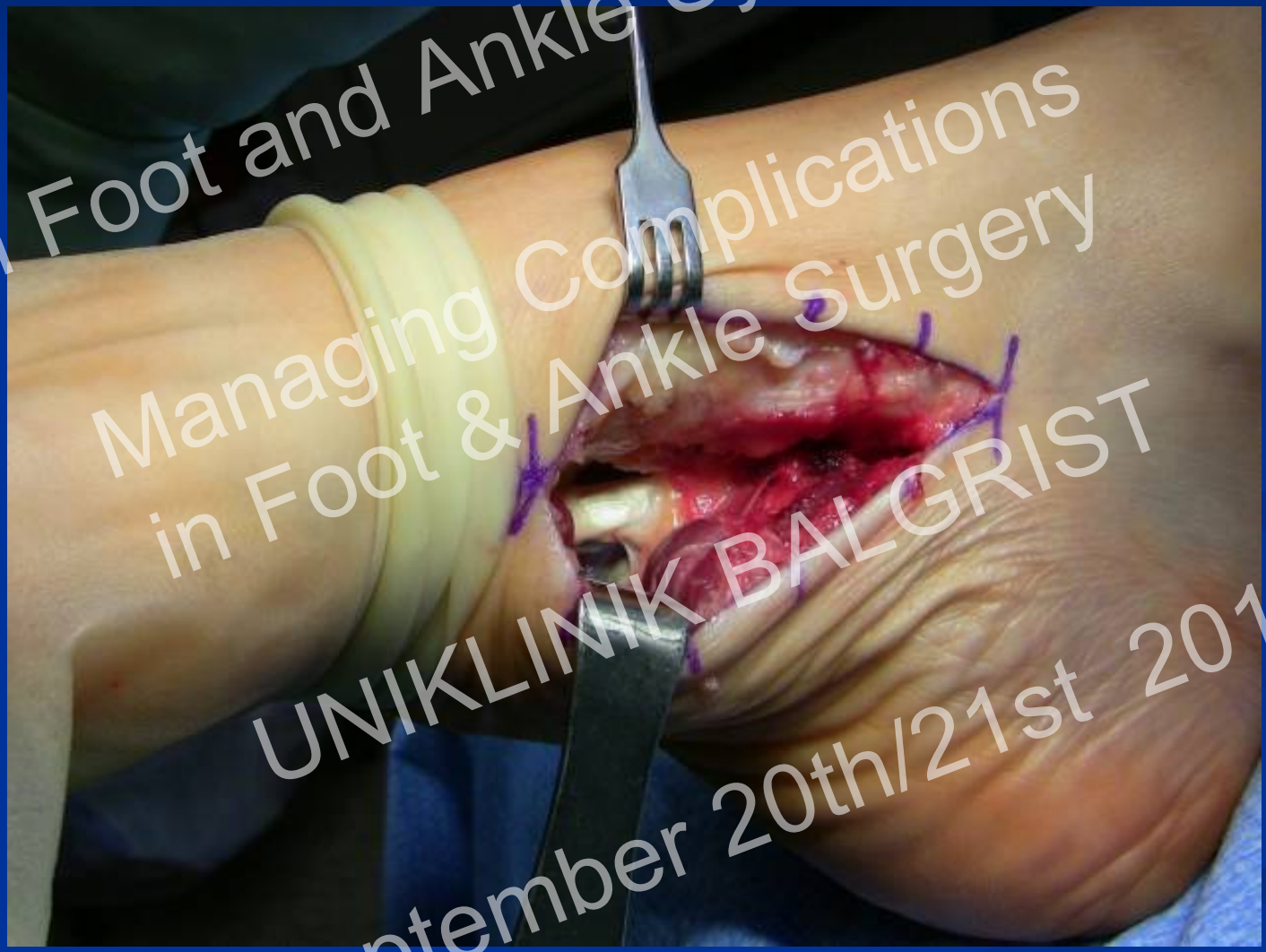
Revision

- FHL transfer to the base of the 5th Metatarsal
  - Recreates dynamic eversion of the peroneals
  - Does not recreate PF of the 1st Ray.
- Graft Reconstruction

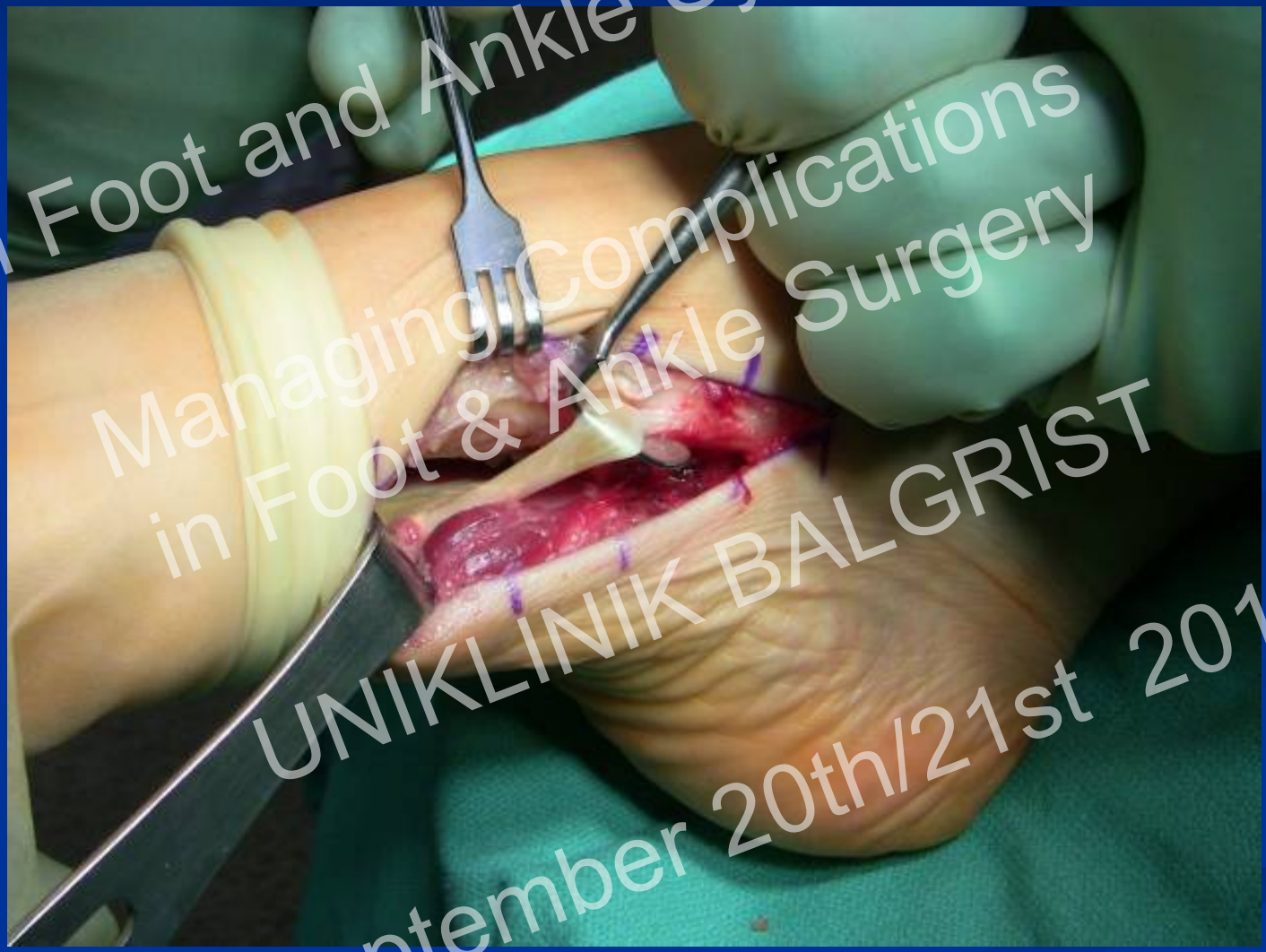
(Redfern D, Myerson M. The Management of Concomitant Tears of the Peroneus Longus and Brevis Tendons. Foot and Ankle Int. 2004: 25(10); 695-707)

  - Requirements – Viable proximal muscle (at least one)
    - Graft – Allo or Auto Hamstring
  - Acute – Minimal scarring within sheath
  - Staged – Heavy scarring/inflammation

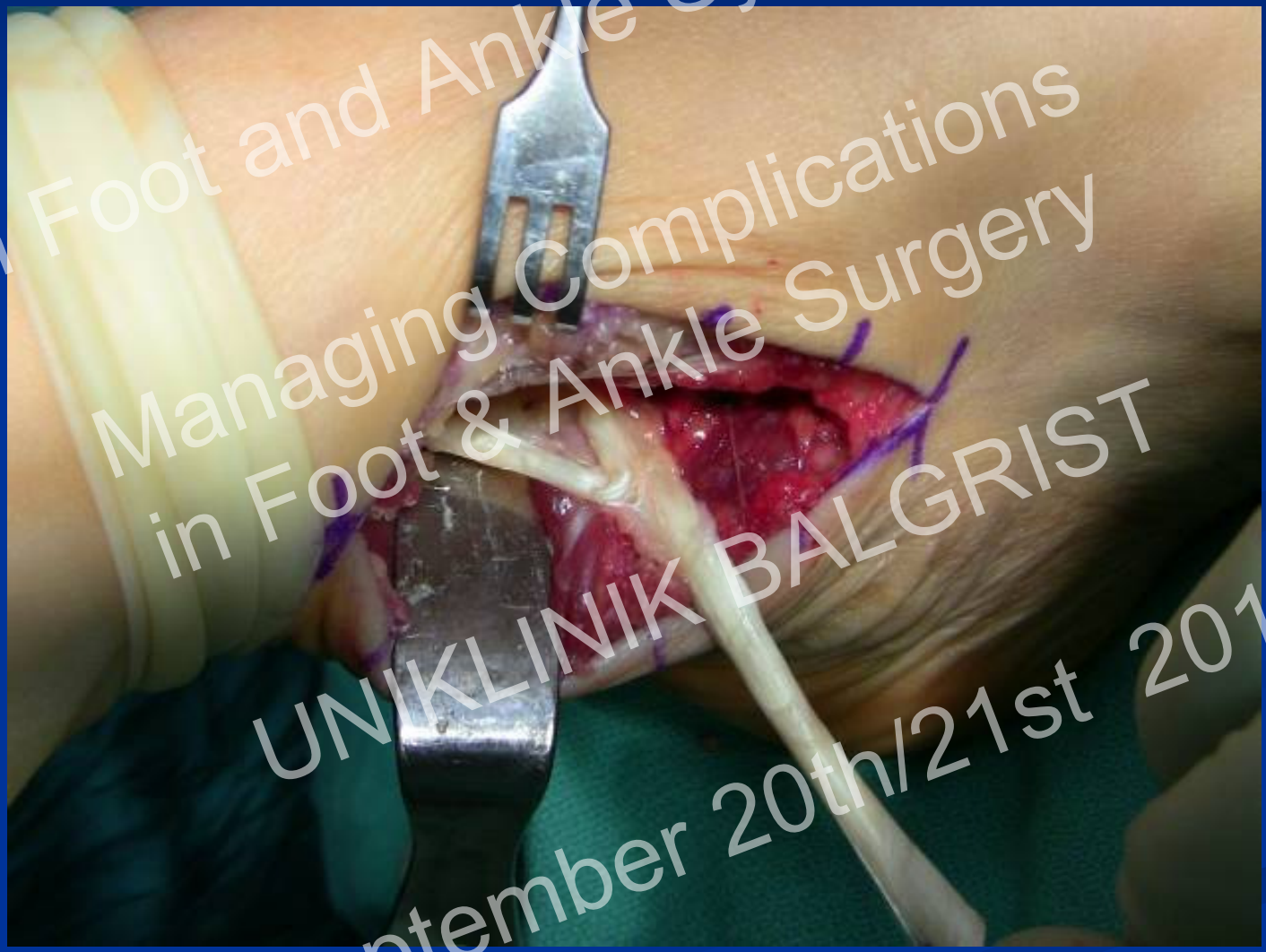
FHL Harvest – Medial Approach



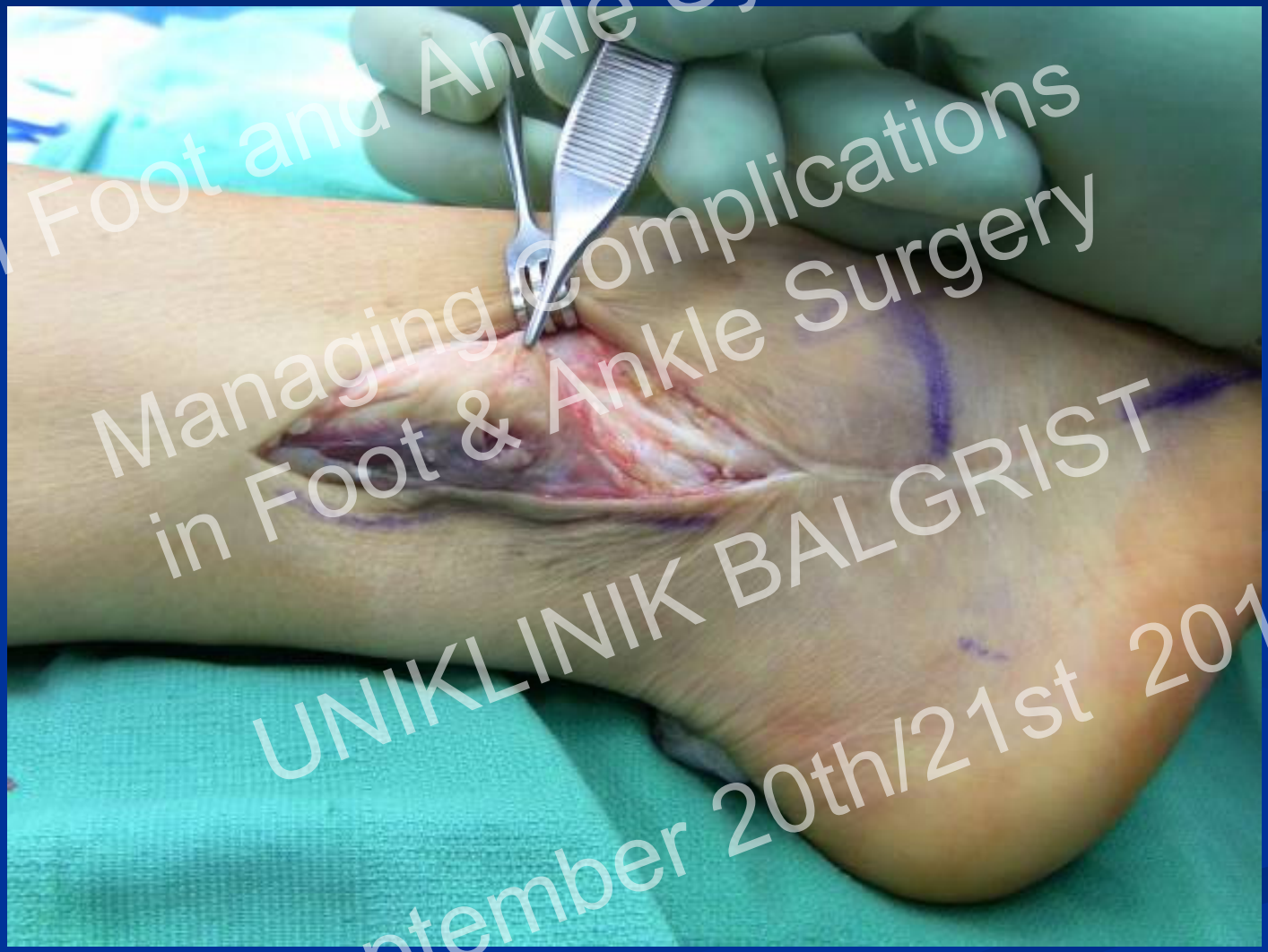
FHL Harvest – Medial Approach



FHL Harvest – Cross Tendinous Slip to FDL

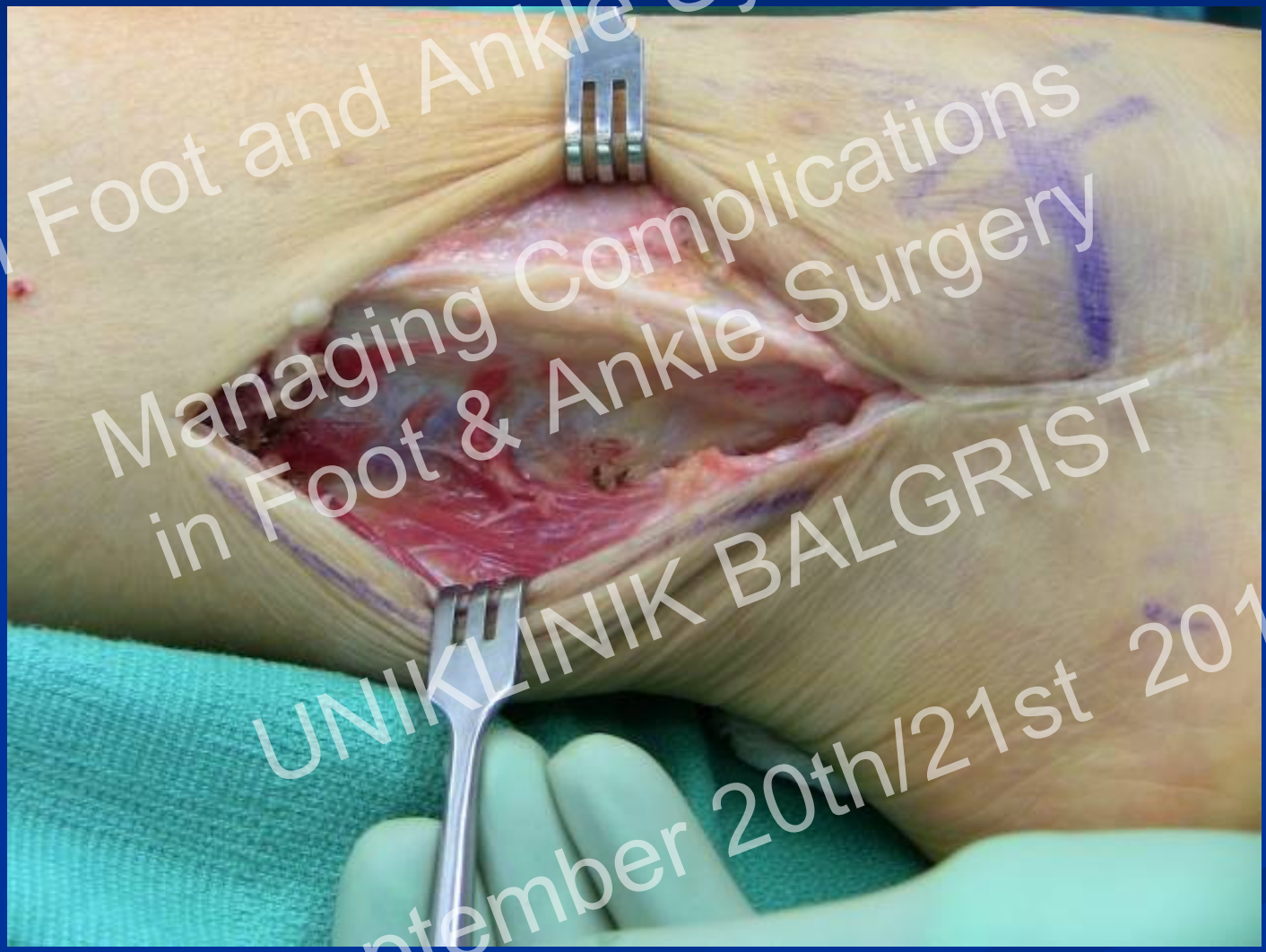


Diseased Peroneals

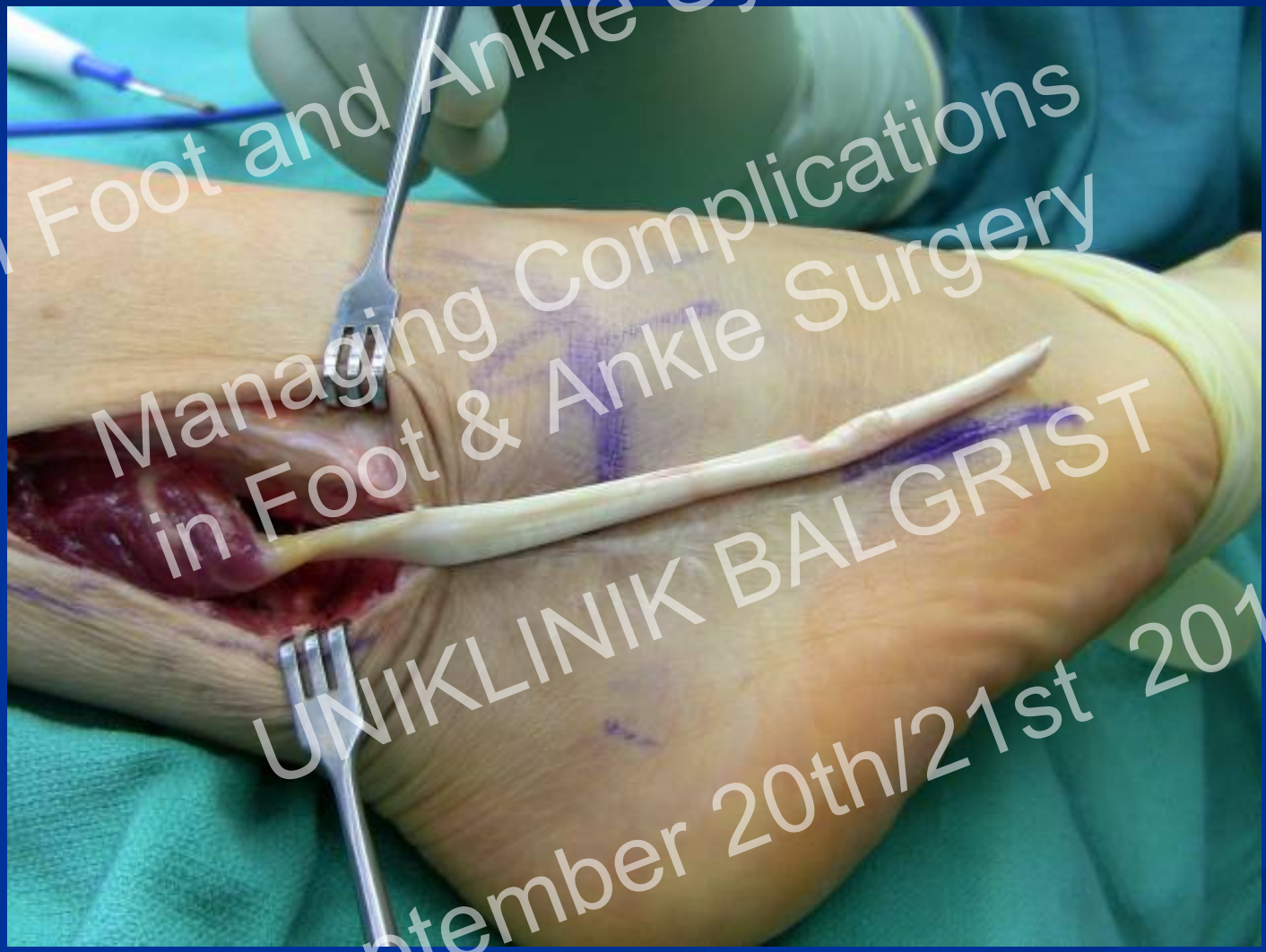


Peroneal Tendon Excision

S/P Excixion

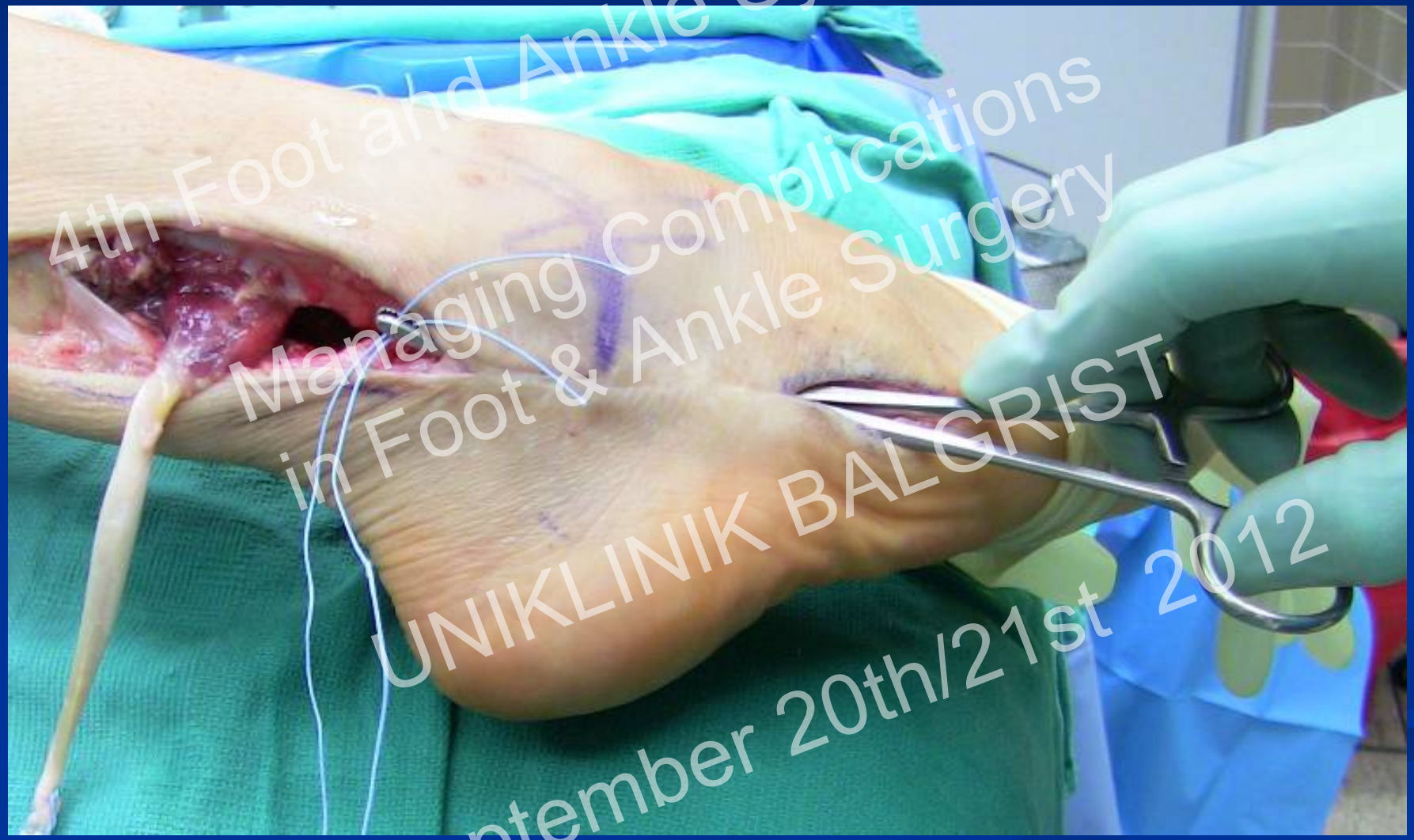


FHL Taken Laterally

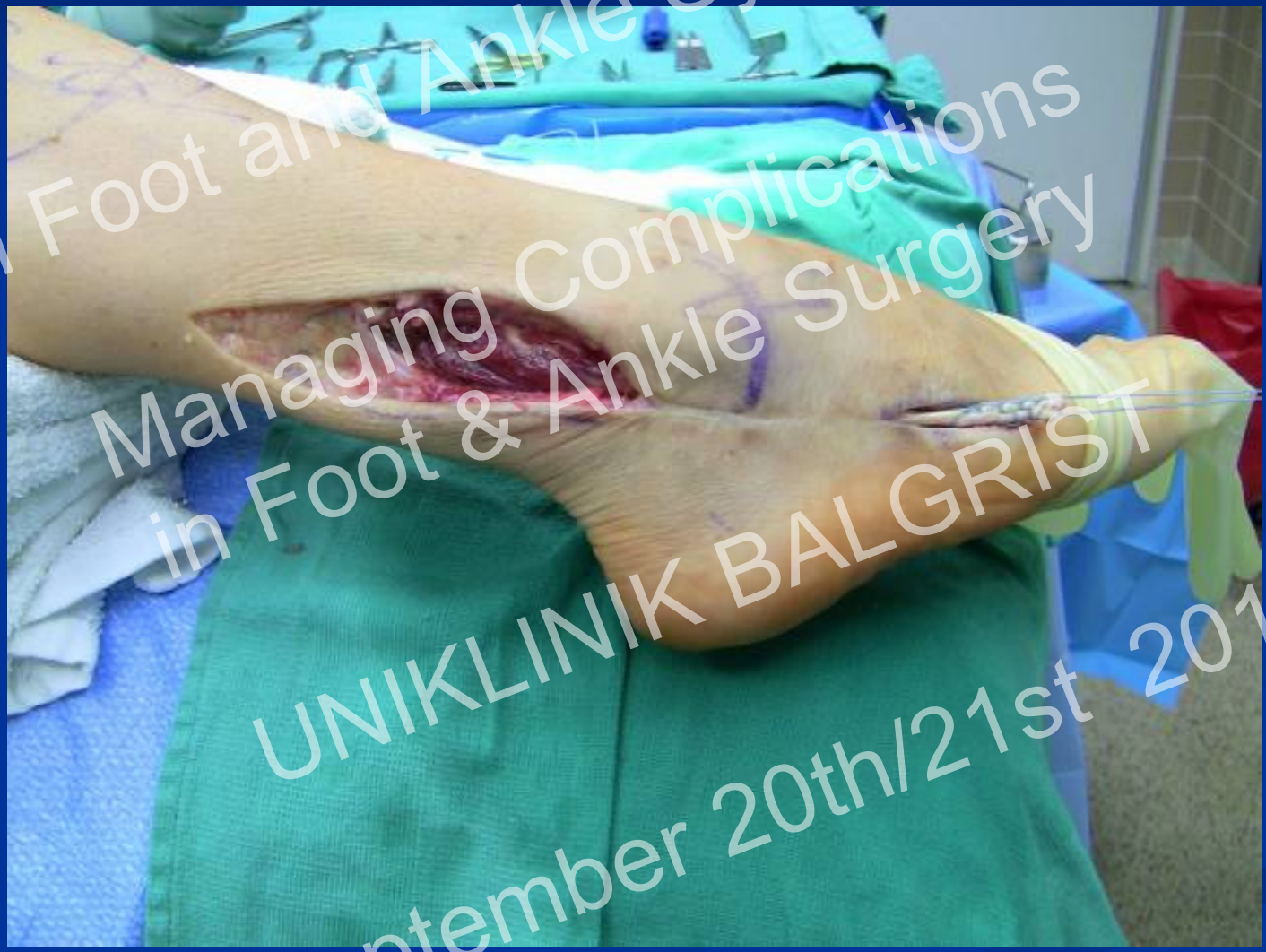


Tunnel Enlargement

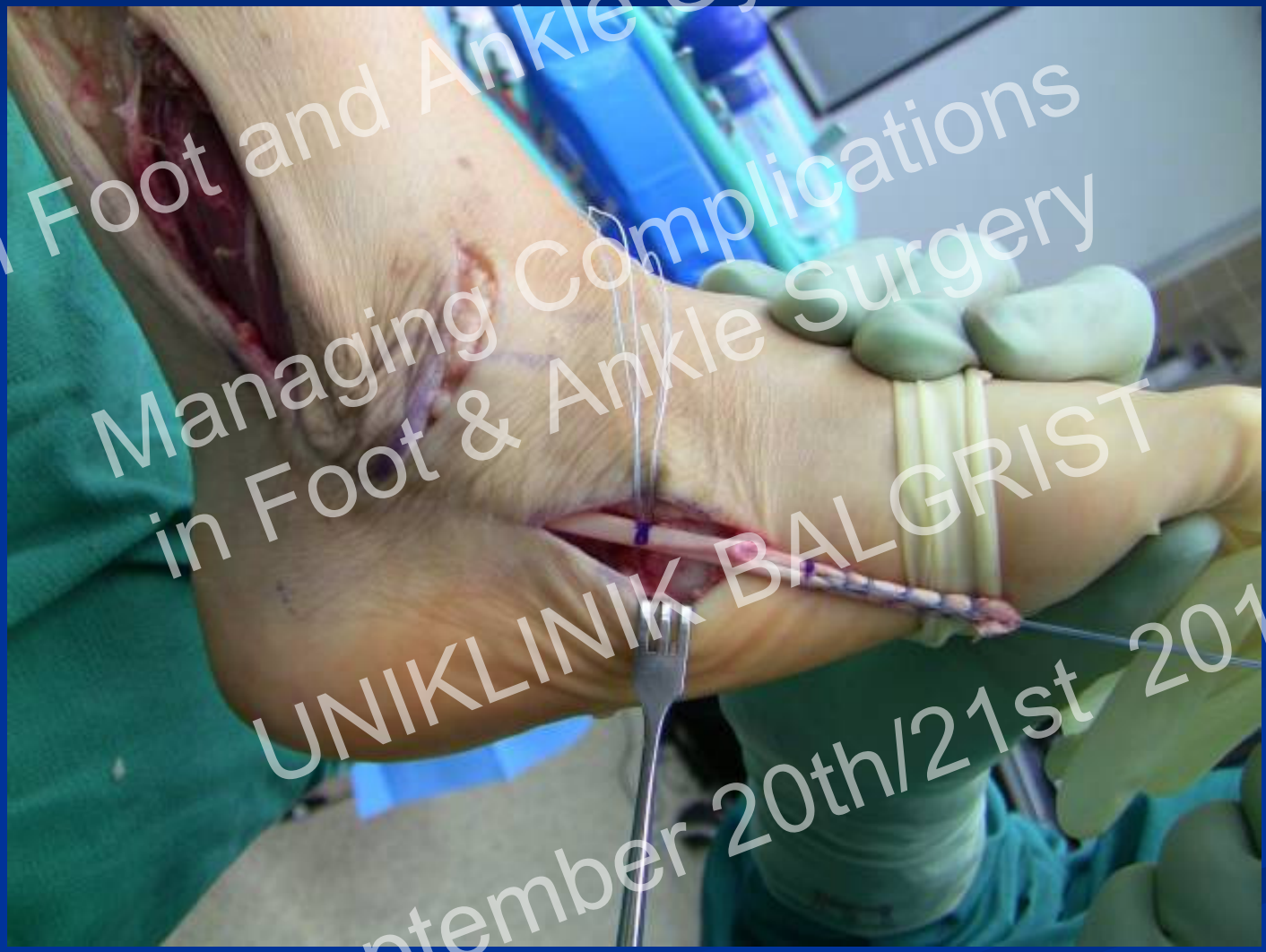
Distal Transfer of Tendon



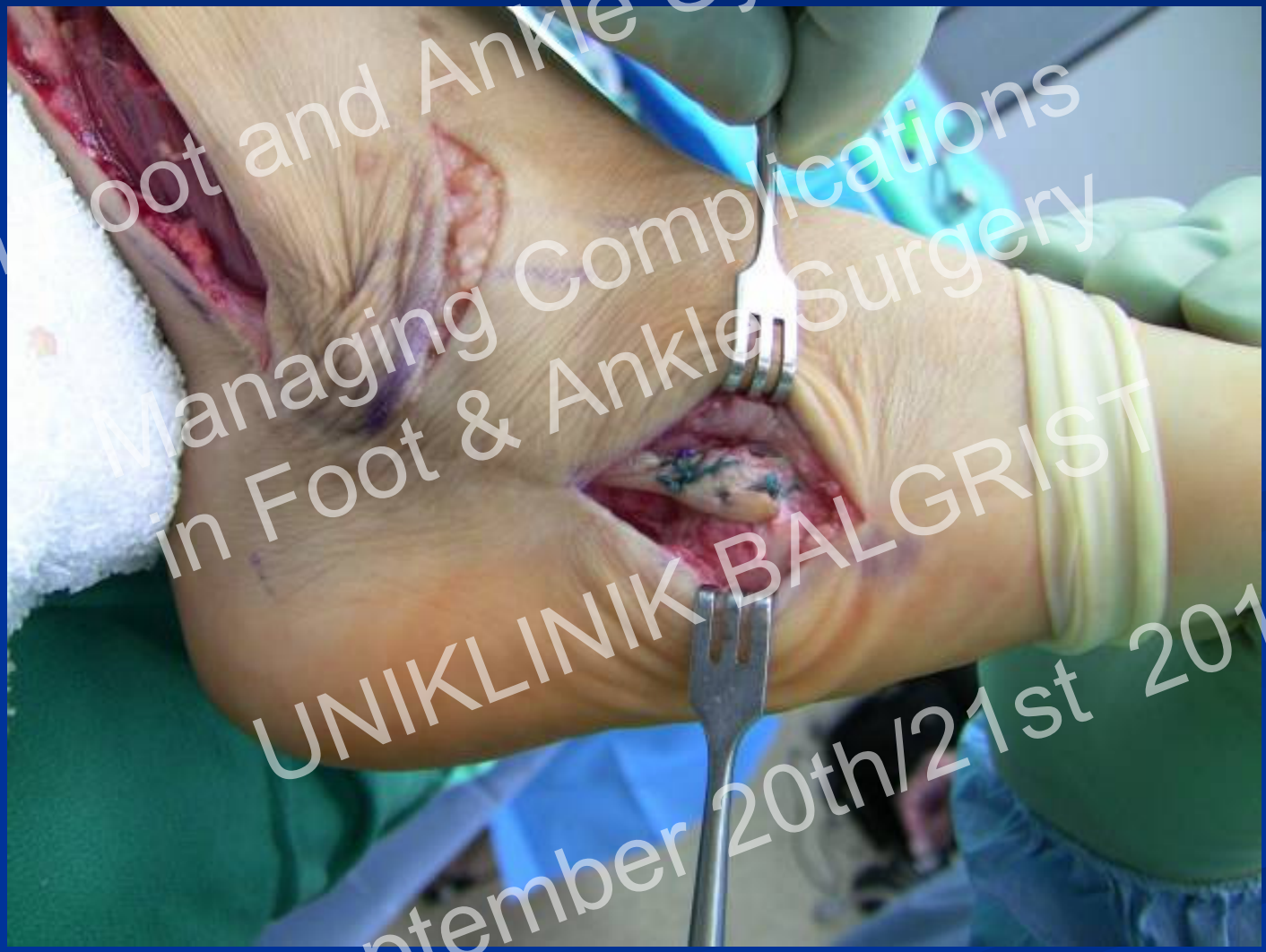
Proximal Appearance



Tensioning of Transfer



Final Appearance



Summary

- Preserve/Reconstruct
  - Function of the Brevis
- Groove Deepening
  - Subluxation – Chronic
  - Peroneal Tendon Tear
- Revision
  - Assess proximal viability
  - FHL reliable operation

Thank You

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