# USE OF COLLAGEN SUBSTITUTES IN TENDON AND LIGAMENT REPAIR OF THE FOOT

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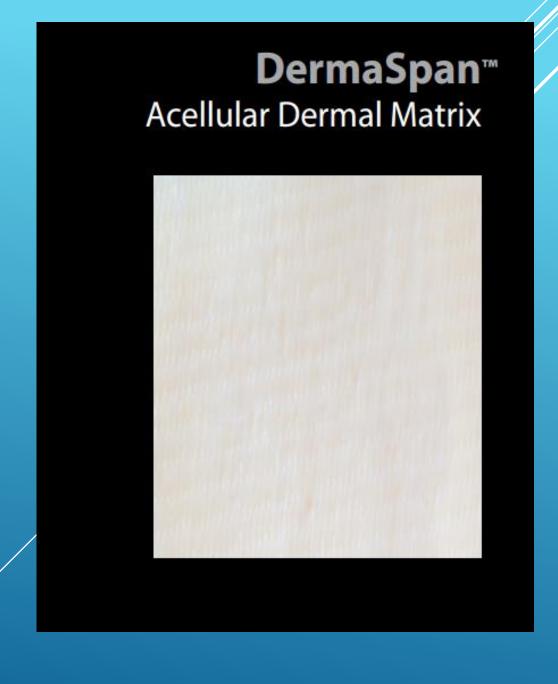
- ▶ Tendon Ruptures
- ▶ Ankle Stabilizations
- ▶ Peroneal Subluxation Repair
- ▶ Split Tendon Repair
- ▶ Tendinosis

# TYPES OF PROCEDURES



GRAFT JACKET

DERMASPAN





# Types of Acellular Tissue Matrix

- 1. Graft Jacket- Wright Medical
- 2. Dermaspan-Biomet

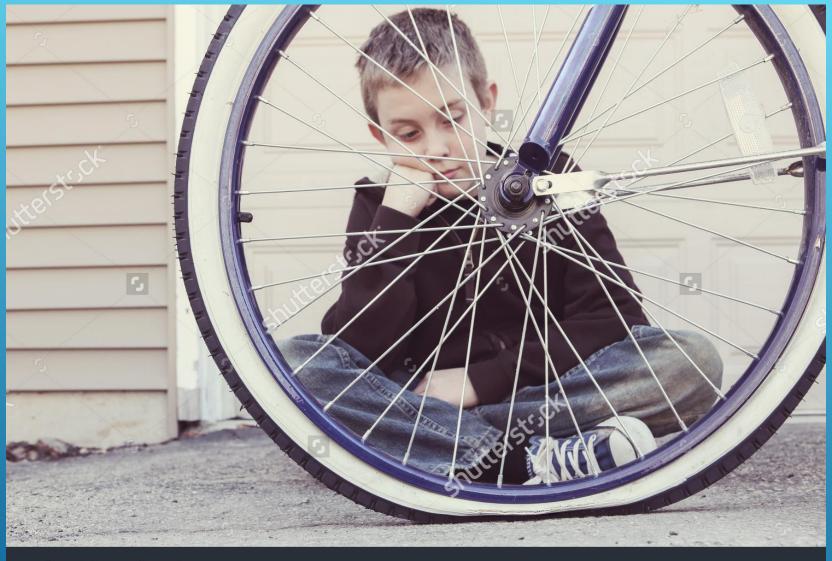
These can be used as internal collagen lattices as well as skin substitutes.

### Preparation:

- 1. Some need to be refrigerated
- 2. Size and thickness
- 3. Hydrate for at least 5 Minutes
- 4. Mark the outside component before hydrating

## Uses:

- Cover the anastomosis point
- Strengthen the Structure
- Ligament substitute
- Retinaculum Substitute
- Promote Healing



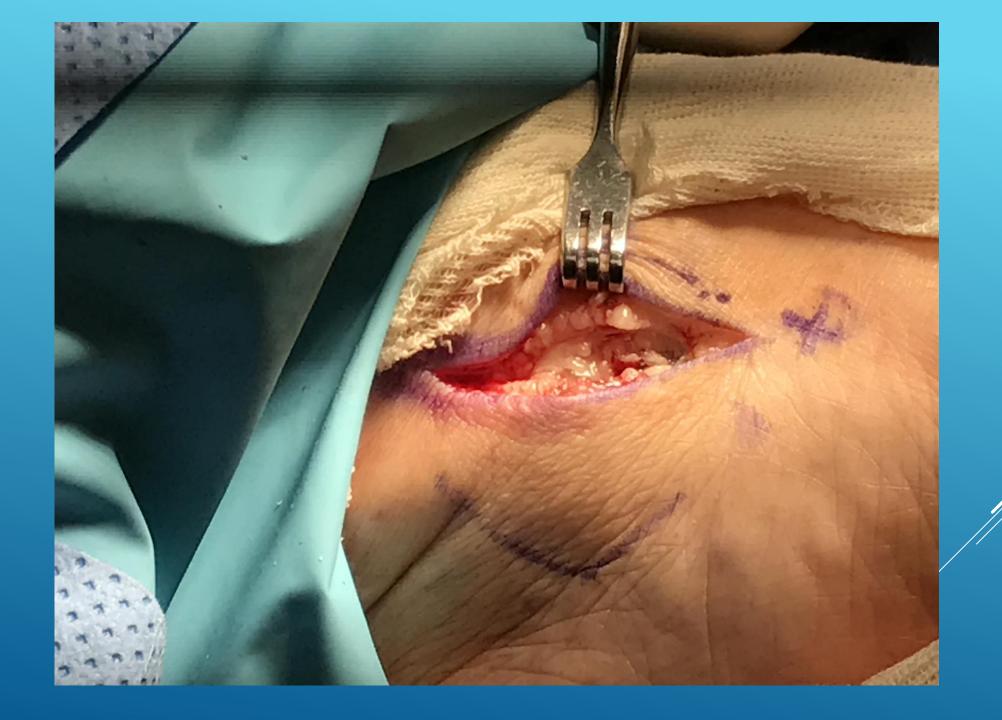
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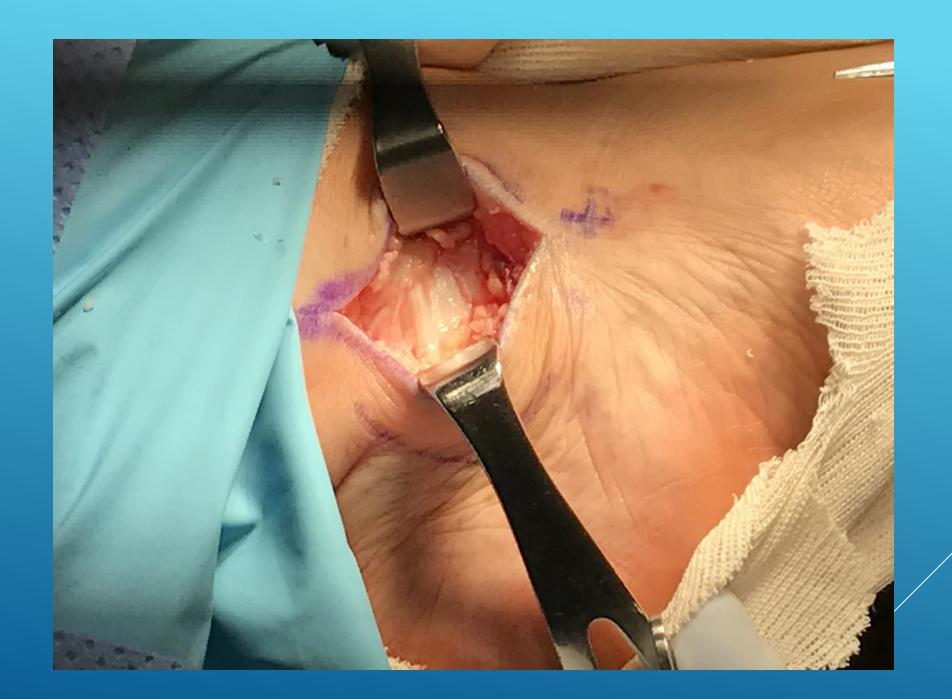
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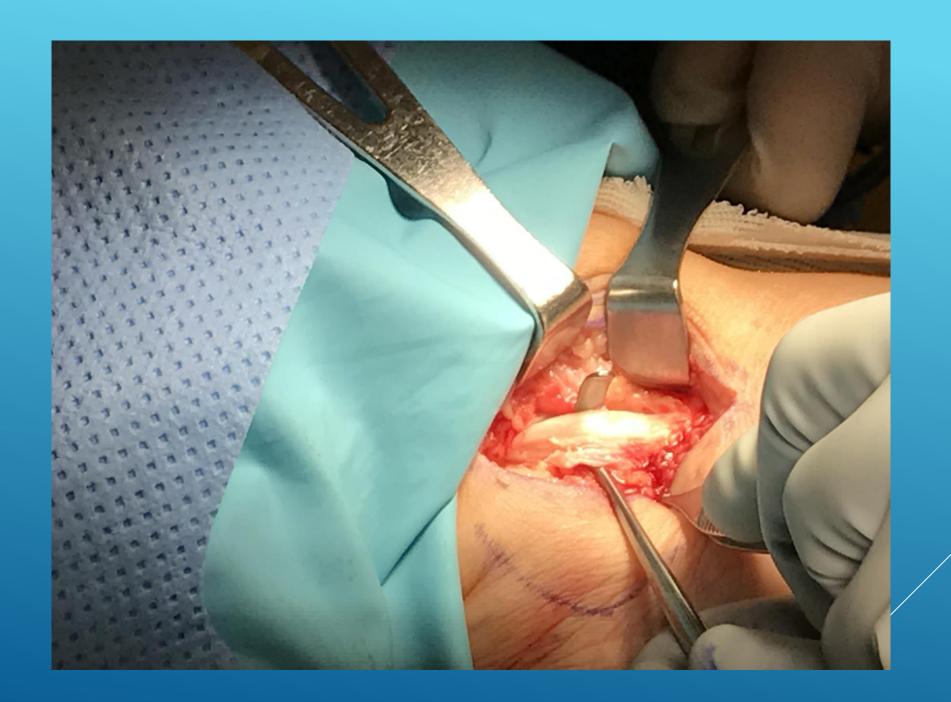
- 1. Identify the problem
- 2. Primary Repair of Defect
- 3. Remove necrotic part of tendon
- 4. Tubularize the remaining tendon
- 5. Cover with Collagen Substitute

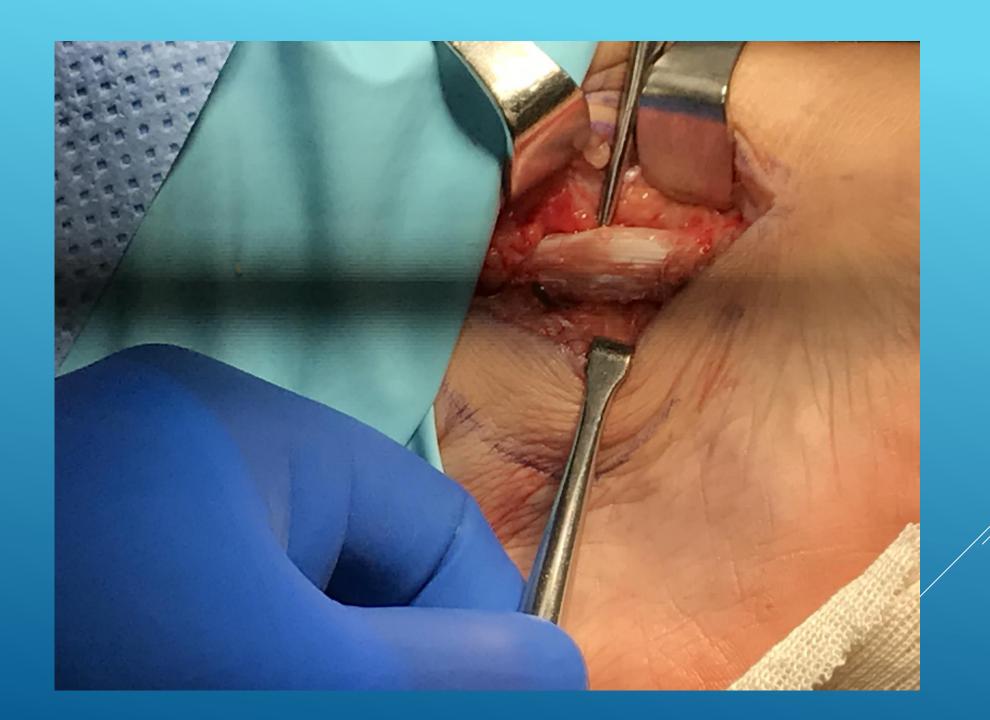
# PARTIAL RUPTURE REPAIR



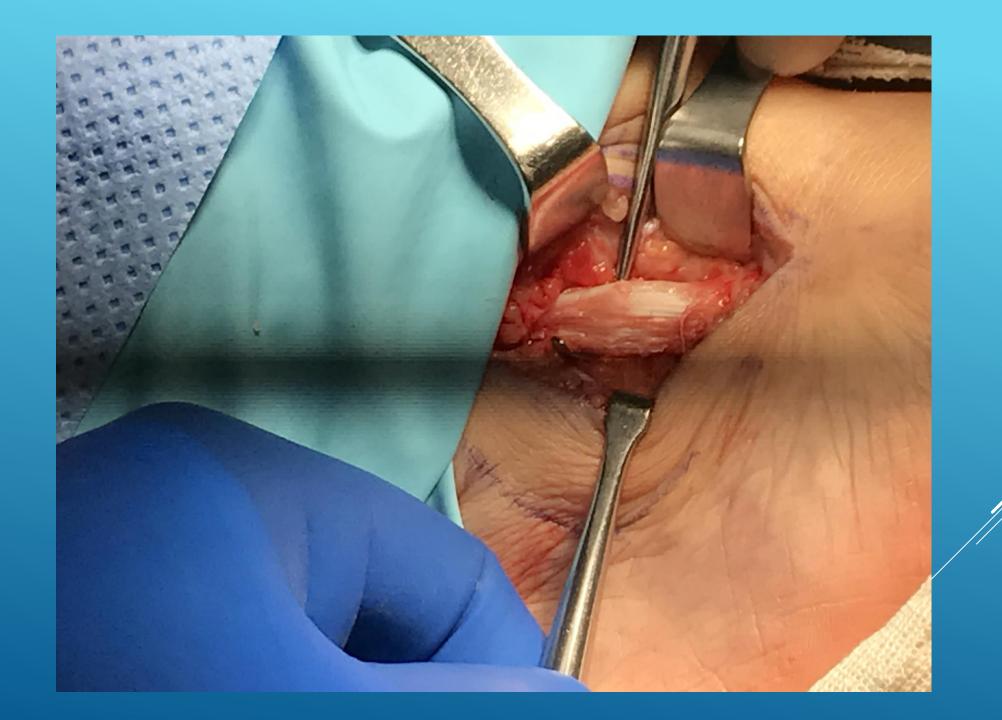












# Complete Tendon Ruptures

- 1. Evaluate function of tendon
- 2. Palpate the substance of the tendon
- 3. Acute vs Chronic
- 4. Viability of the two tendon segments
- 5. Surgical vs Nonsurgical

Surgical vs Non-Surgical Achilles Tendon Repair

1981 Nistrom; Journal of Bone and Joint: 105 acute achilles tendon ruptures. End result was minimal long tern differences in each group. Recommended conservative tx as no infection rate.

1993 Cetti, et. al; American Journal of Sports Medicine: 111 acute ruptures. Significant increase in function 1 year after surgery. Recommended surgical intervention.

2002 Bhanderi; Current Orthopedic Practice: Retrospective study that shows less re-rupture in the surgical group, but point to more research needed.

# Diagnosis

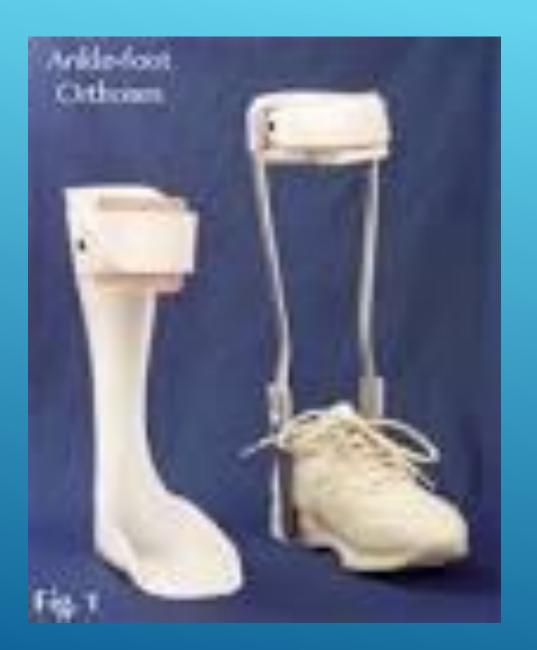
- 1. Physical Exam
- 2. Xrays
- 3. MRI
- 4. Diagnostic Ultrasound

#### Conservative Treatment

- 1. R.I.C.E.
- 2. Non-weight bearing
- 3. Casting: How high?
- 4. Physical Therapy
- 5. Injection after long period of time
- 6. AFO, Orthotics, and Other Braces

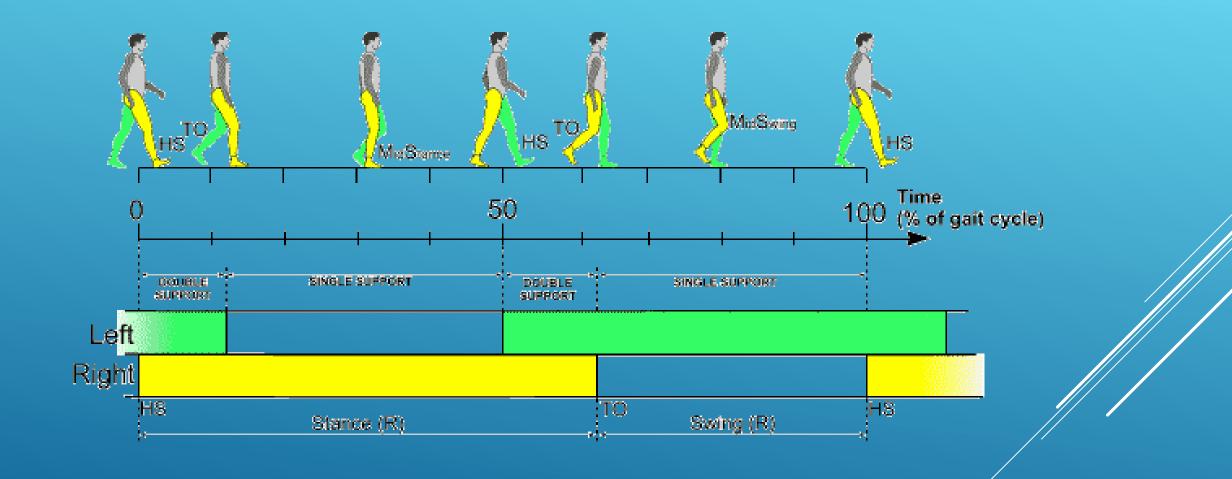
# Arizona Gauntlet





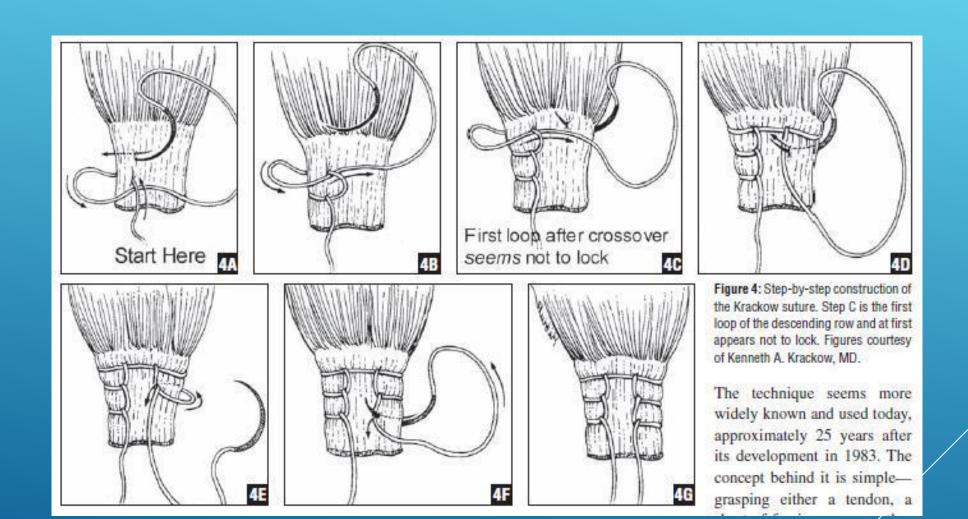
#### Surgical Repair of Complete Rupture

- 1. Acute vs Chronic-Judge the viability of the ends
- 2. How big of a gap?
- 3. MRI is the best for planning the procedure
- 4. Primary plus reinforcement
- 5. How big a graft? Free or Substitute
- 6. Suture: Size and Absorbability
- 7. Suturing technique
- 8. Understand the function





#### Krackow Stitch – Modification of the Bunell Stitch



#### Tibialis Anterior

- \* Muscle belly in the anterior compartment
- \* Inserts into the medial cuneiform
- \* Biphasic muscle- dorsiflexes the foot to clear the ground; decelerates the foot on contact
- Works with the other anterior group muscles
- Main complaint is slapping the ground during walking













#### Ankle Stabilization

Modified Brostrom-recreating the ATFL ligament

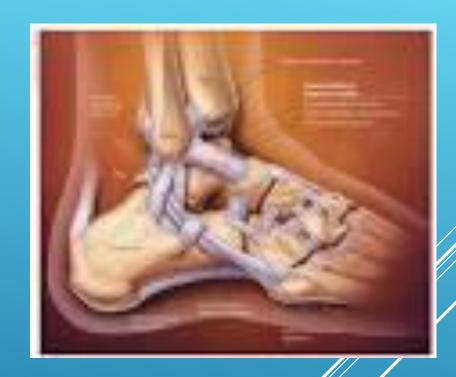
3 layer repair

Suture the capsule

Periosteal flap

Collagen graft flap

Can also repair the CFL at the same time



### Capsular Tightening

- Full thickness incision to the anterior lateral ankle capsule
- Will be in the ankle joint
- Underscore full thickness capsule
- Horizontal Mattress Sutures- 2-0 non-absorbable (Ethibond, Parcus braid)
- Hold foot in dorsiflexion and inversion
- Grab a large piece of the capsule

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#### Internal Brace™ Ligament Augmentation Repair

Arthrex has developed a simple, safe and reproducible technique using the BioComposite SwiveLock® and FiberTape®. The InternalBrace Ligament Augmentation Repair can be used as an augmentation to a Brostrom procedure. The InternalBrace Ligament Augmentation Repair allows the surgeon to repair lateral or medial ankle instability. It can be used in acute and chronic ankle sprains.

Tags: ankle instability



**Educational Resources** 

Products

Related Science

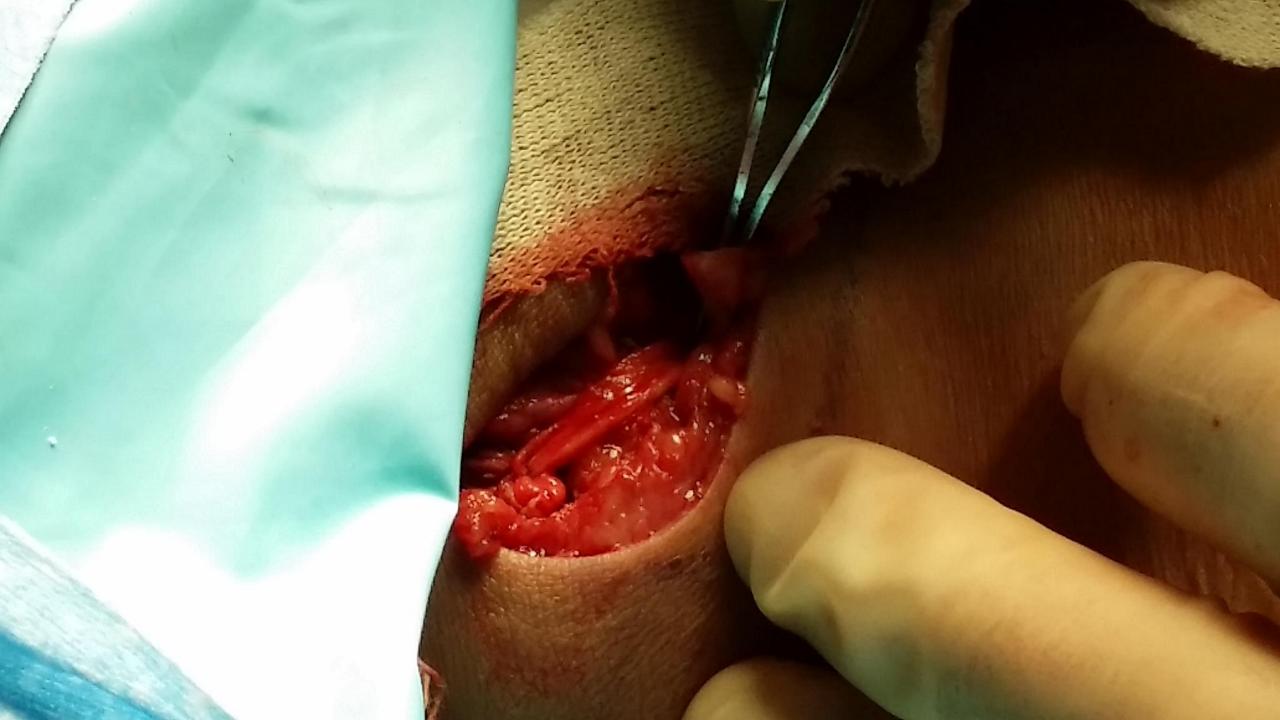
## Periosteal Flap

- Use periosteum over the lateral malleolus
- Attachment to bone is left distally
- Care to keep full thickness
- Advancement is the lateral talus
- Suture vs. Anchor?
- Keep foot dorsiflexed and everted

### Graft Flap

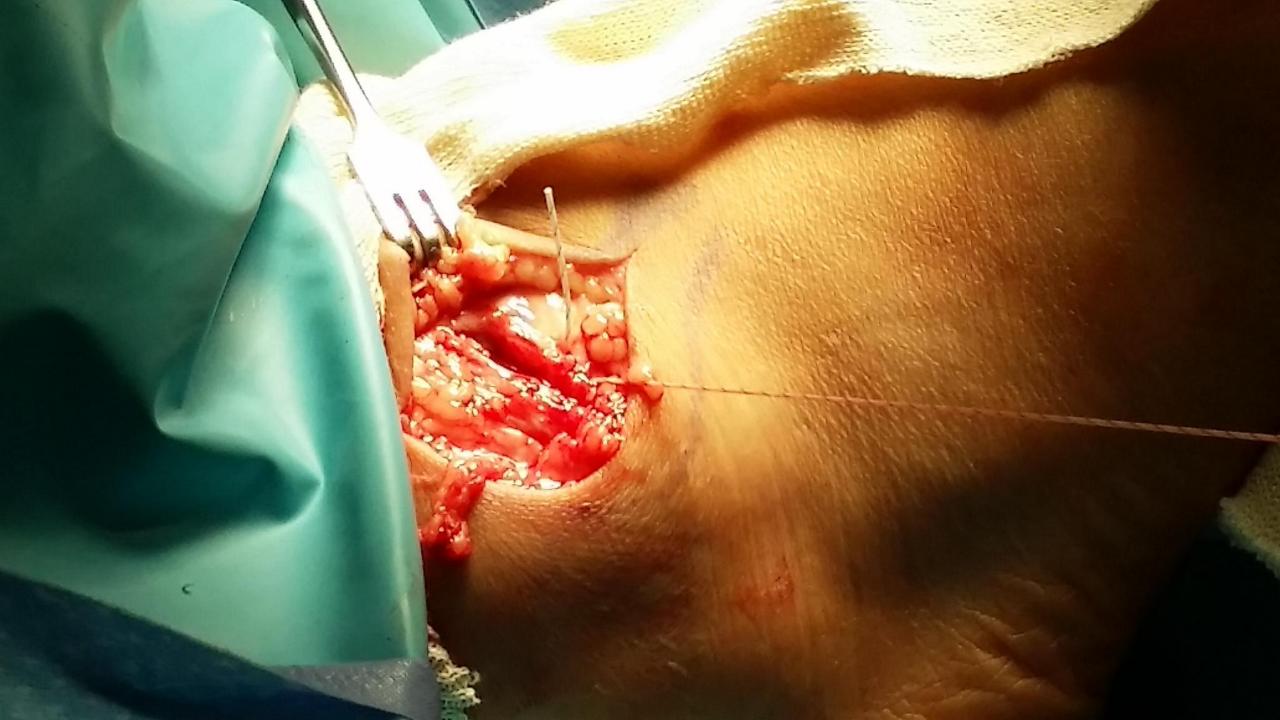
- Small strip of material that is wider than the periosteal flap
- 2.0 anchor into the lateral malleolus
- Place directly over the periosteal flap
- Suture into the same area as other flap
- MAKE IT TIGHT !!!!!

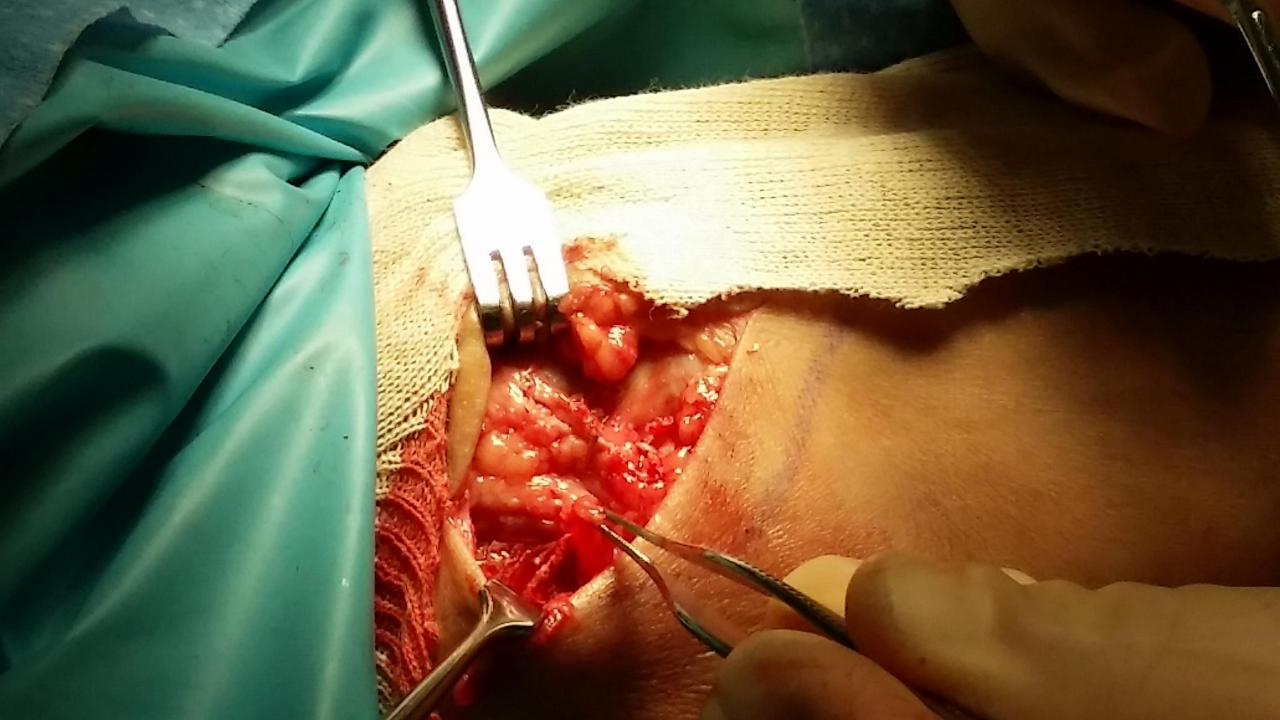


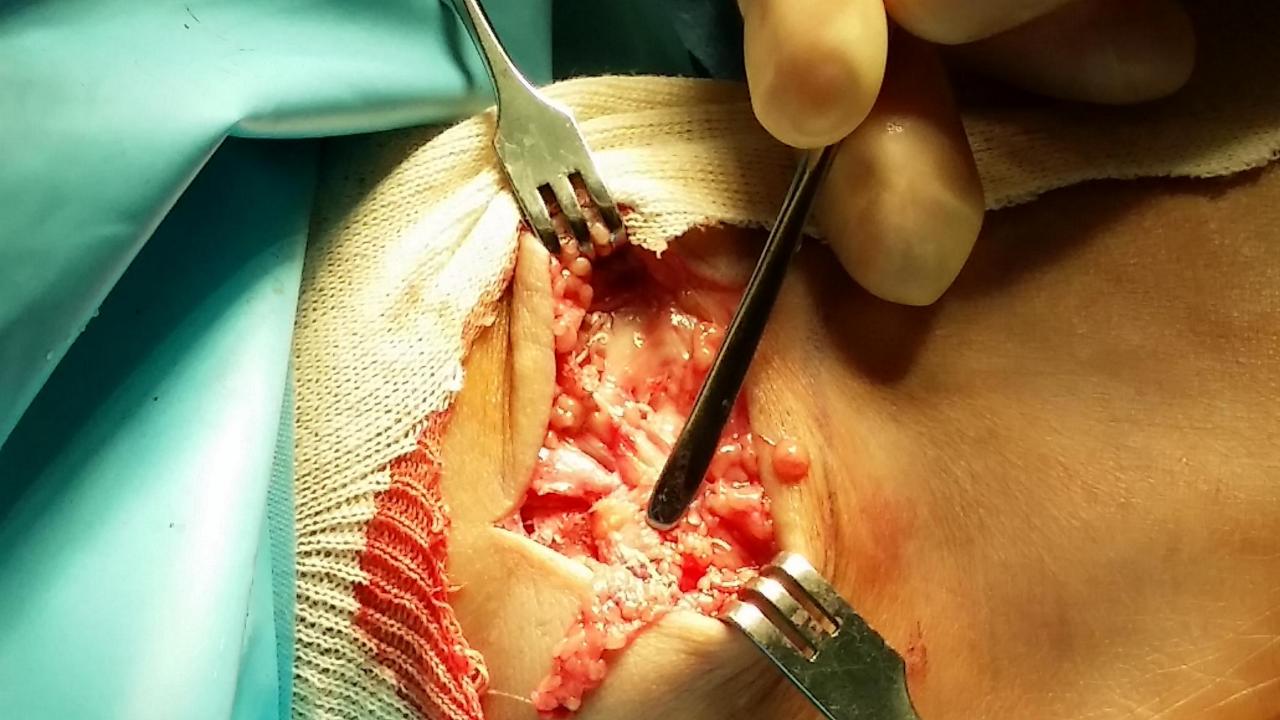


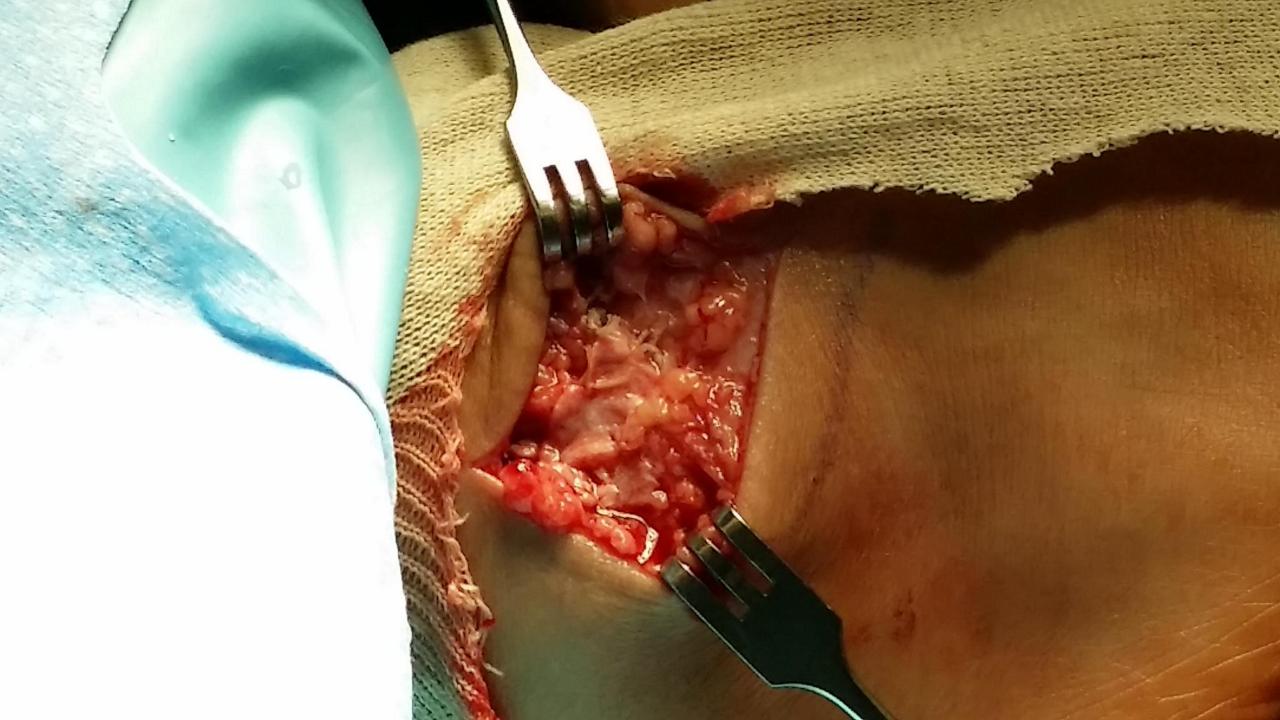




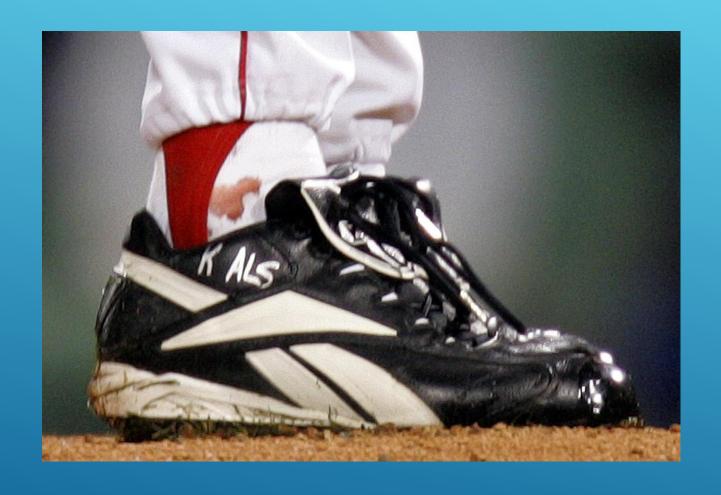








# Peroneal Subluxation



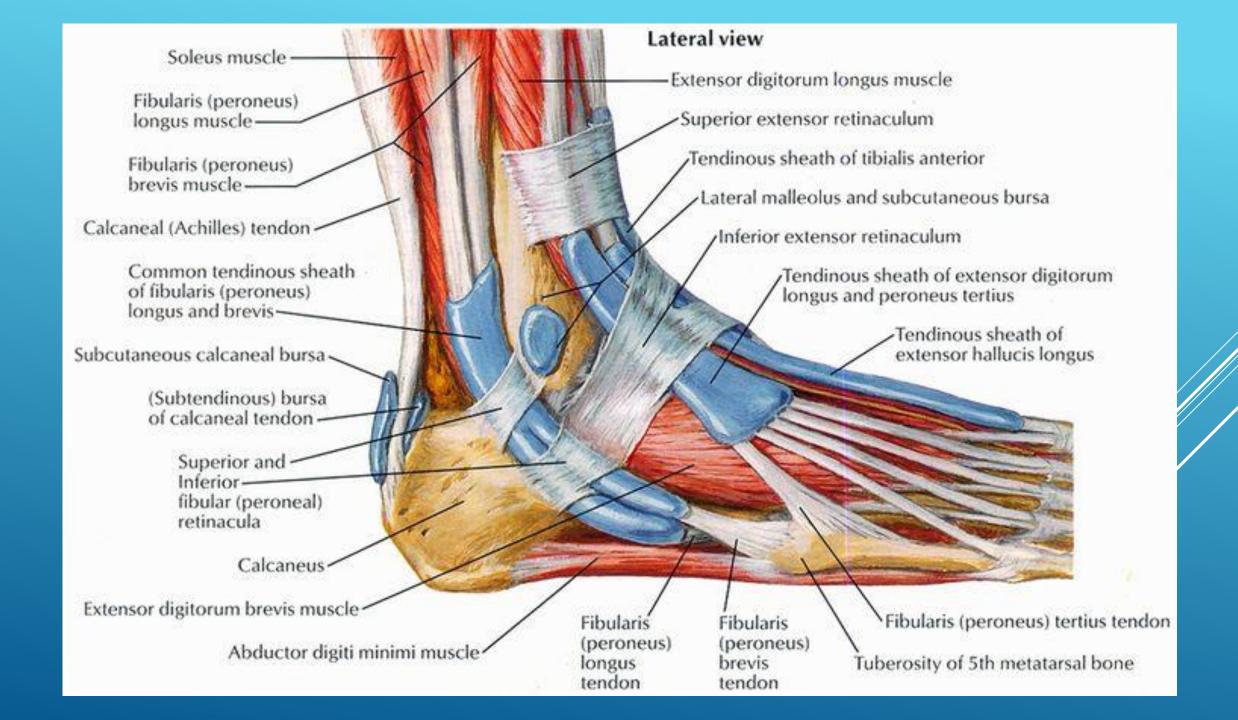
#### Multiple Procedures

- 1. Eckert and Davis-Repair of the superior peroneal retinaculum
- 2. Zoellner and Clancy (1979)- Deepened the posterior malleolar groove of the fibula
- 3. Kelly (1920) Cortical wedge to block the subluxation
- 4. Raikin (2009) Combined a cortical slide posteriorly to the fibula with deepening of the groove of the fibula

<sup>\*</sup>All were based on relatively small study samples

#### Collagen Substitute Procedure

- 1. Deepen the posterior malleolar groove- Burr through the cartilage until tendons sit without subluxing.
- 2. Recreate the superior peroneal retinaculum with graft- 2-0 anchor to one and and anchor or suture the other end
- 3. Place another collagen graft 2.0 cm proximal to the original graft
- 4. Cover area with outer graft





I feel a very unusual sensation if it is not indigestion, I think it must be GRATITUDE.

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