

HAND AND WRIST INJURIES IN THE STUDENT ATHLETE, SIMPLIFIED

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ORTHOPAEDIC HAND TO SHOULDER SURGEON
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DISCLOSURES

- NO FINANCIAL INTERESTS IN ANY PRODUCT OR COMPANY PERTINENT TO THIS TALK

MANAGEMENT OF HAND AND WRIST INJURIES IN STUDENT ATHLETES MEANS MANAGING...



- **THE INJURY (RISKS/BENEFITS/ALTERNATIVES)**
 - **ALWAYS** PRIORITIZE THE LONG-TERM HAND AND WRIST FUNCTION OF THE STUDENT
 - THE DESIRE TO RETURN TO PLAY
- COMMUNICATION AND COORDINATION BETWEEN TRAINERS, PARENTS, AND COACHES
- **(TEXT UPDATES TO ATC ARE KEY!!)**

DOES YOUR COVERING DOCTOR HAVE A HAND SURGEON AS PART OF TEAM?

DO YOU HAVE A HAND SURGEON YOU CAN TALK TO/TEXT ON THE FIELD FOR EMERGENCIES?

COMMON SPORTS HAND & WRIST INJURIES

- INJURED FINGER TIP
- “JAMMED” OR DISLOCATED FINGER
- “JAMMED” THUMB
- INJURED, SWOLLEN HAND
- “WRIST SPRAINS”

INJURED FINGER TIP

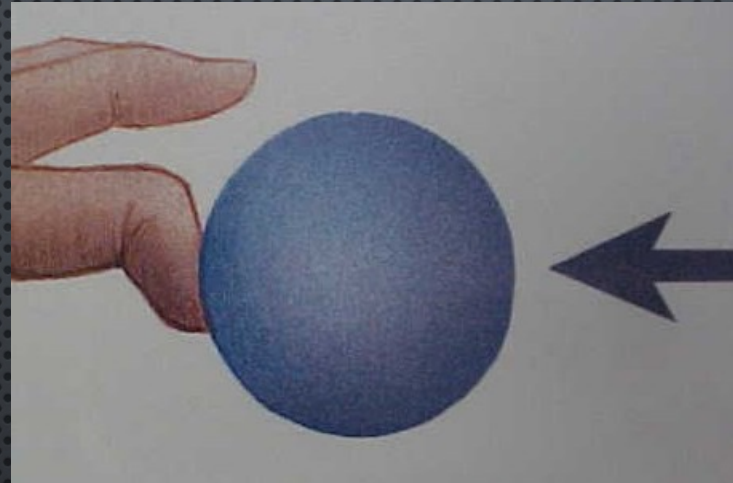
JAMMED, DEFORMED FINGERTIP



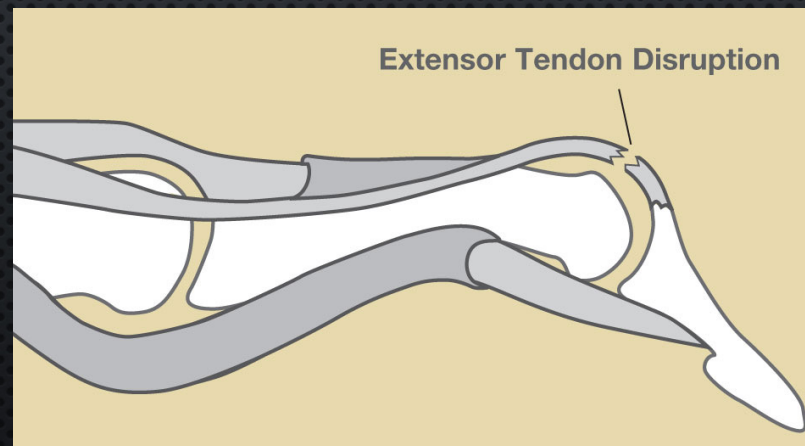
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MALLET FINGER

MECHANISM: SUDDEN
FORCEFUL FLEXION



EXTENSOR TENDON
DISRUPTION WITH OR
WITHOUT BONY
AVULSION FRACTURE



MALLET FINGER

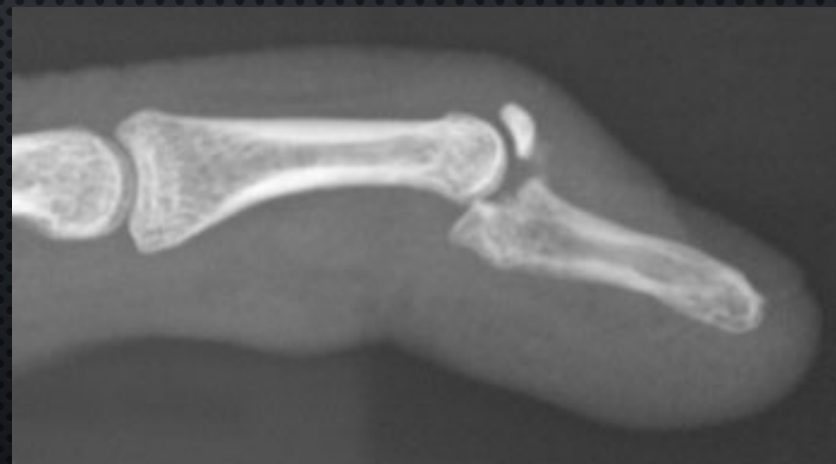


VS



X-RAY IMPORTANT

- SOFT TISSUE VS. FRACTURE
- +/- SUBLUXATION



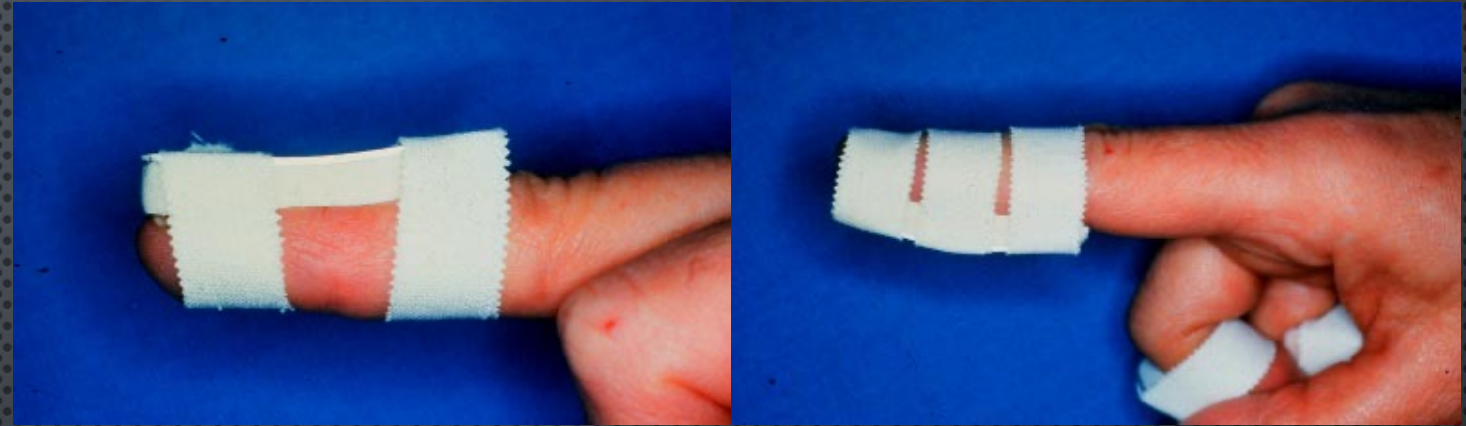
MALLET FINGER

PATIENT EDUCATION

- SPLINT APPLICATION
- PERMANENT SWELLING
- MINOR EXTENSION DEFICIT (10 -15 DEGREES)



MALLET FINGER



- TREATMENT - SPLINT
DIP IN FULL
EXTENSION X 8 WEEKS



Compare to
Dr. Scholl's
Super
Moleskin™

CAREONE™ SUPER MOLESKIN

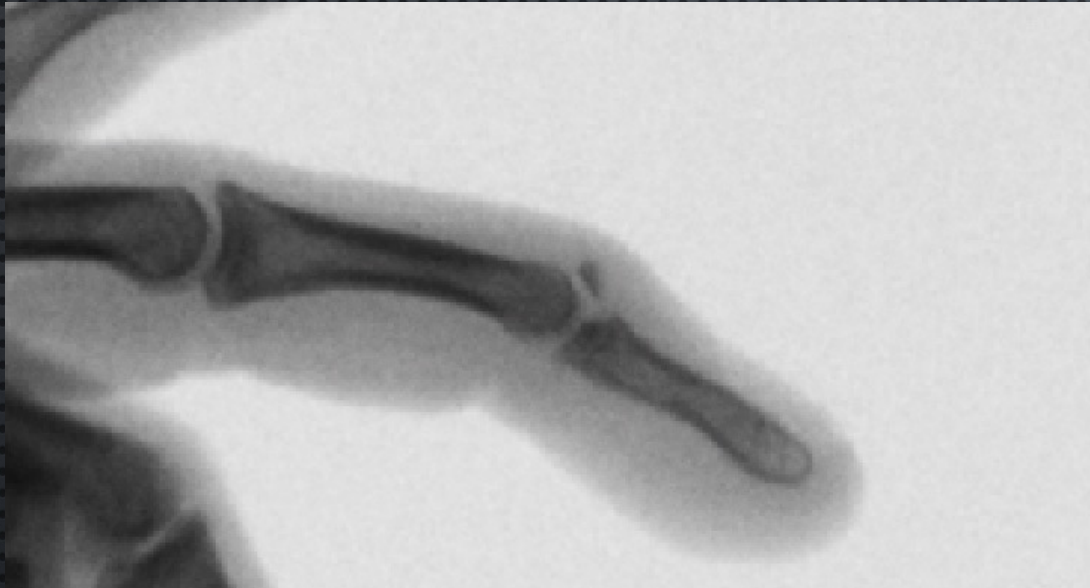
- Protects sore, tender areas
- Extra thick and soft durable fabric
- Super adhesive holds fabric firmly
- Hypo-allergenic
- Will not snag hosiery

3 STRIPS
4 5/8" x 3 3/8"



CASE

14 YEAR-OLD GIRL, JAMMED HER FINGER **5 WEEKS** AGO
WHILE PLAYING BASKETBALL



**Cannot reduce fragment
with extension!!**

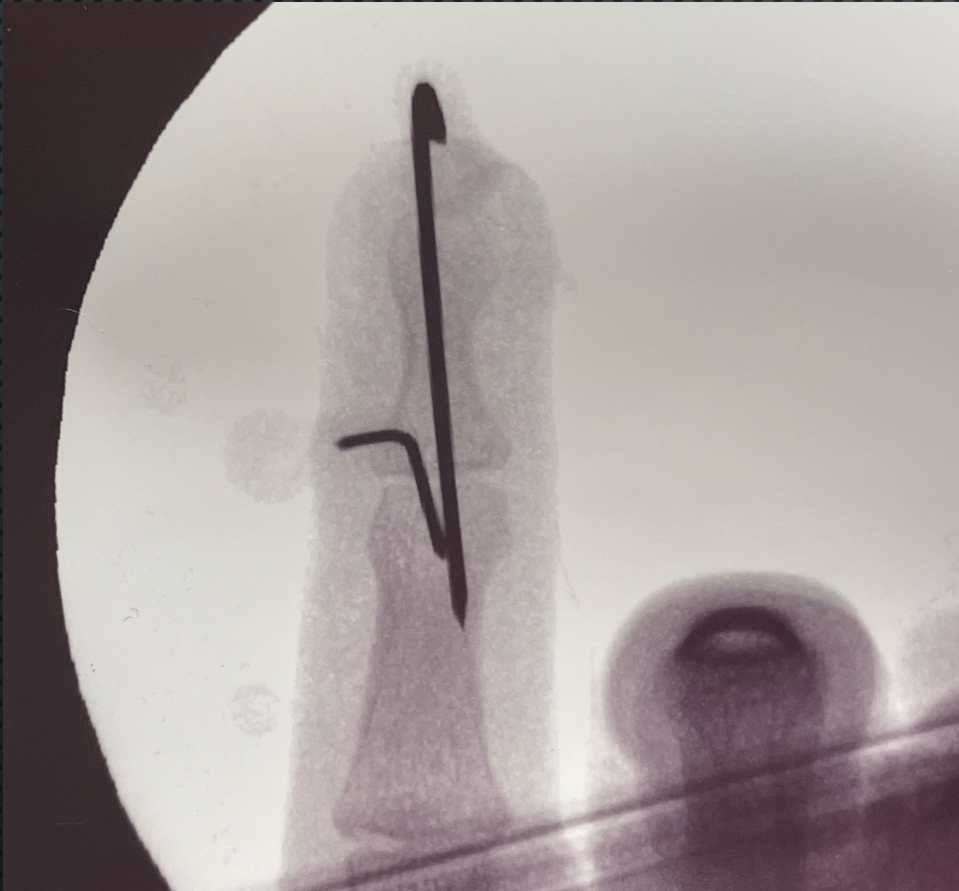


DECIDES TO PLAY BALL...

...FIX LATER!



OPEN REDUCTION AND PINNING



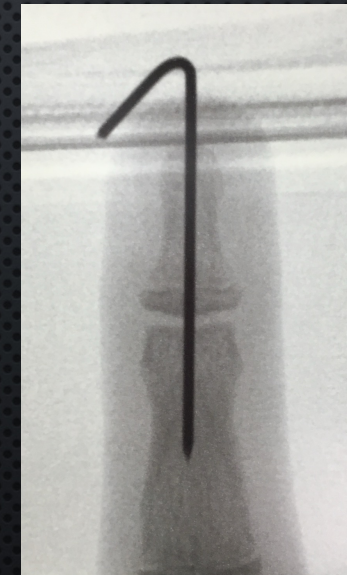
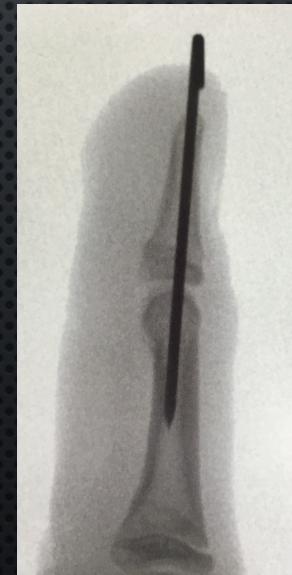
REHAB

- PINS COVERED WITH DRESSING, FINGER SPLINTED IN EXTENSION FOR 5-6 WEEKS

BEWARE: SEYMOUR FRACTURE

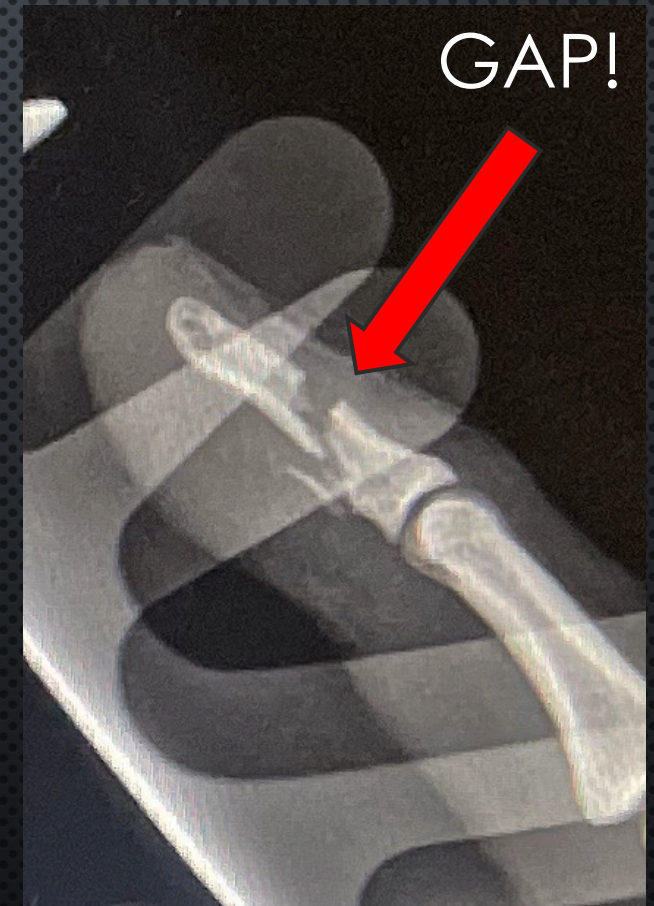


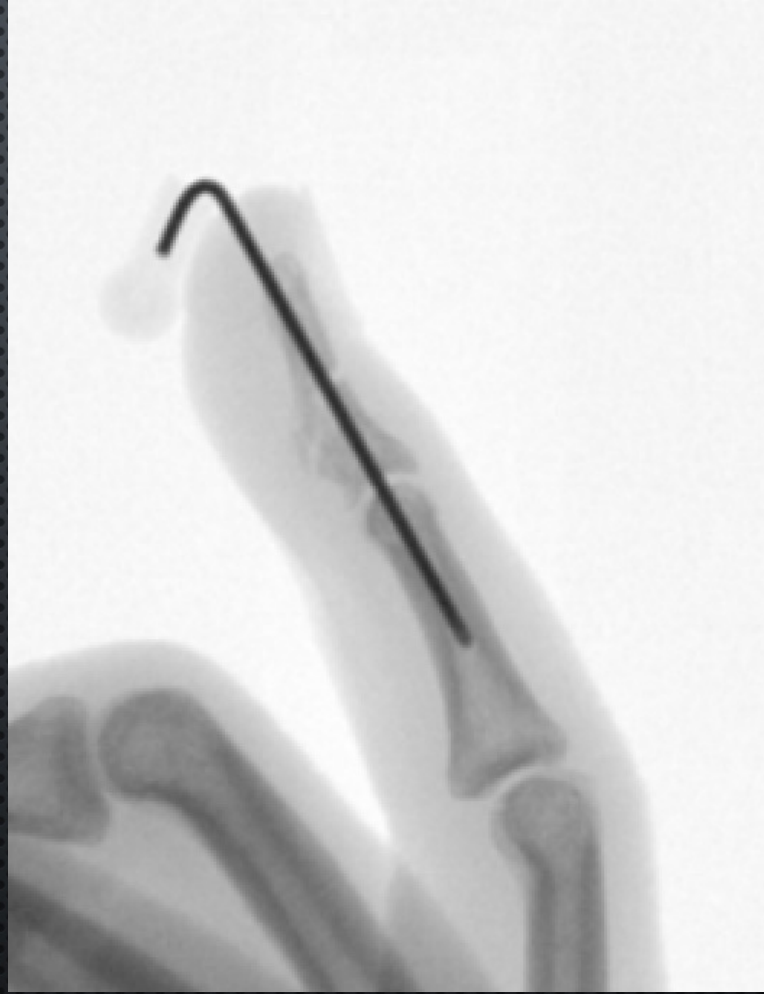
- THIS IS AN **OPEN FRACTURE**
- NEEDS TO GO TO ER IMMEDIATELY
- NEEDS ANTIBIOTICS, ACUTE DEBRIDEMENT, REPAIR OF NAIL BED, AND PINNING



CASE

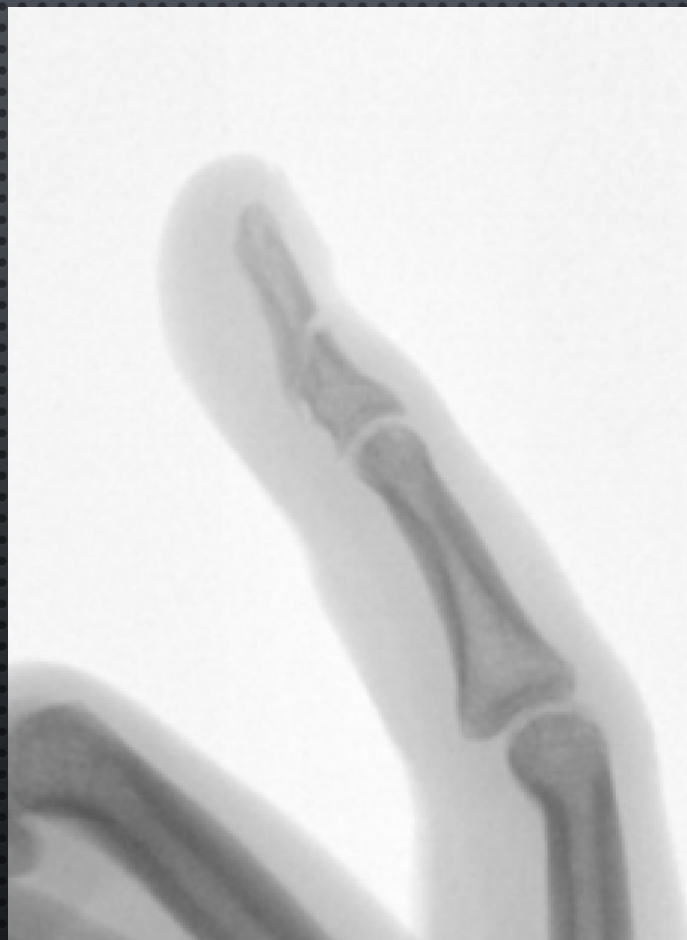
18 Y/O DIVISION 1 COMMITTED FOOTBALL PLAYER
– ACUTE NAIL BED INJURY IN GAME





5 WEEKS

2 MONTHS



“JAMMED” OR DISLOCATED
FINGER

PROXIMAL INTERPHALANGEAL (PIP) JOINT DISLOCATIONS

- DISLOCATIONS
- FRACTURE DISLOCATIONS



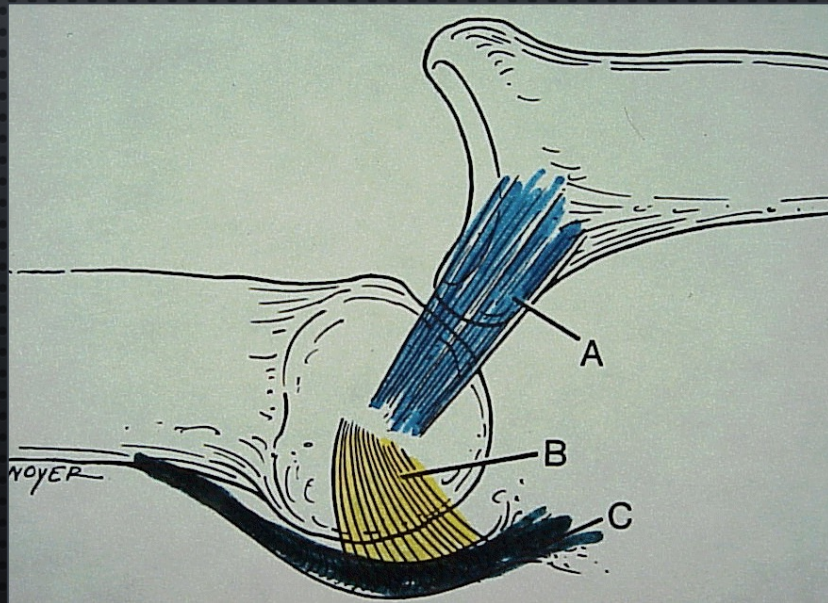
PIP DISLOCATION

- **DORSAL (MOST COMMON)**
 - VOLAR PLATE TEAR
 - POSSIBLE COLLATERAL LIGAMENT TEAR
- **LATERAL**
- **VOLAR**
 - CENTRAL SLIP AVULSION (BOUTONNIERE)



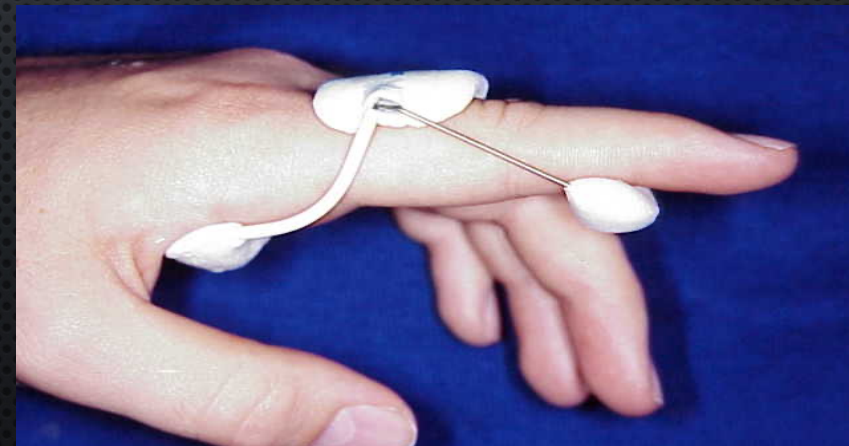
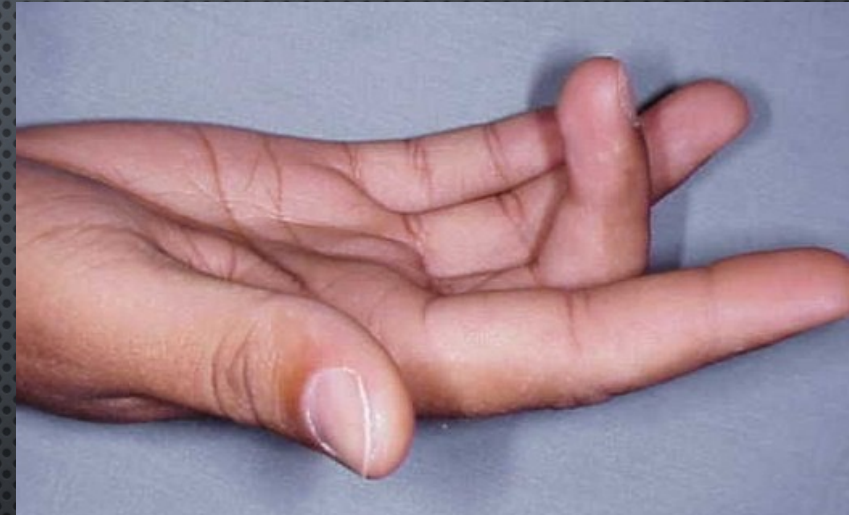
DORSAL PIP DISLOCATION

- HYPEREXTENSION OF PIP
- CLOSED REDUCTION, +/- LOCAL ANESTHESIA
- EVALUATE STABILITY - USUALLY STABLE FOLLOWING REDUCTION
- BUDDY TAPE WITH EARLY ROM



DORSAL PIP DISLOCATION

- XRAY TO EVALUATE FOR FRACTURE OR SUBLUXATION
- STIFFNESS – “PSEUDO-BOUTONNIERE”
- RE-EVALUATE AT 3 AND 6 WEEKS
 - HAND THERAPY IF NOT PROGRESSING
- STIFFNESS AND PAIN FOR A YEAR;
FAT FOREVER



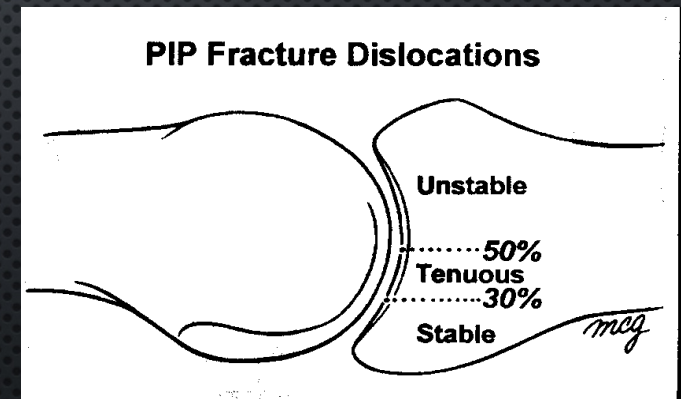
PIP FRACTURE-DISLOCATION

- USUALLY DORSAL DISLOCATIONS WITH VOLAR FRACTURES
- RESULT FROM AXIAL LOADS APPLIED TO EXTENDED DIGITS
- ****NEEDS AN XRAY WITHIN FIRST SEVERAL DAYS OF INJURY****



PIP FRACTURE-DISLOCATION

- STABLE
 - IMMOBILIZE 7-10 DAYS, THEN ROM
 - EXTENSION BLOCK SPLINTING
- UNSTABLE
 - DYNAMIC SKELETAL TRACTION
 - ORIF
 - HEMI-HAMATE RECONSTRUCTION

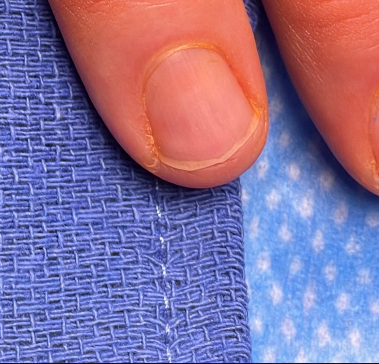
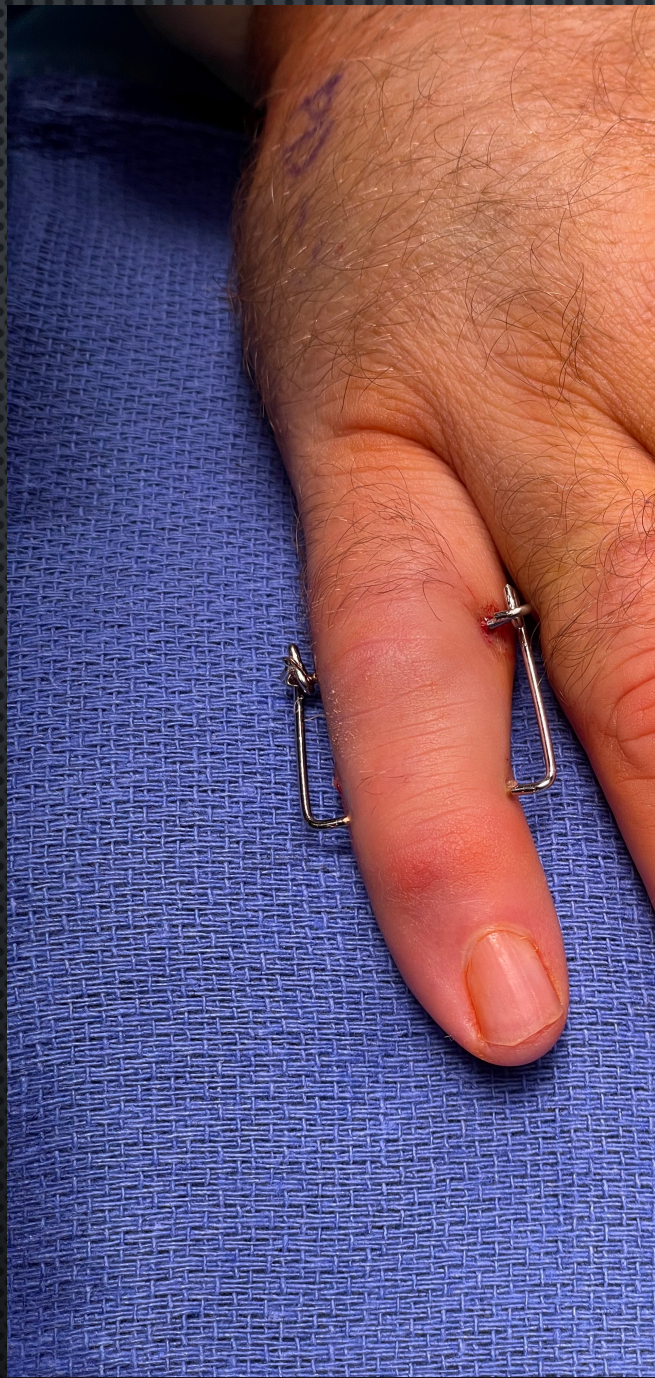


CASE

59 MALE, 1 WEEK AFTER SLIP AND FALL, RIGHT
SMALL FINGER PIP JOINT FX/DISLOCATION







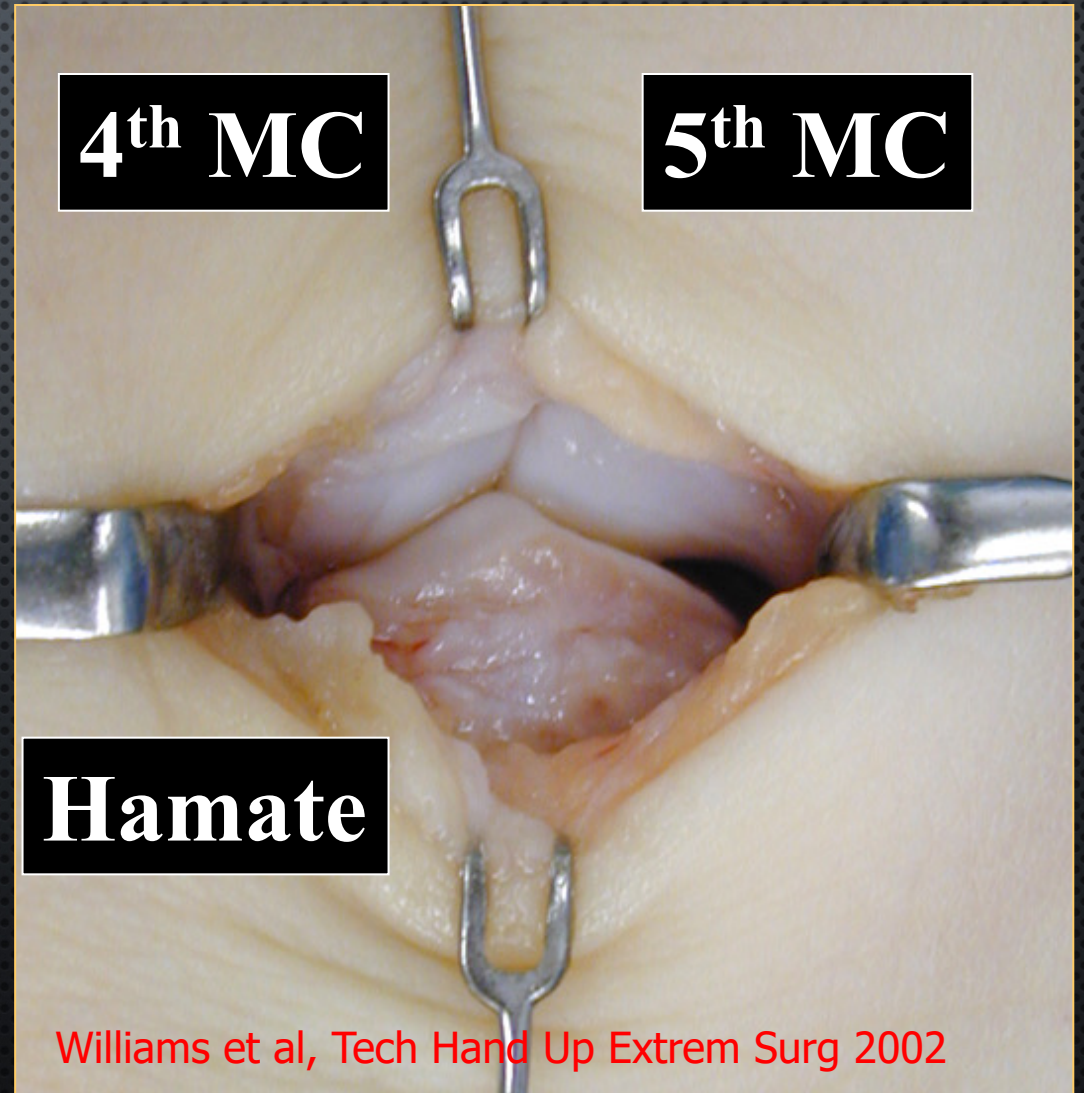
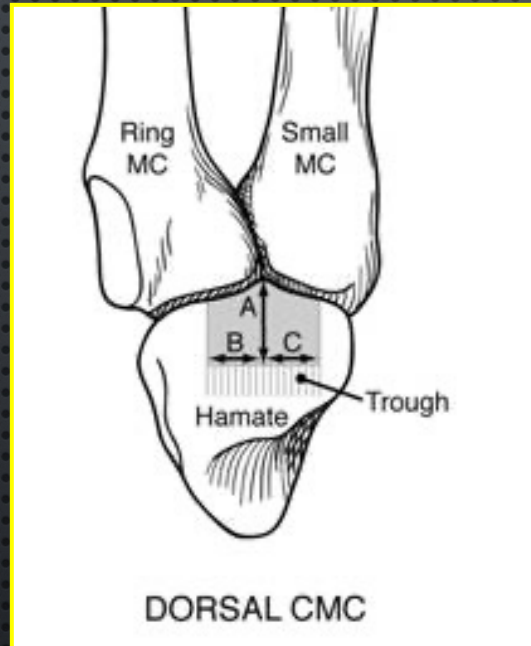
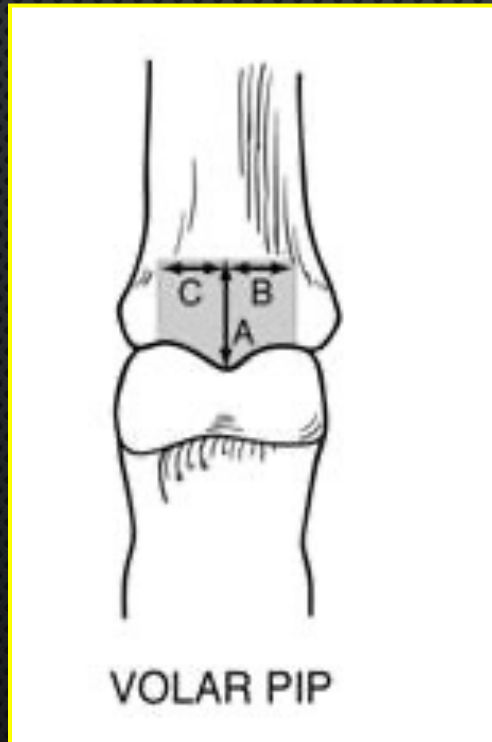
REHAB

- BEGIN AROM & PROM IMMEDIATELY
- DAILY PIN CARE WITH PEROXIDE USING A Q-TIP

2 MONTHS POST-OP

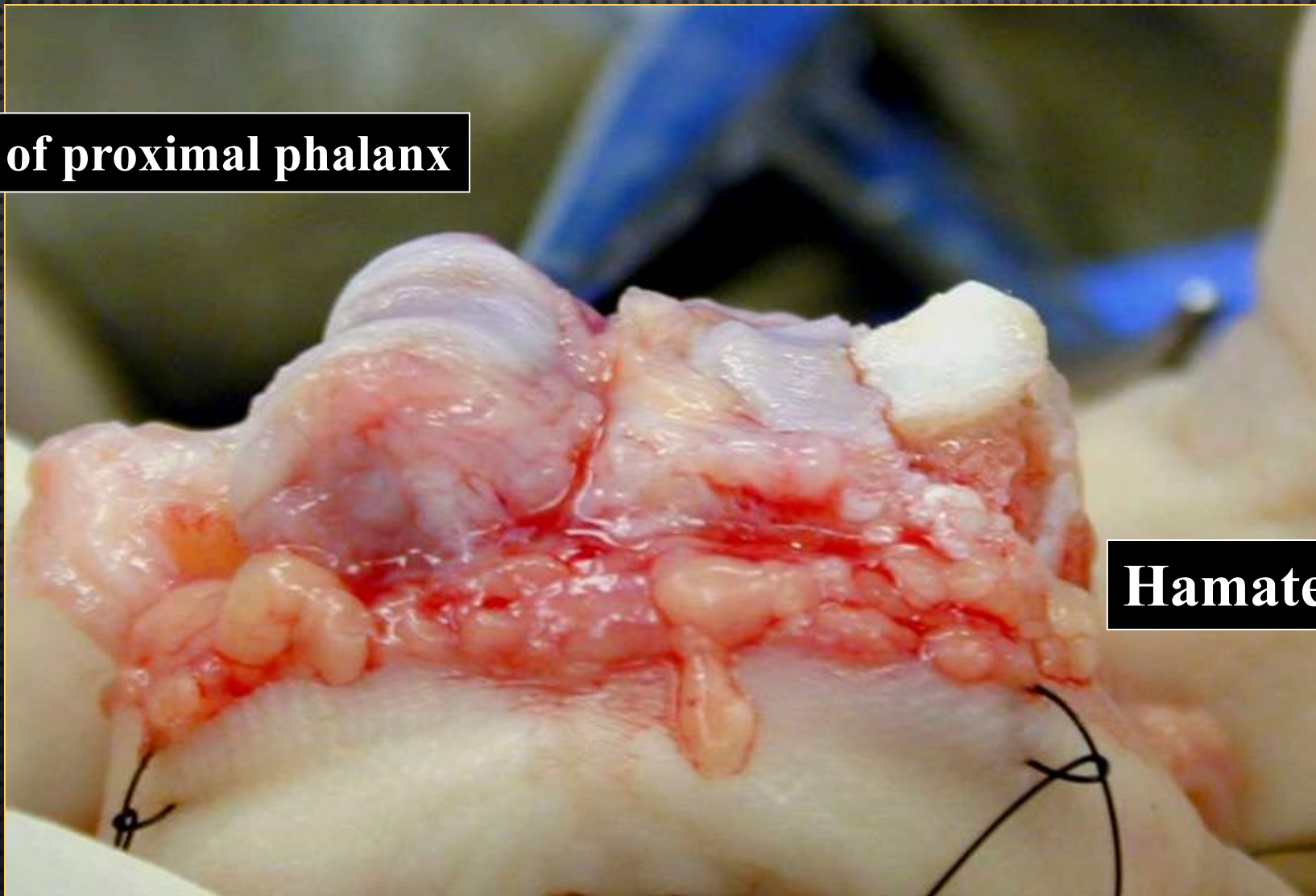


Hemihamate Arthroplasty

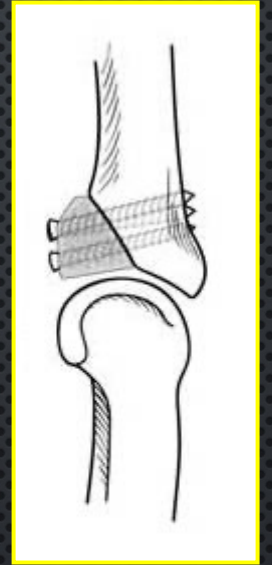


Hemihamate Arthroplasty

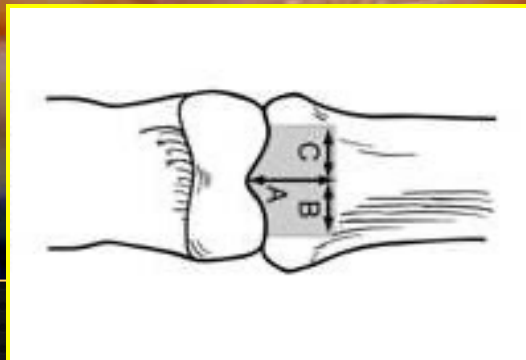
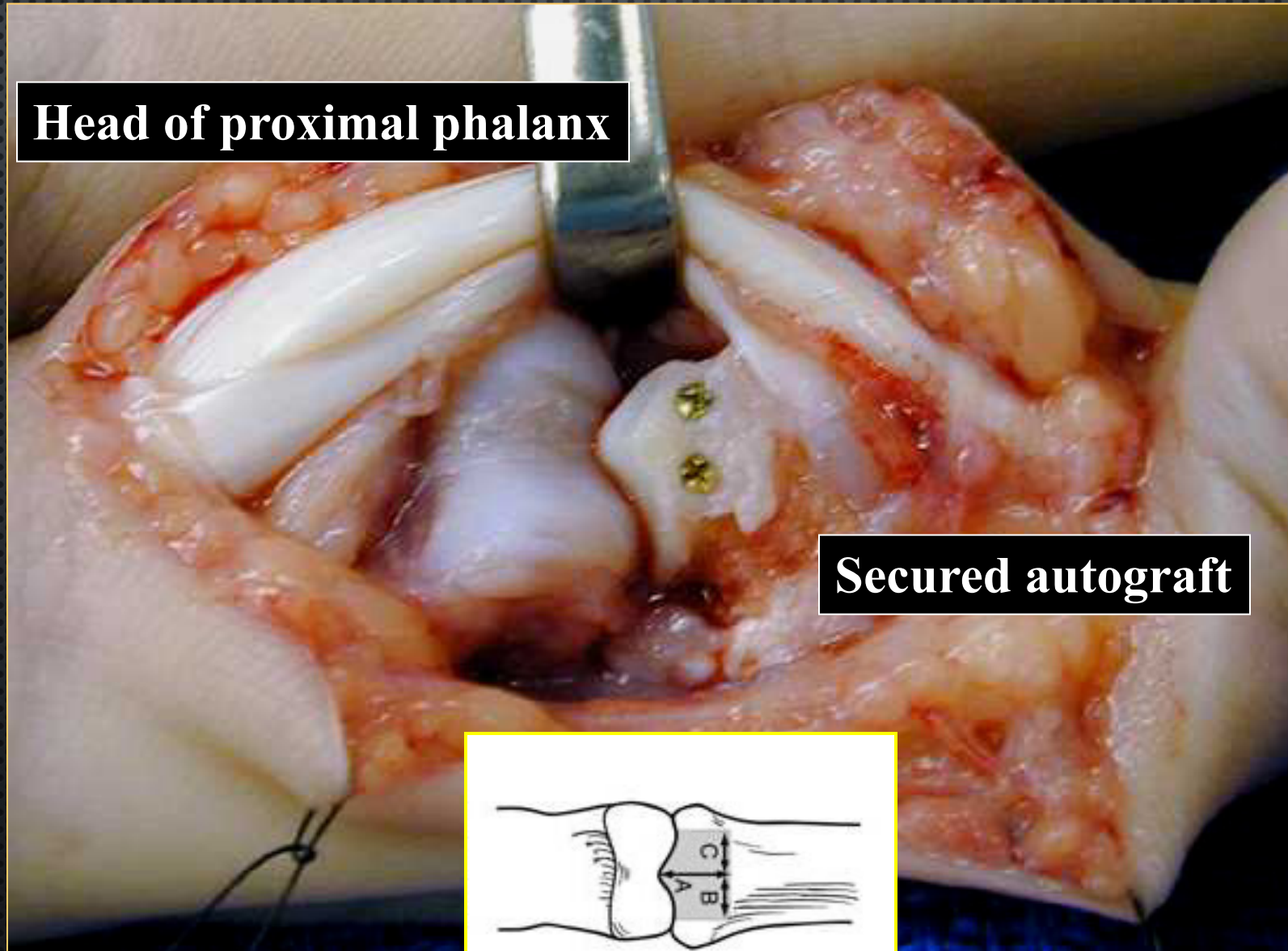
Head of proximal phalanx



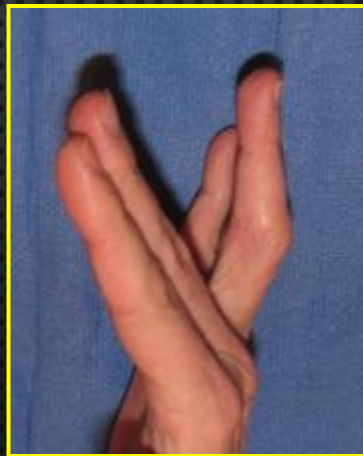
Hamate autograft



Hemihamate Arthroplasty



Hemihamate Arthroplasty



Average PIP extension
19° (0-80°)

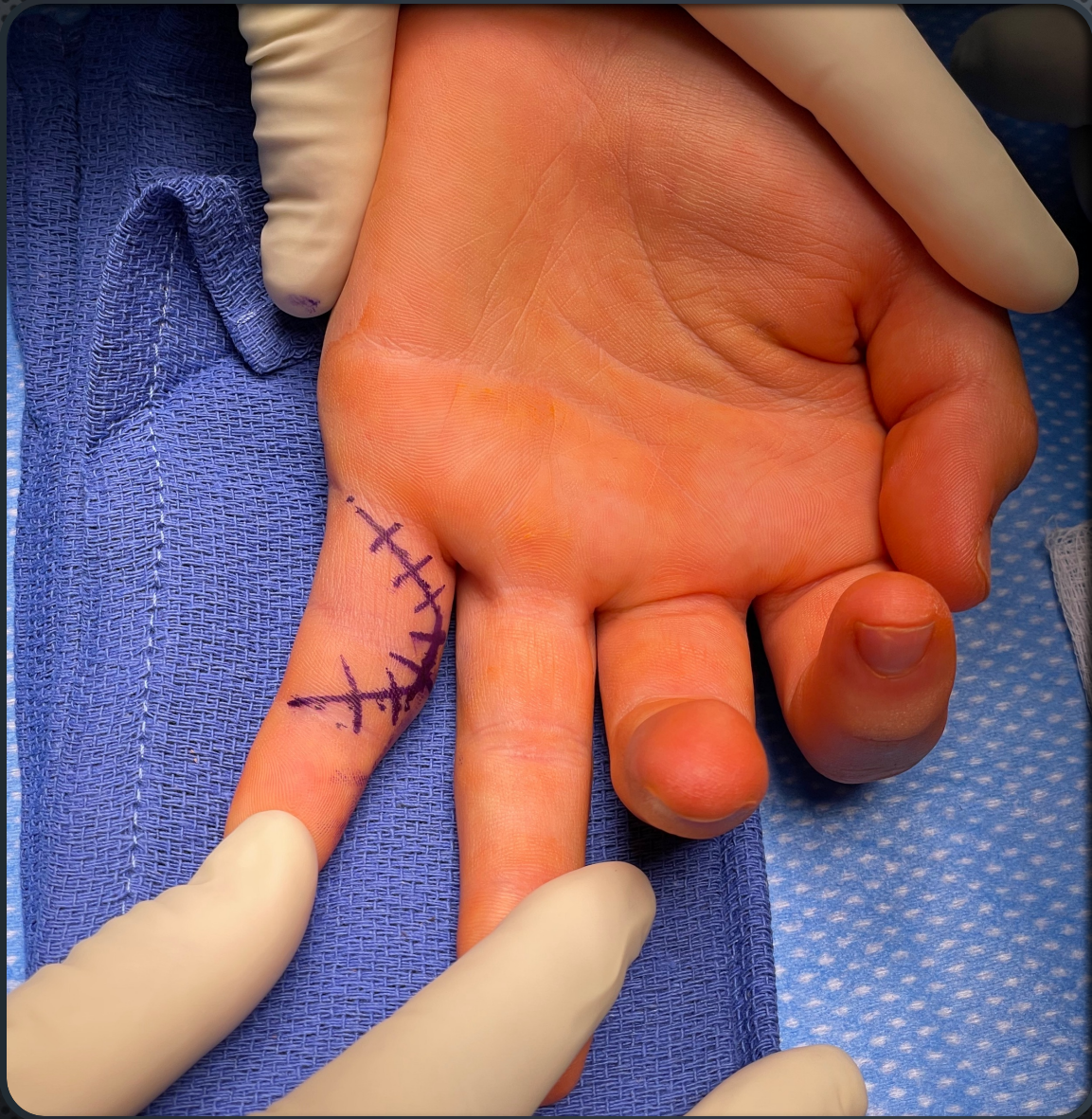


Average PIP flexion
70° (45-105°)

CASE

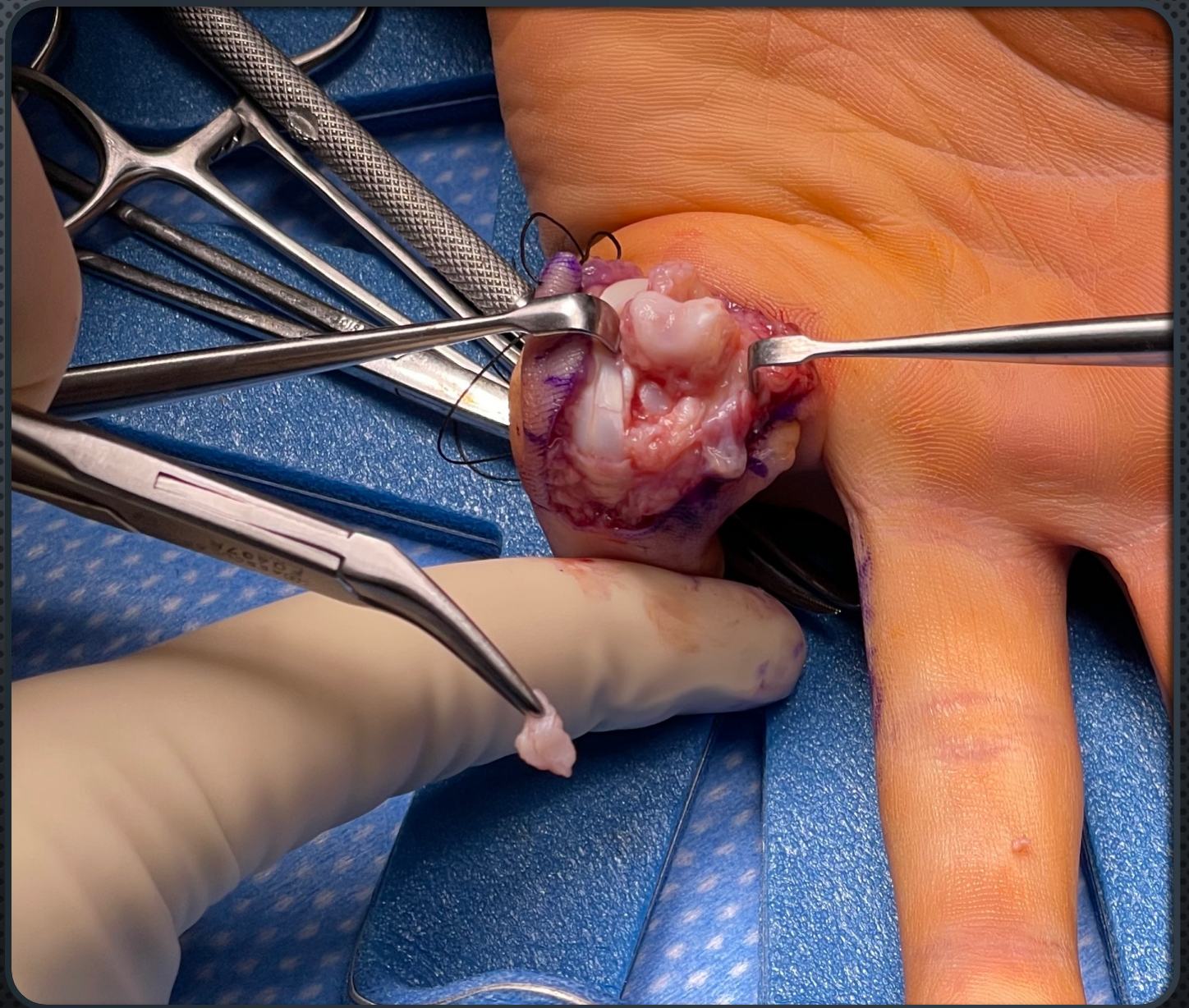
14 MALE, 2 DAYS AFTER AFTER "JAMMING" FINGER
DURING A PIN MANEUVER AT A WRESTLING MATCH -
LEFT SMALL FINGER PIP JOINT FX/DISLOCATION



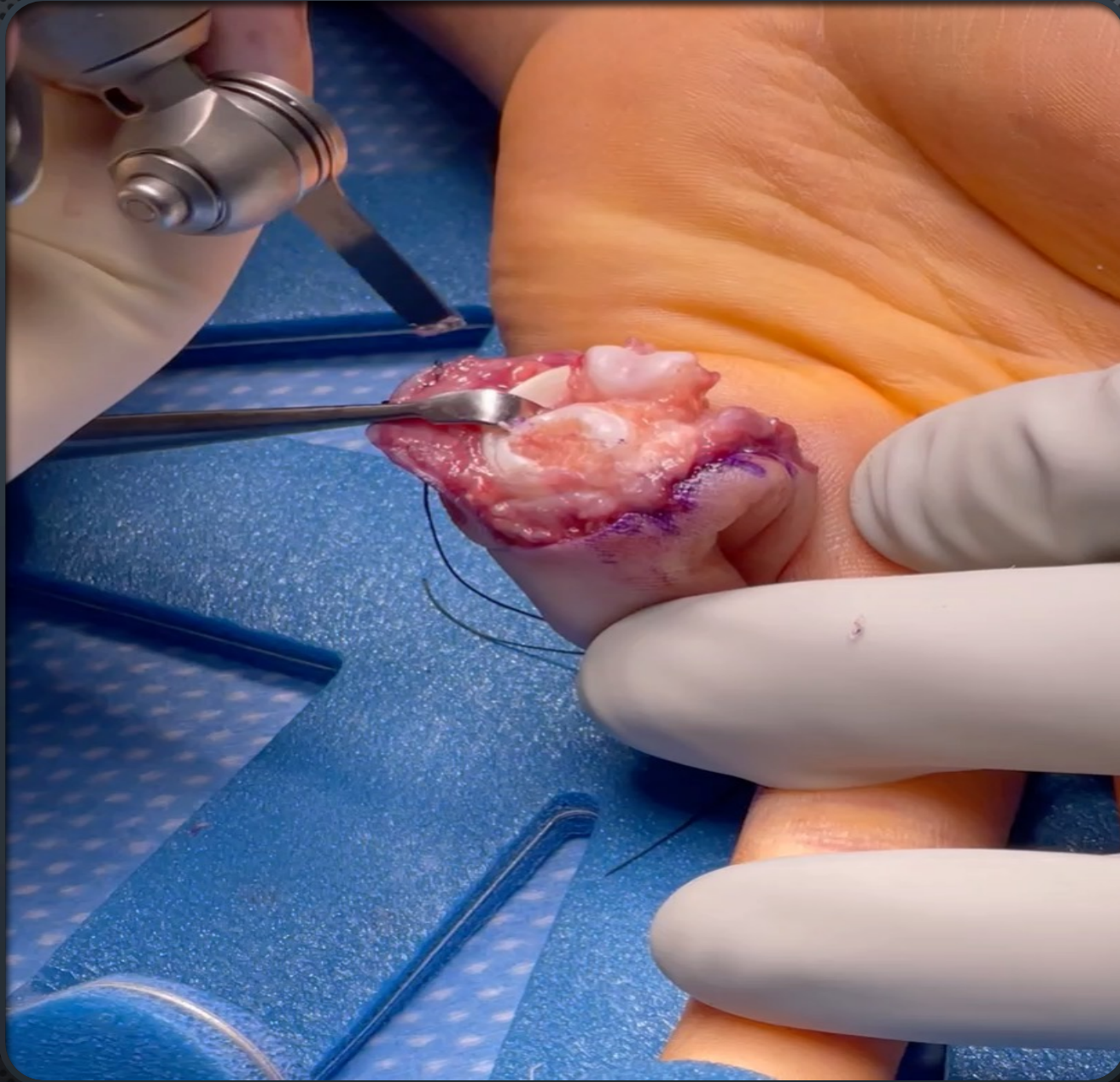


MODIFIED
BRUNNER
INCISION

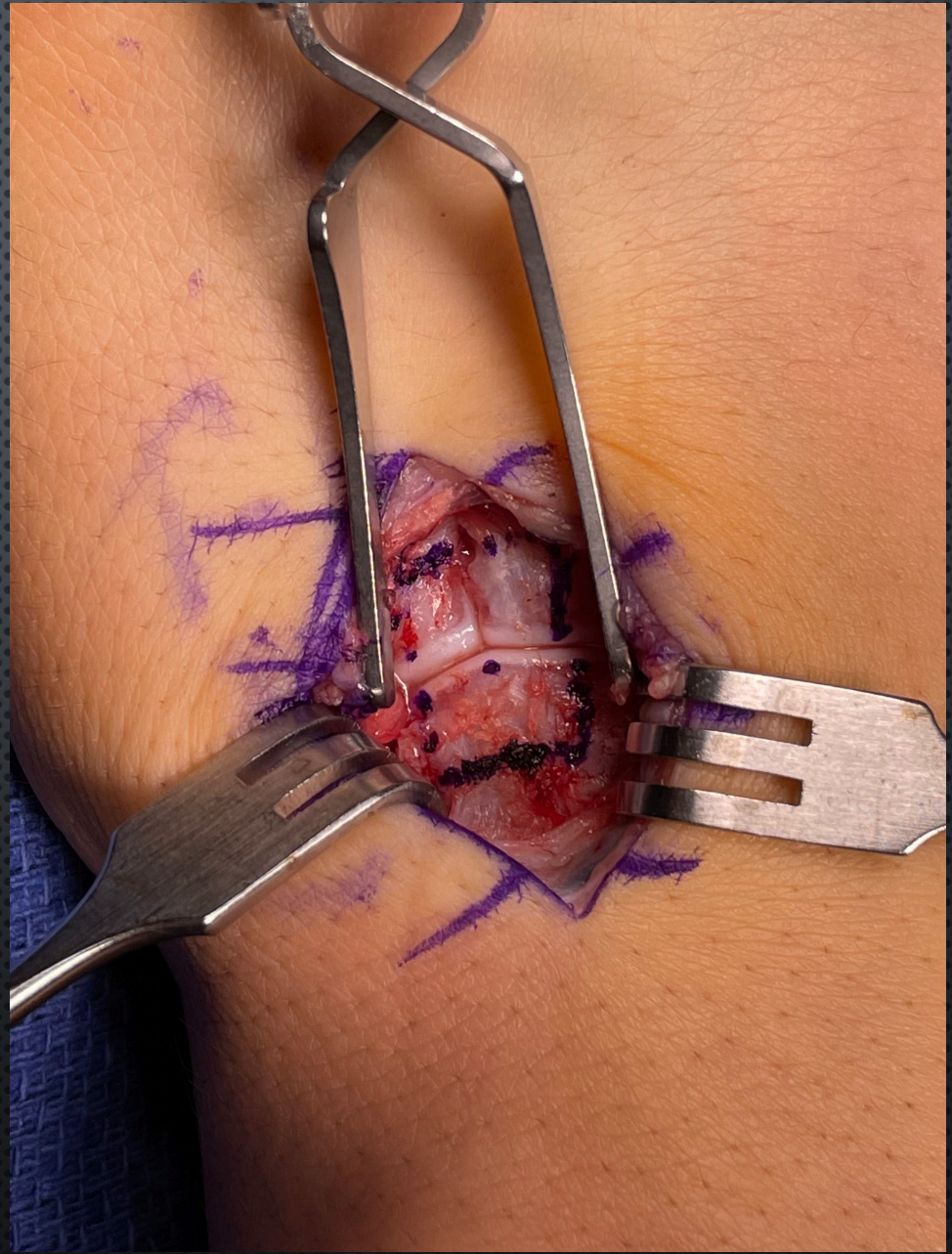
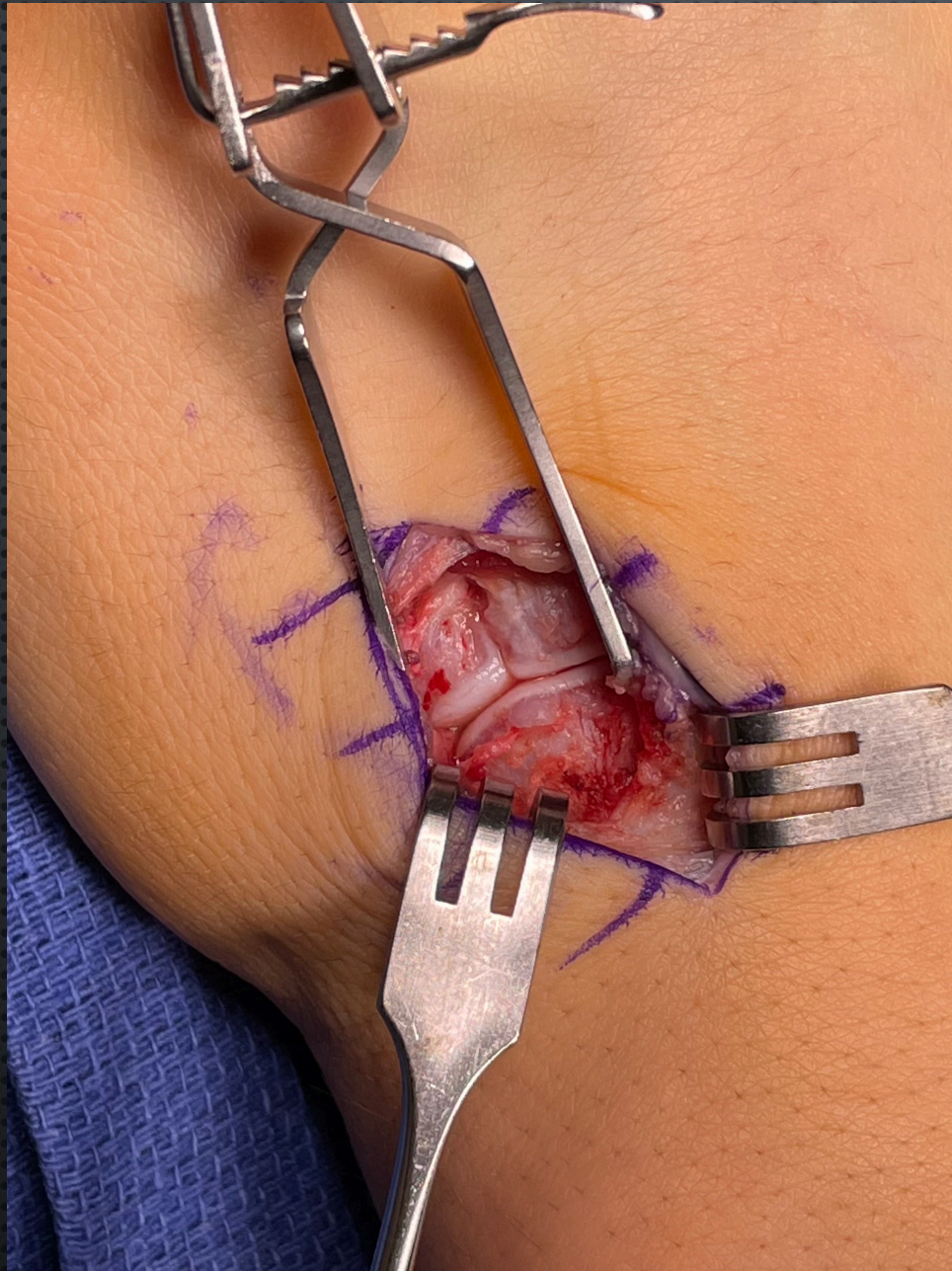
TRASHED
ARTICULAR
SURFACE







SHOTGUN APPROACH



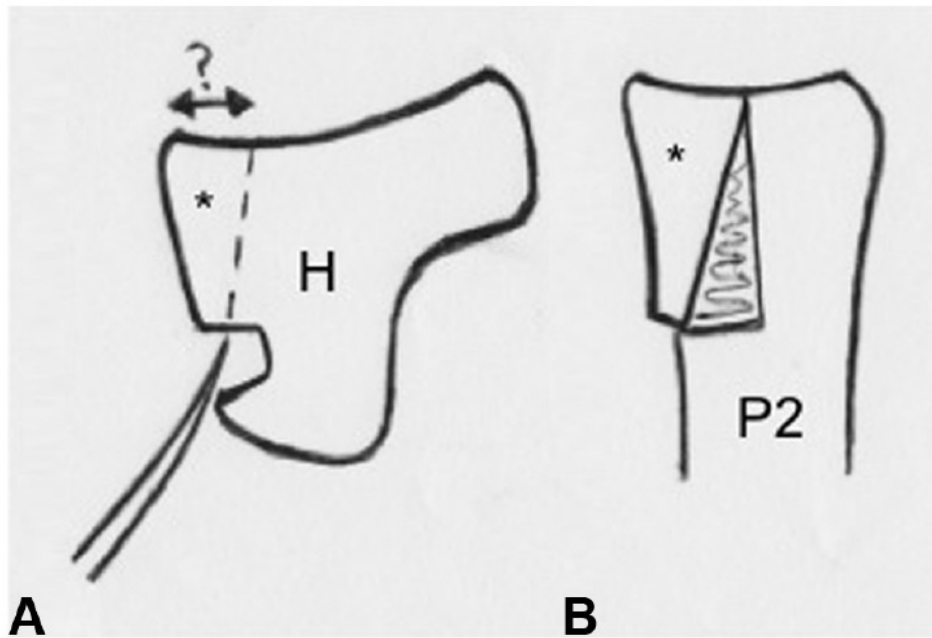


FIGURE 1: Challenges of current anterograde hemi-hamate harvesting. **A** A proximal trough in the hamate is required to allow a starting point for the osteotome. Cutting the graft at the articular surface is performed blindly and therefore proper size is difficult to judge. **B** The shape of the graft requires backgrafting. *Hemi-hamate graft. H, hamate; P2, middle phalanx.

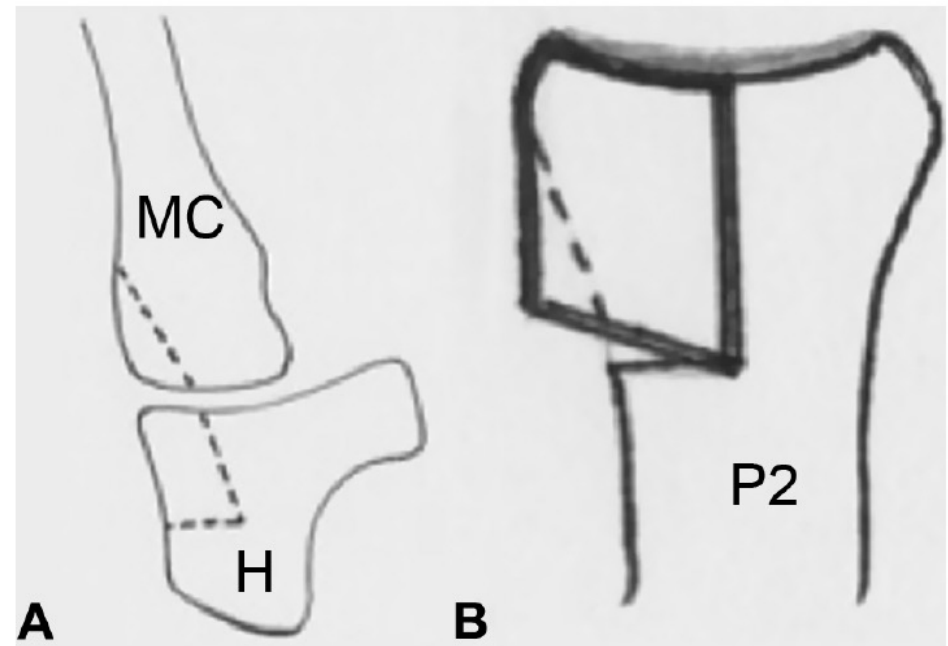
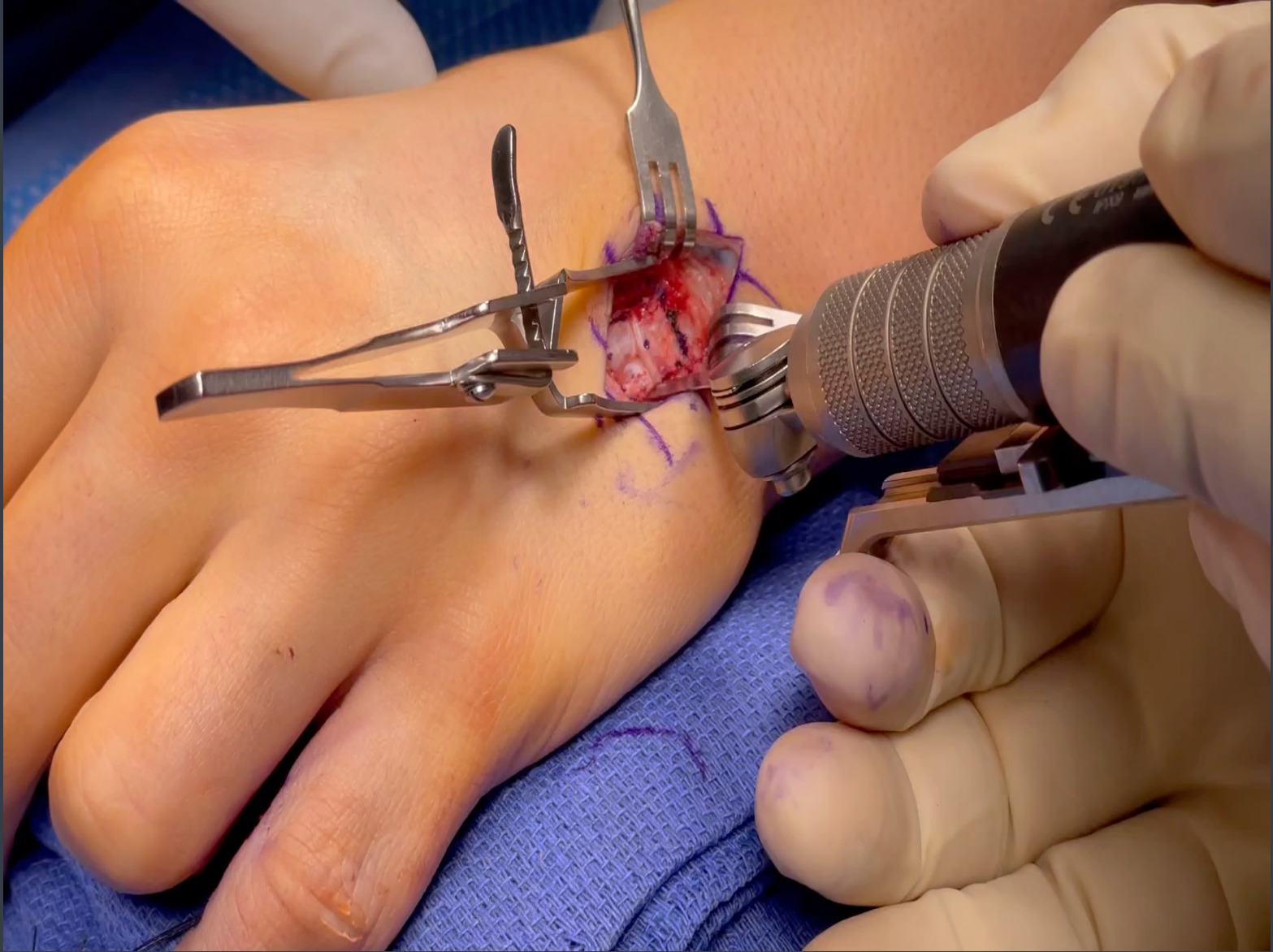
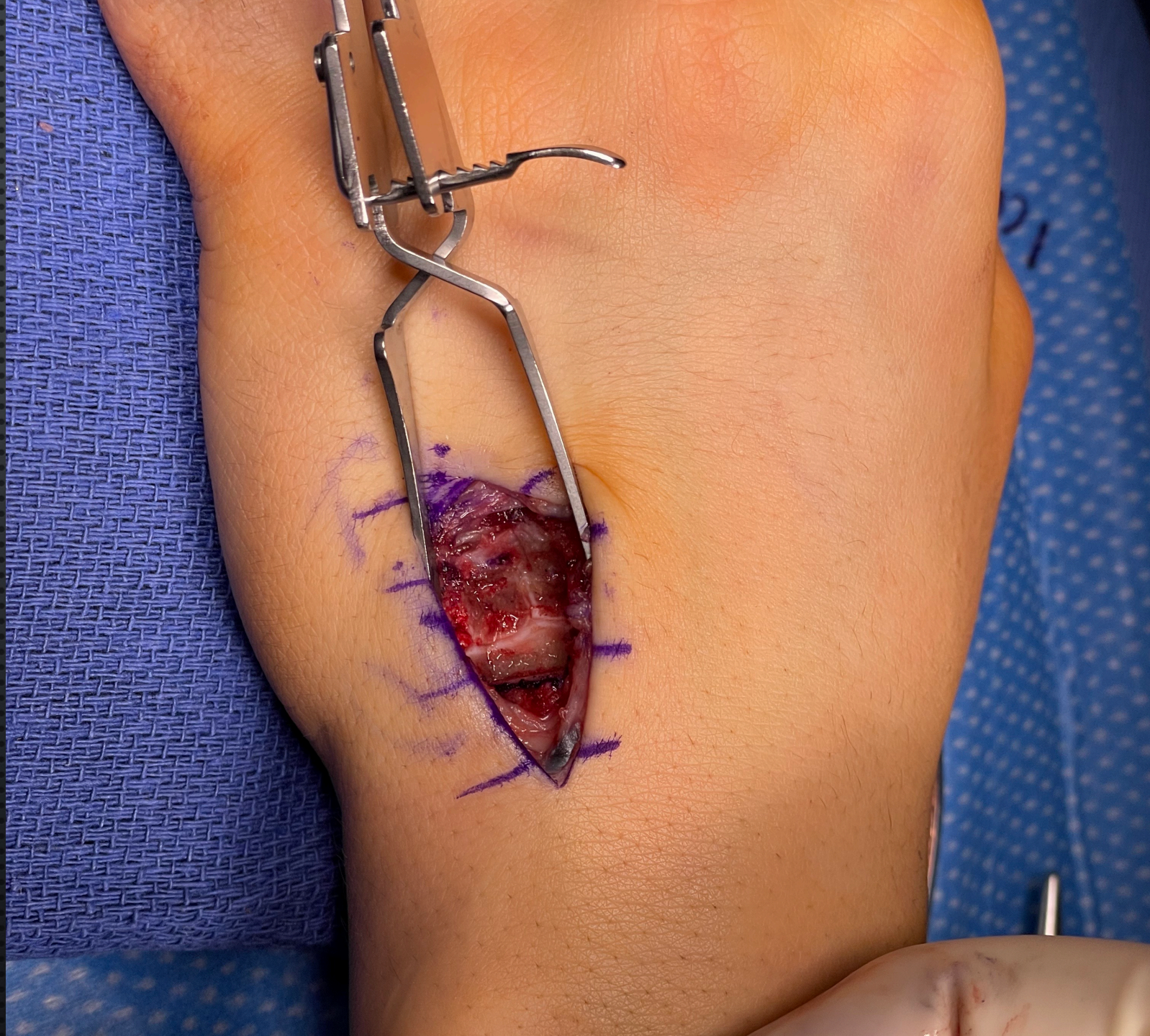
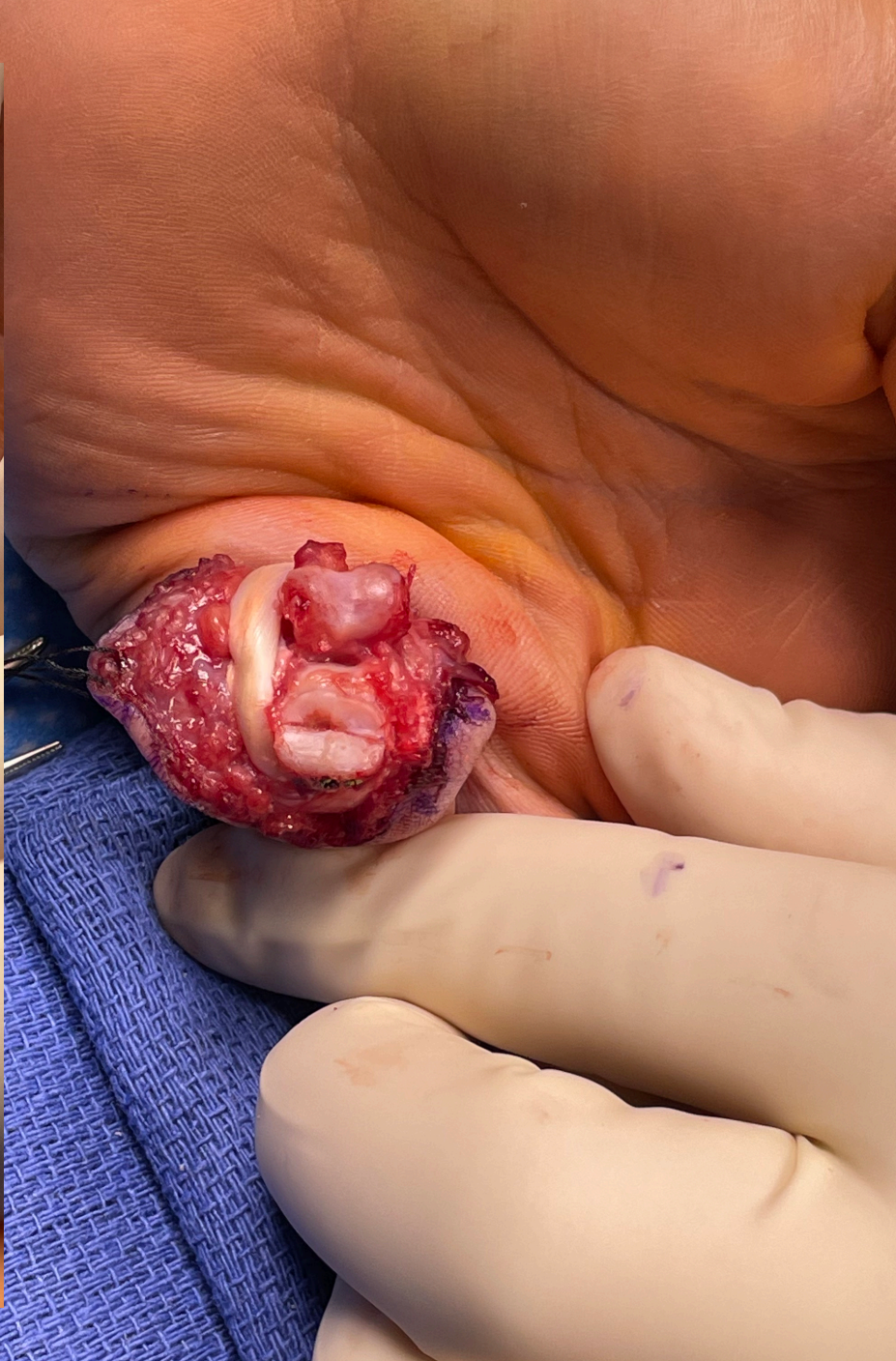
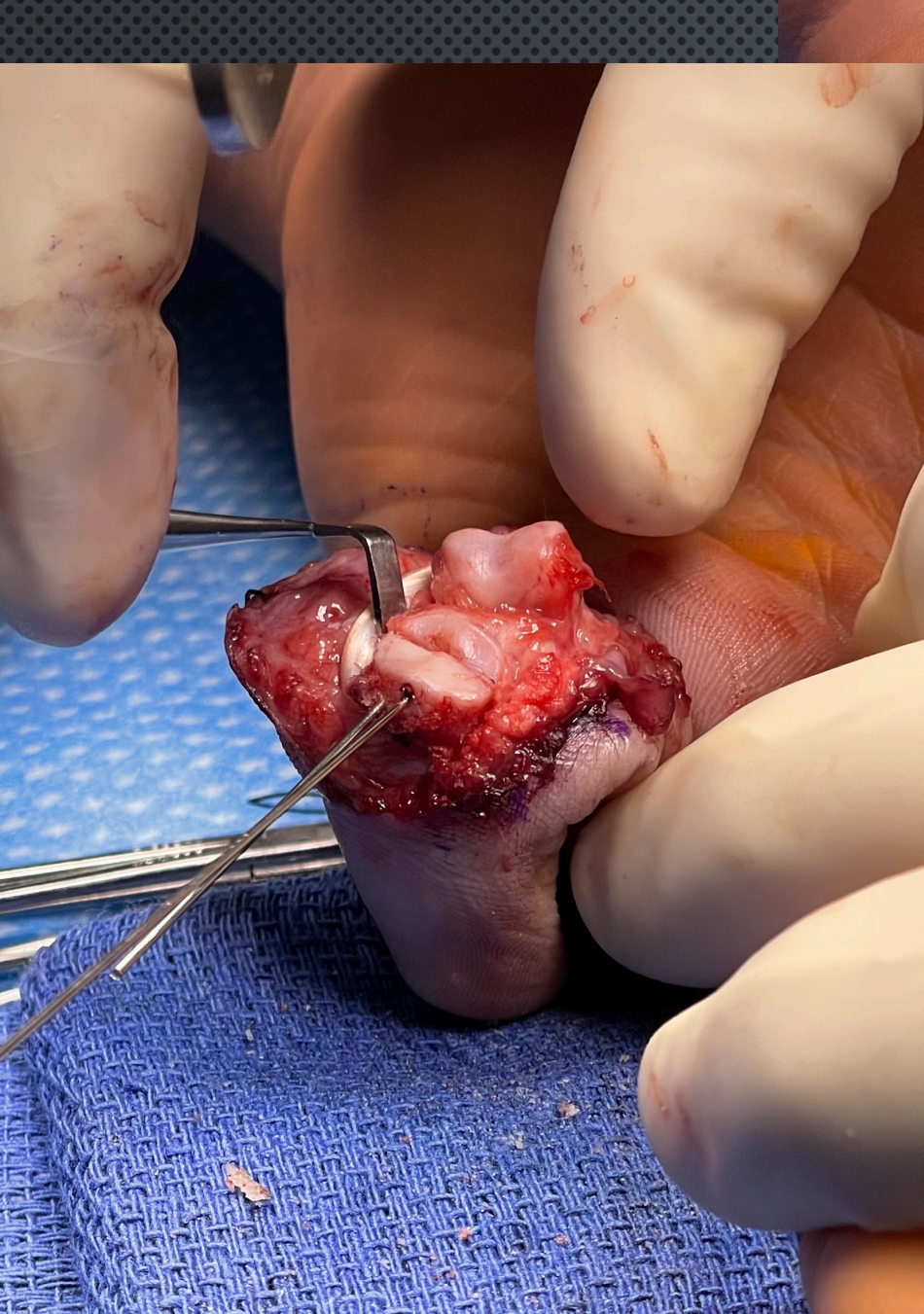


FIGURE 2: Illustration of orientation of the hemi-hamate graft. **A** A portion of the fourth and fifth metacarpal bases is removed to facilitate graft harvest. **B** The shape of the graft allows for proper orientation of the middle phalanx joint surface. The graft can be shaped with a sagittal saw once fixed. H, hamate; MC, metacarpal; P2, middle phalanx.











REHAB

- BEGIN ROM AT 3-5 DAYS POST-OP
- EXTENSION SPLINT

3 WEEKS POST-OP



6 WEEKS POST-OP

RTP (WRESTLING) 8
WEEKS



“JAMMED” THUMB

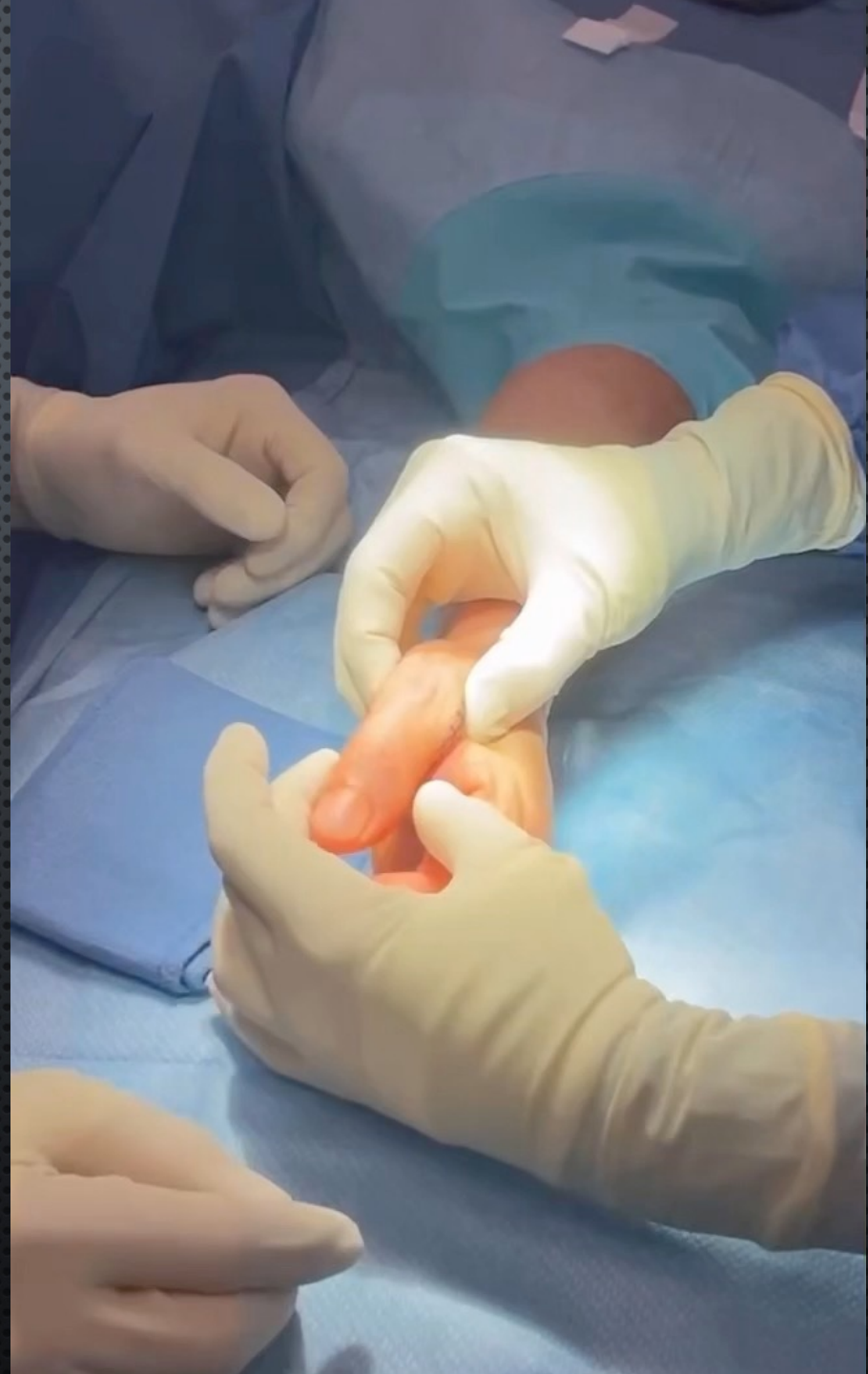
“JAMMED” THUMB

- ULNAR COLLATERAL LIGAMENT
 - SKIER’S THUMB (ACUTE)
 - GAMEKEEPER’S THUMB (CHRONIC)
- RADIAL COLLATERAL LIGAMENT



SKIER'S THUMB

- RADIALLY DIRECTED FORCE
- UCL IMPORTANT FOR STRONG PINCH
- EXAM
 - TENDER, SWOLLEN OVER UCL
 - TEST FOR STABILITY IN EXTENSION AND 30° FLEXION



SKIER'S THUMB



SKIER'S THUMB

STENER LESION

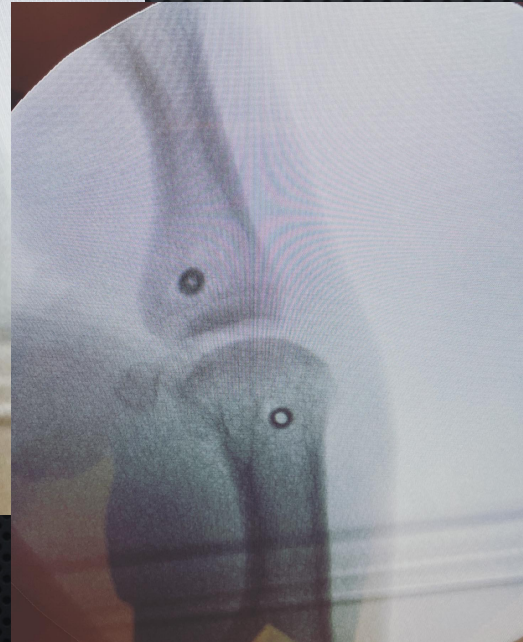
- UCL "FLIPPED" AWAY FROM DISTAL INSERTION
- ADDUCTOR APONEUROSIS INTERPOSED BETWEEN BONE AND UCL
- **REQUIRES SURGERY**



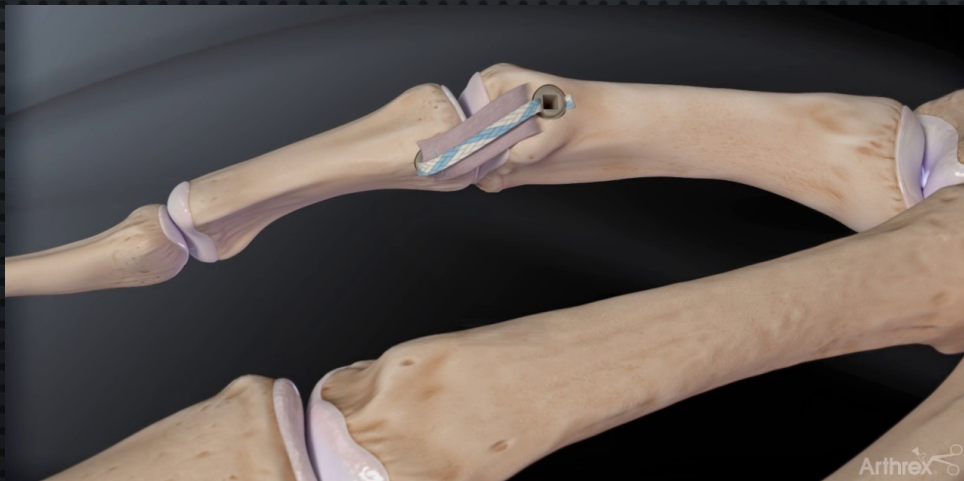
MP COLLATERAL LIGAMENT INJURIES

TREATMENT

- SPRAIN
 - SPLINT 4-6 WEEKS
 - AVOID UNPROTECTED CONTACT SPORTS 3 MONTHS
- SURGICAL INDICATIONS
 - COMPLETE RUPTURE
 - JOINT SUBLUXATION
 - DISPLACED BONY FRAGMENT
 - CHRONIC, SYMPTOMATIC LAXITY



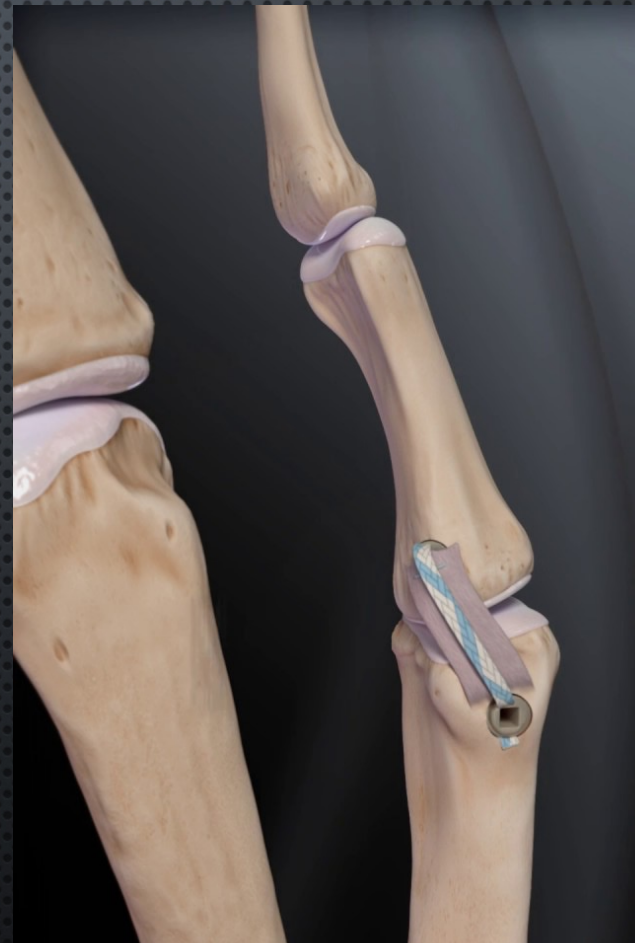
THUMB UCL INTERNAL BRACE



THUMB UCL INTERNAL BRACE

EXPEDITED REHAB

- 3-5 DAYS - SPLINT OFF
- 1-3 WEEKS — RANGE OF MOTION
- 3-5 WEEKS — STRENGTHENING
- AFTER 5 WEEKS — POSSIBLE RTP (SPORT-SPECIFIC)





**when we're done with it.
So now we're going to**

INJURED, SWOLLEN HAND

THE “PAINFUL, SWOLLEN” HAND

- METACARPAL FRACTURES
- MCP COLLATERAL LIGAMENT INJURIES
- CMC DISLOCATIONS
- HOOK OF HAMATE FX (BASEBALL PLAYERS)

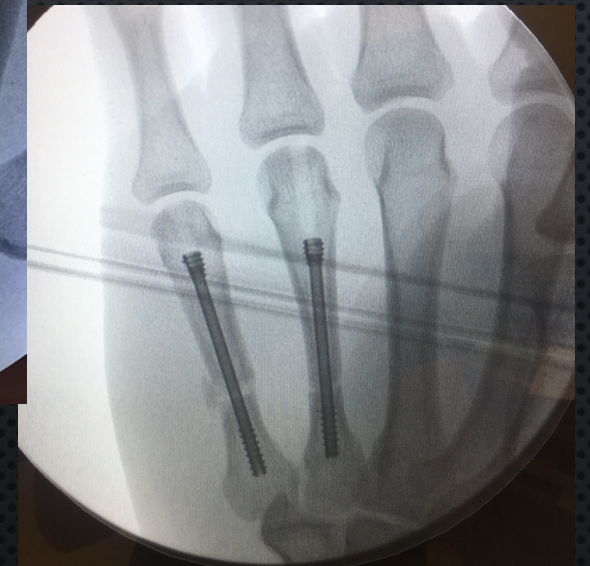
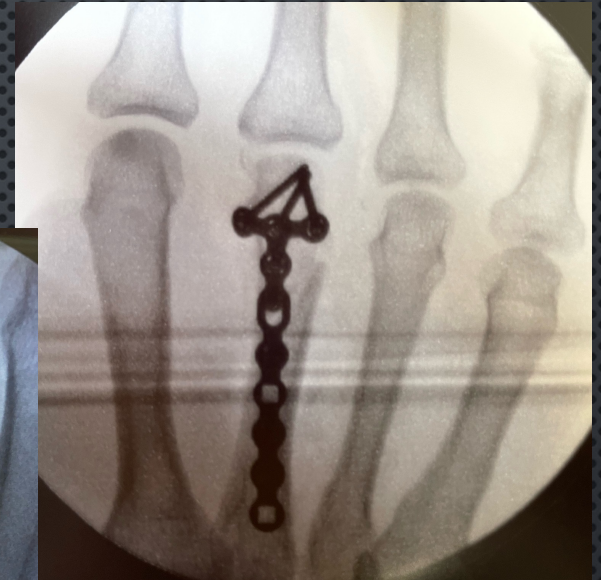
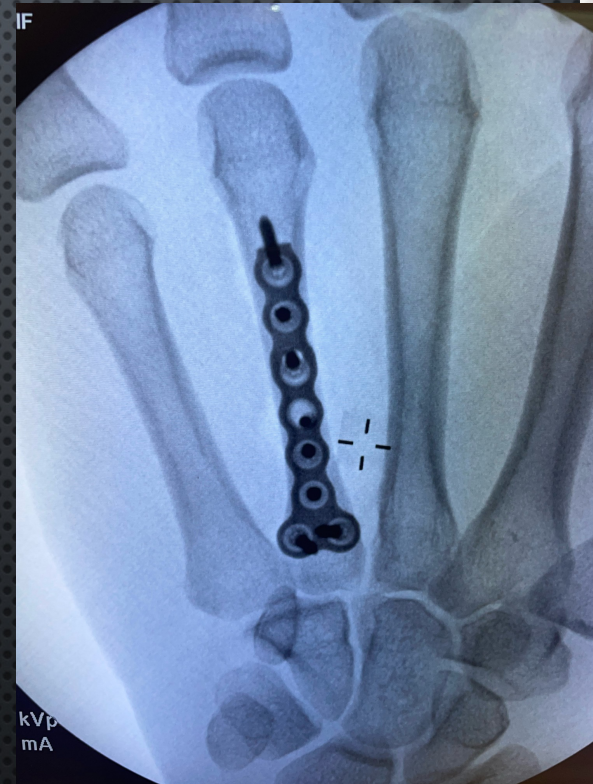


METACARPAL FRACTURES



METACARPAL FRACTURES

- Stable fixation = immediate mobilization
- IM Screw vs. plate & screws
- Bone & soft tissues still needs to heal (3-4wks)



CASE

16 Y/O FOOTBALL PUNTER – MAKES THE TACKLE!!





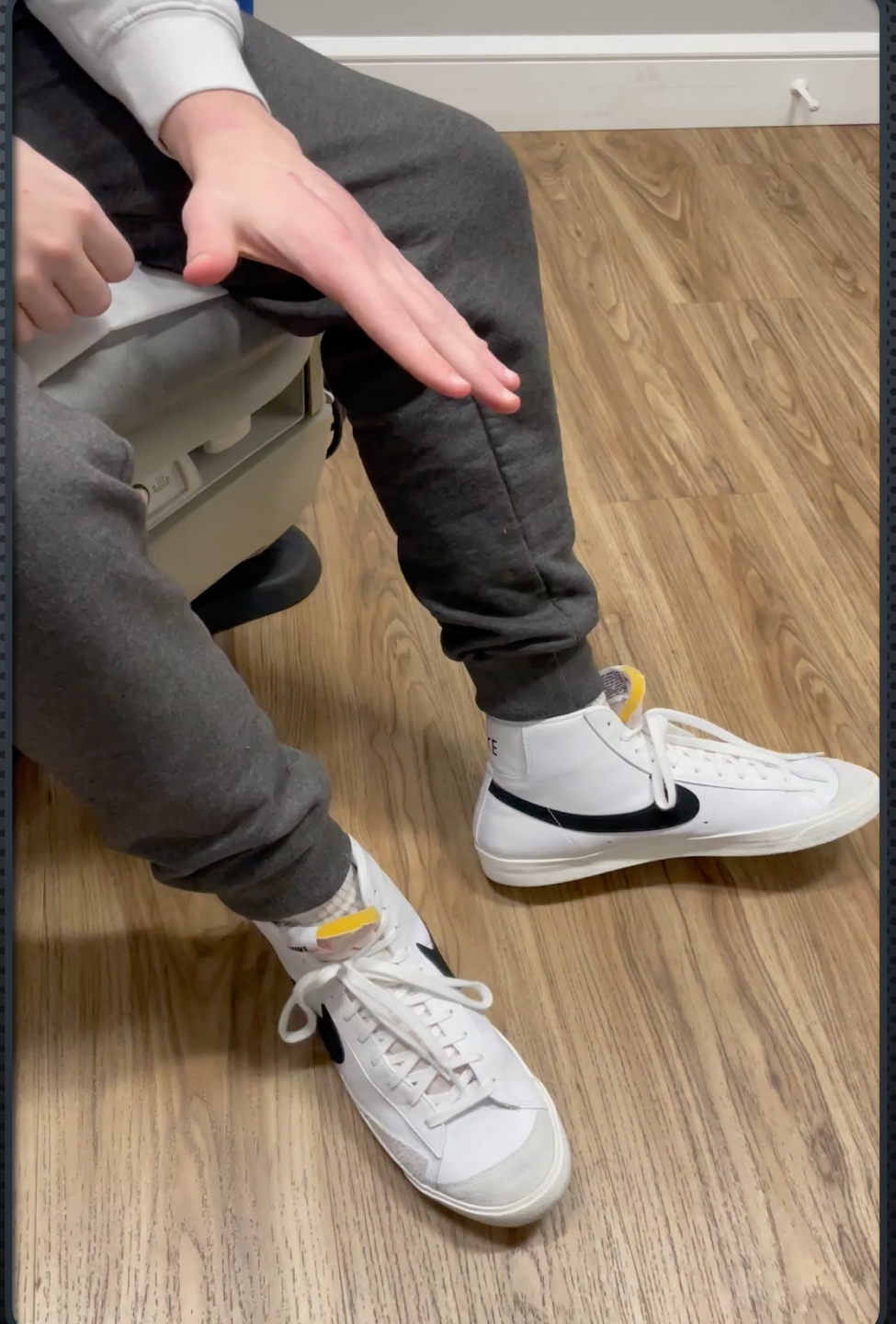


REHAB

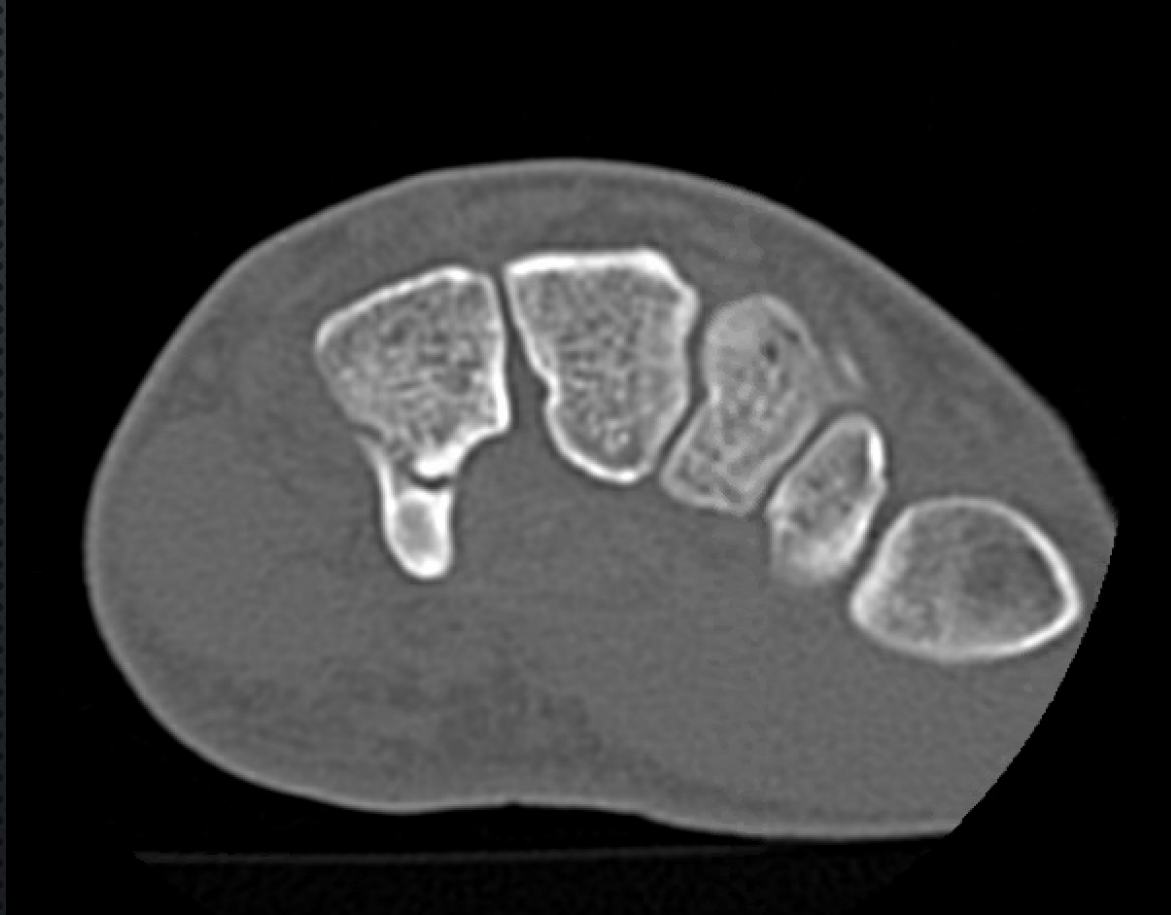
- BEGIN THERAPY, ROM 3 DAYS POST-OP

2 MONTHS POST-OP

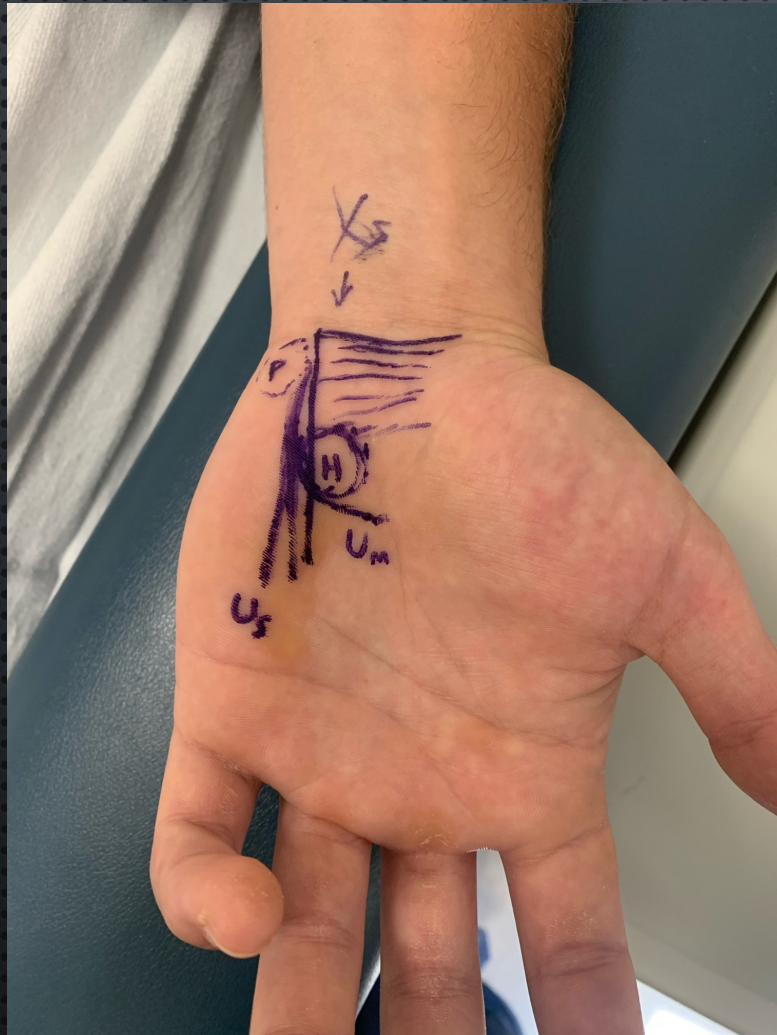
- Returns to swimming
- “He’s having his best swimming season so far. They are county champs, NJATC champs, and conference champs. He is competing Monday for States!”



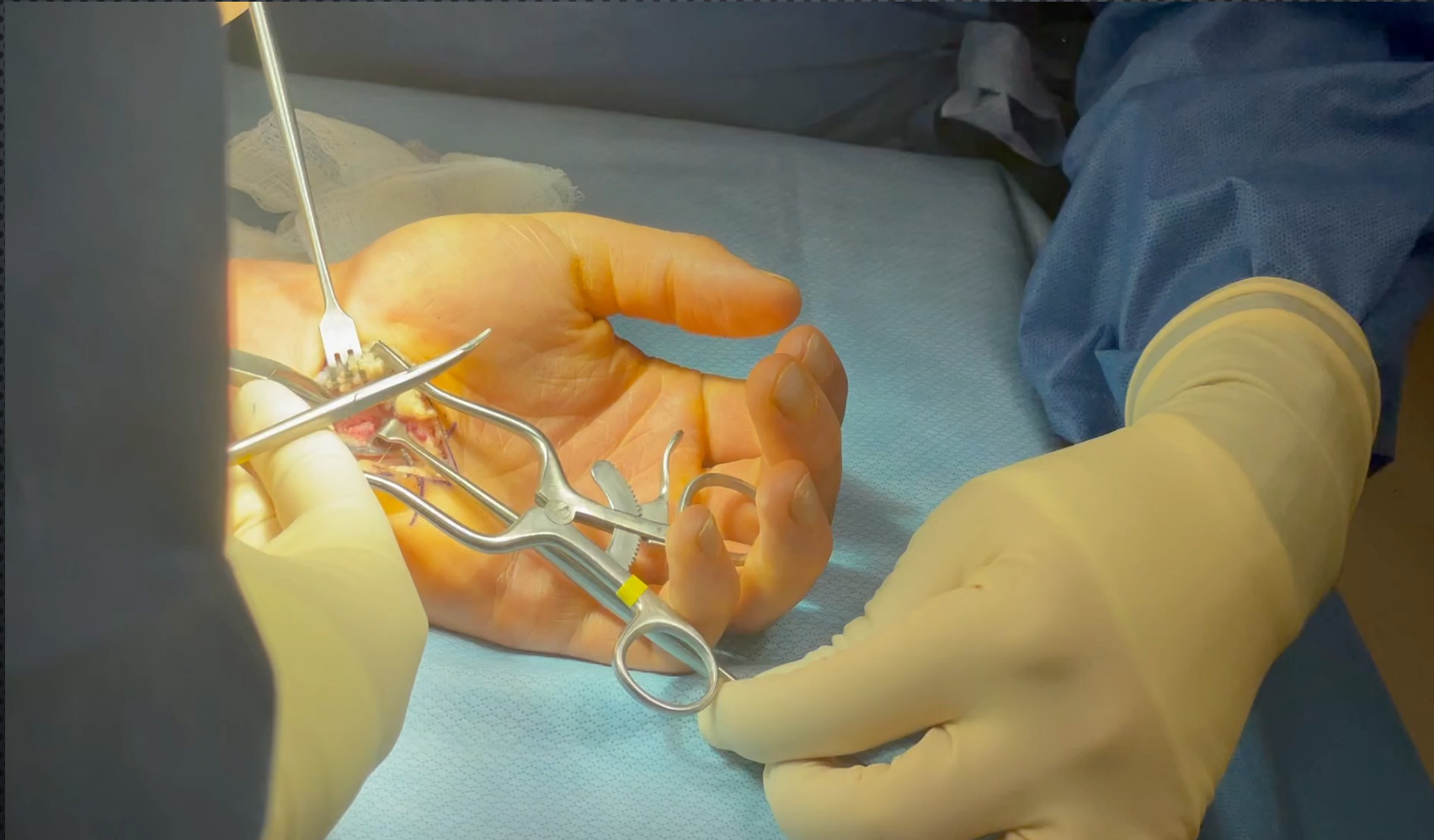
HOOK OF THE HAMATE FRACTURE



19 Y/O MALE WITH ULNAR-SIDED PALM PAIN AFTER A BATTING – HOOK OF HAMATE FX



CASE:
19 Y/O MALE WITH ULNAR-SIDED PALM PAIN
AFTER A BATTING



REHAB

- SPLINT FOR 1 WEEK
- 1 WEEK BEGIN ROM AND SCAR MASSAGE

3 WEEKS POST-OP



“WRIST SPRAIN”

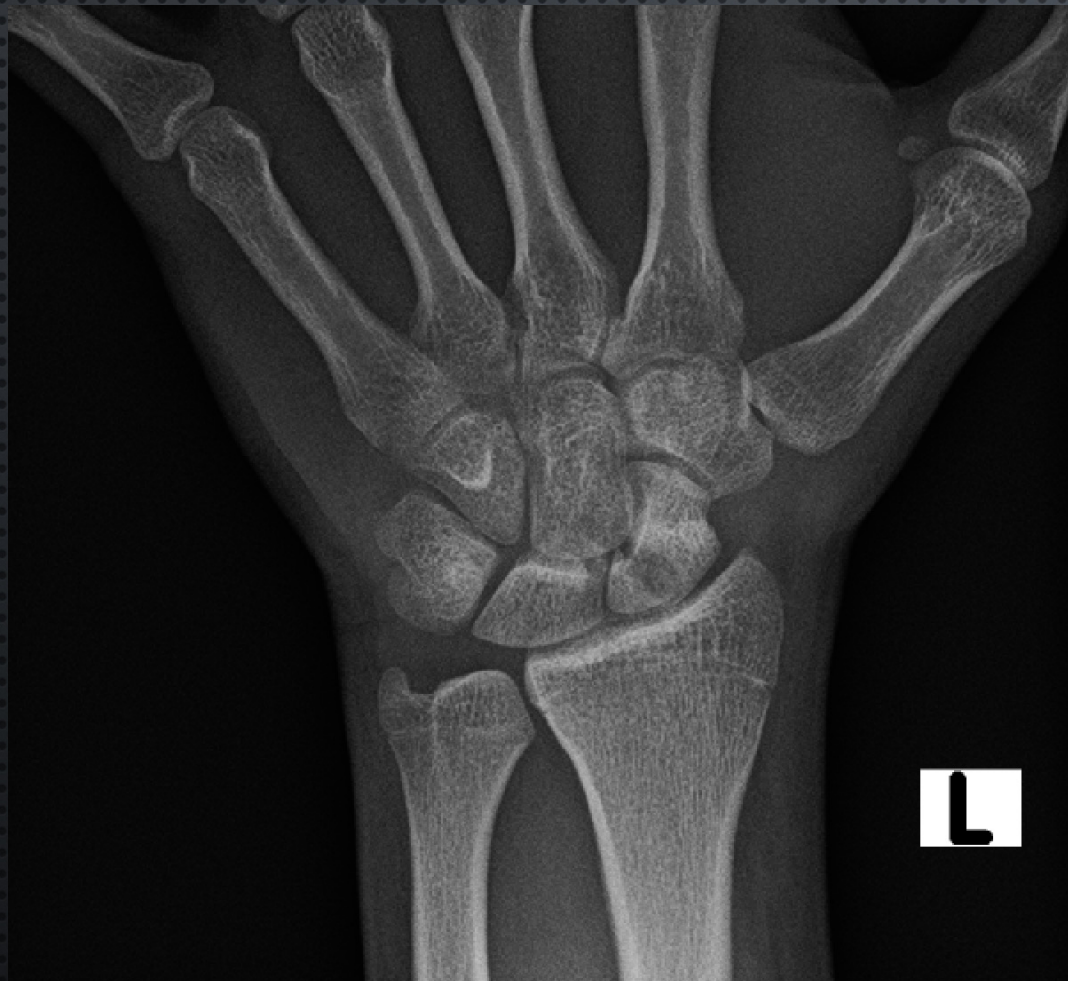
THE “PAINFUL, SWOLLEN” WRIST

- WRIST SPRAIN (GRADE 1-3)
- CARPAL BONE FRACTURES (SCAPHOID VS NON-SCAPHOID)
- WRIST FRACTURE/DISLOCATIONS



CASE

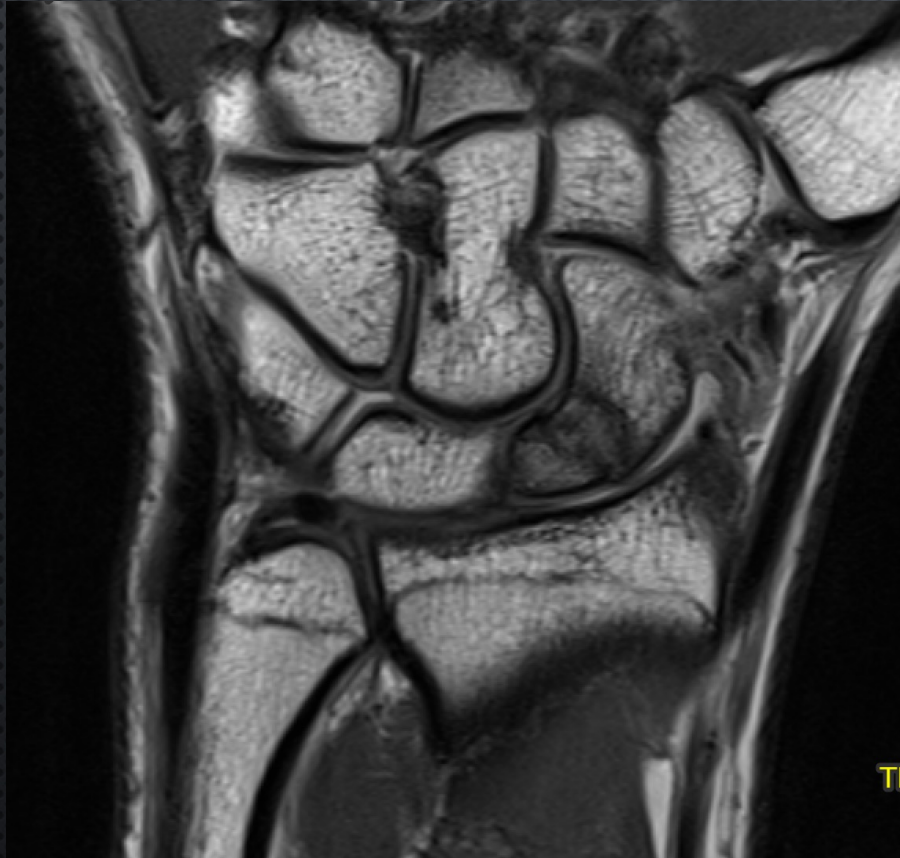
17 Y/O MALE - 6 MONTHS S/P LEFT WRIST SPRAIN
DURING PRIOR BASKETBALL SEASON



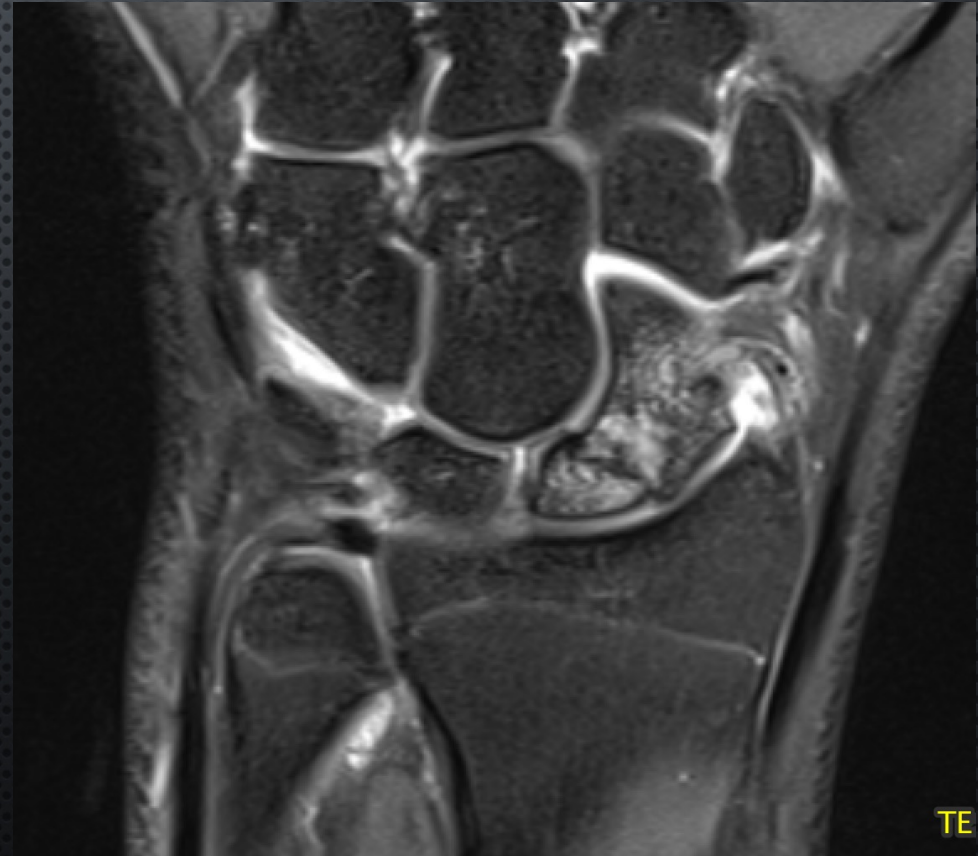
PROXIMAL POLE SCAPHOID NONUNION

MRI ASSESSMENT FOR BLOOD SUPPLY

T1 – some preservation of fat signal



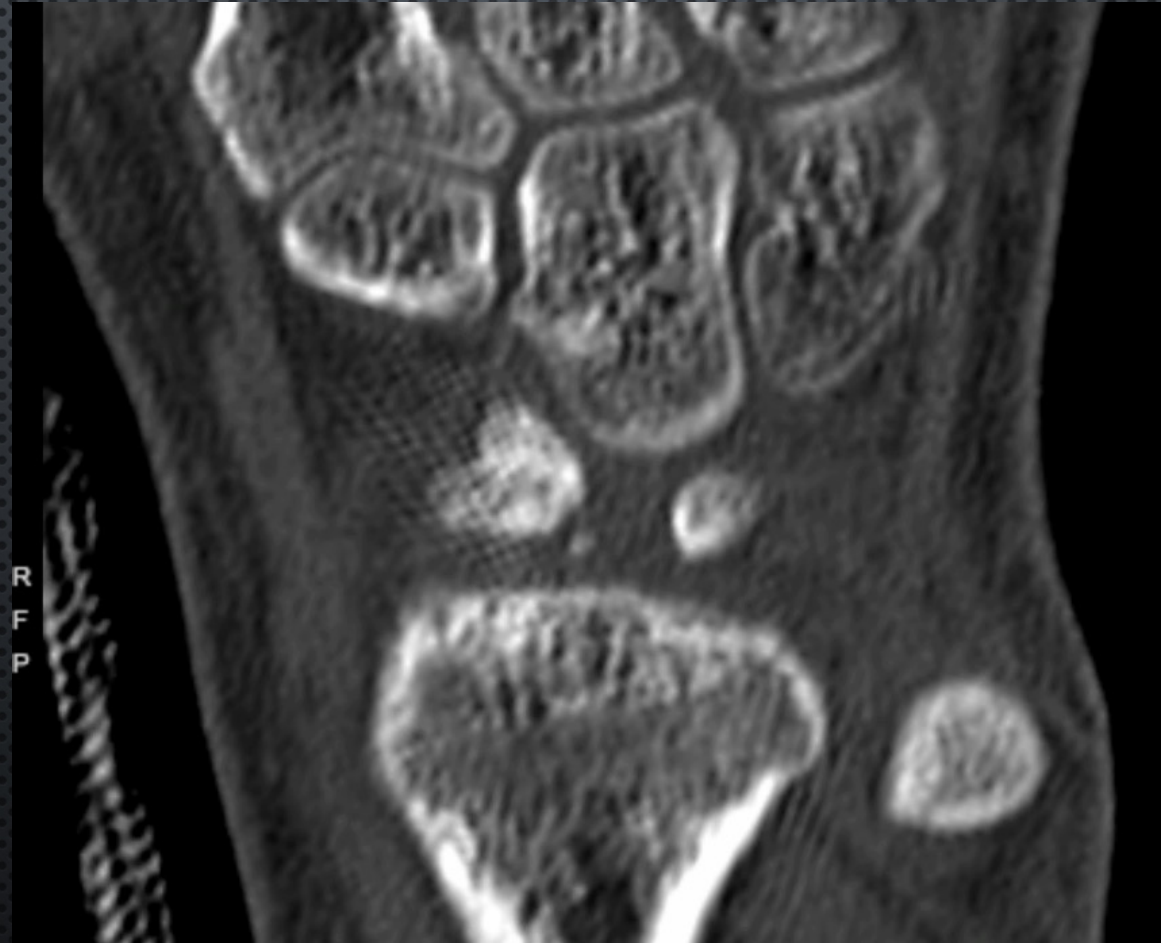
T2 – edema present in proximal pole



1 MONTH S/P SCAPHOID NONUNION ORIF W/
DISTAL RADIUS AUTOGRAFT



3 MONTHS S/P SCAPHOID NONUNION ORIF W/
DISTAL RADIUS AUTOGRAFT



SCAPHOID PROXIMAL POLE ORIF DELAYED UNION OPTIONS?

1ST – CHECK METABOLIC PANEL, COTININE LEVELS

THEN:

- CONTINUE TO CAST, WATCH (UP TO 6 MONTHS)
- SCREW REMOVAL, ADD INFUSE (BMP) TO SCREW HOLES AND REPLACE
- MEDICAL FEMORAL TROCHLEA (MFT) VASCULARIZED FREE FLAP GRAFT
- PROXIMAL HAMATE AUTOGRAFT RECONSTRUCTION

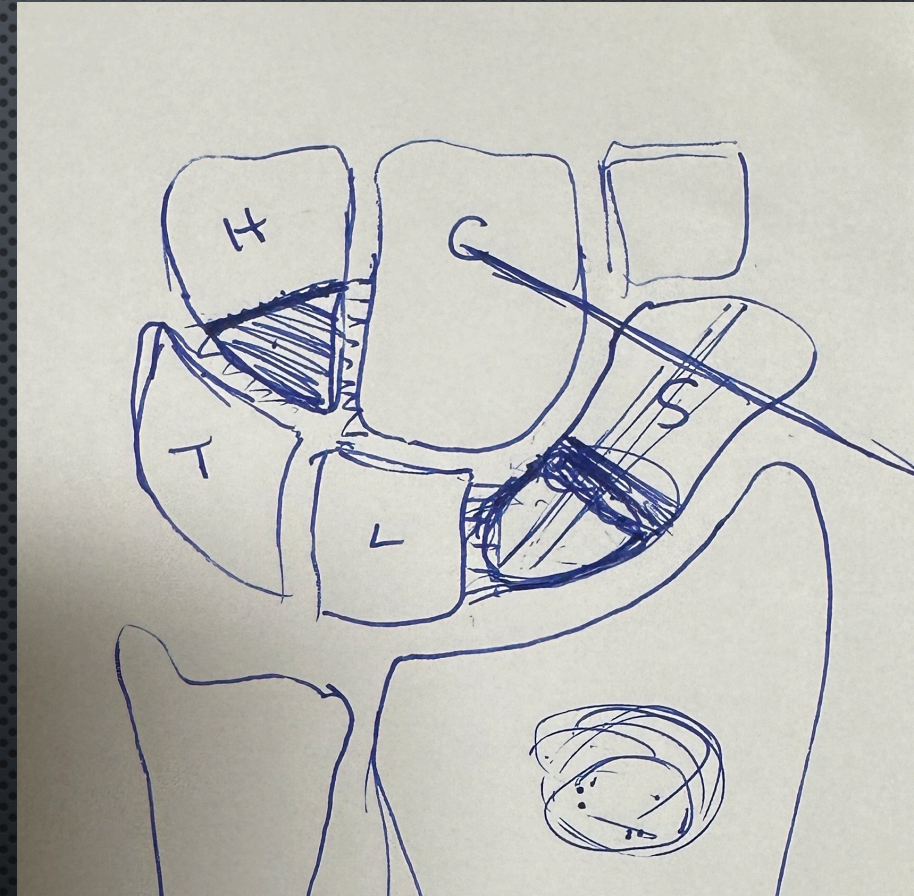
Case Report

Proximal Scaphoid Pole Reconstruction Utilizing Ipsilateral Proximal Hamate Autograft

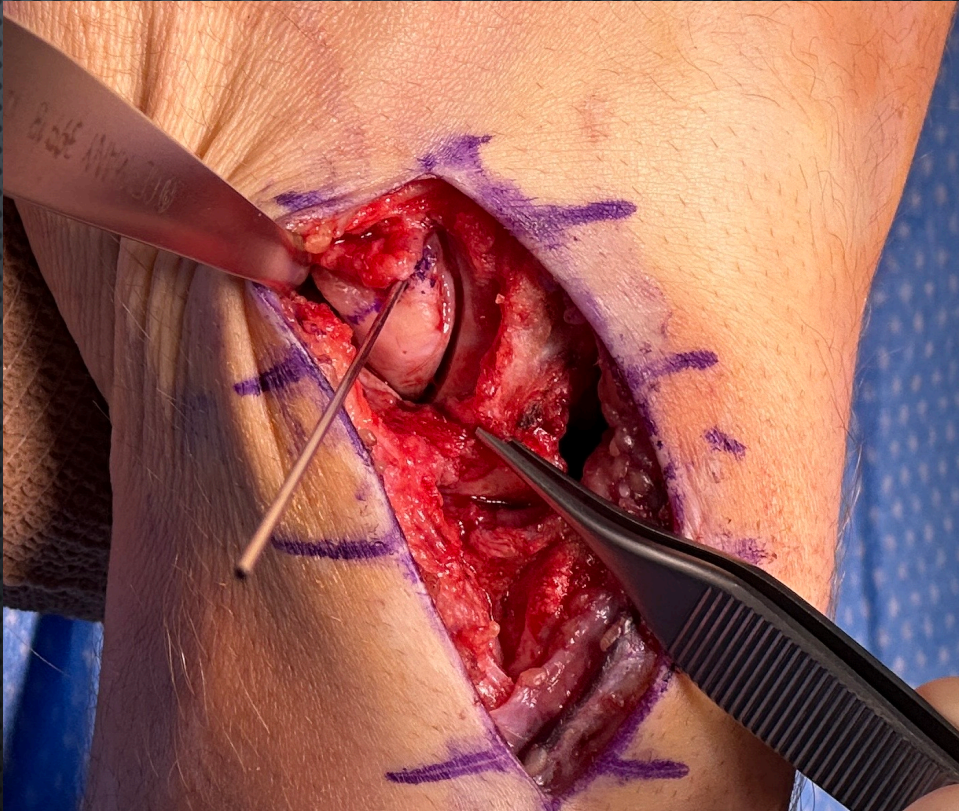
Bassem Elhassan¹, Mohamed Nouredin¹, and Sanjeev Kakar¹



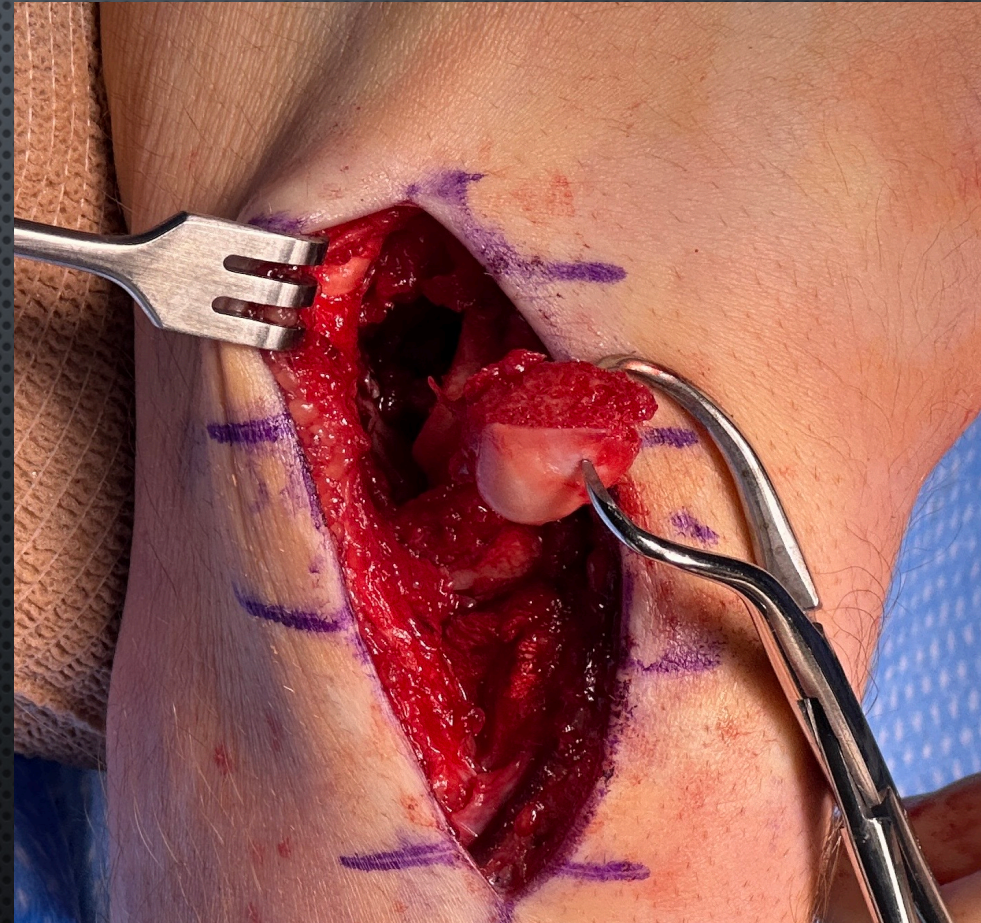
HAND
2016, Vol. 11(4) 495-499
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DOI: 10.1177/1558944716628497
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PROXIMAL POLE SCAPHOID RECONSTRUCTION WITH PROXIMAL HAMATE AUTOGRAFT + ICBG



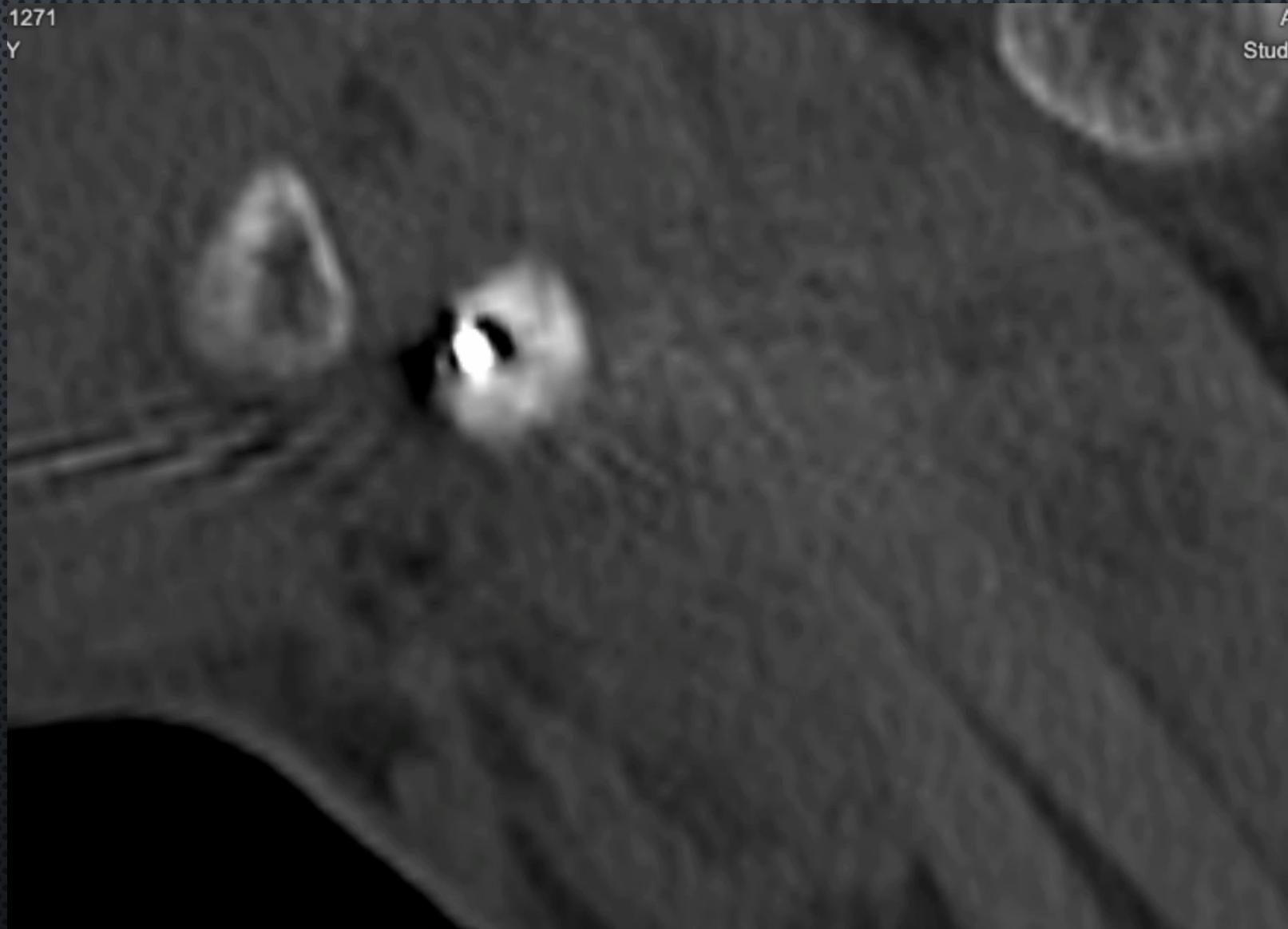
PROXIMAL POLE SCAPHOID RECONSTRUCTION WITH PROXIMAL HAMATE AUTOGRAFT + ICBG







2 MONTHS POST-OP



3.5 MONTHS POST-OP




CONCLUSIONS:

- MANAGEMENT OF ATHLETIC HAND INJURIES IN MULTI-LAYERED AND COMPLEX
- CASE-BY-CASE CONSIDERATIONS
- THOROUGH DISCUSSION OF THE RISKS, BENEFITS, AND ALTERNATIVES WITH PATIENT AND OTHER STAKEHOLDERS IS PARAMOUNT
- DO YOU HAVE HAND SURGEON YOU CAN TEXT?

Follow for more!!

Cell 781-405-2604



Peter DeNoble, MD, FAAOS ✓
President & CEO, Orthopaedic Surgeon at Modern Orthopaedics of New Jersey, Ortho Content Creator, Host - Beyond the Bones Podcast

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