

Geriatric Hip Fractures

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Disclosures

- Consultant/Medical Educator- Smith & Nephew
- Medical Education Consultant – Zimmer Biomet
- Consultant- Acelity/KCI

Objectives

- Issues/solutions in the management of geriatric hip fractures
- Tips/Tricks involving treatment/fixation of common proximal femur fractures
- Controversies/Challenges

Hip Fracture Issues

- Standard of care for hip fractures isn't working
- High rate mortality/morbidity
- Mortality likely around 25-30% one year
 - Proven worse with need for re-operation
- Morbidity
 - @50% show major decrease in:
 - Mobility
 - ADLs
 - Ambulation
 - QOL

Hip Fracture Program

- Optimizing early ED/pre-op care
- Surgical timing
- Post-operative goals

Why?

- Important for patients
- Medicine is changing
 - Outcome based
 - Need to blame someone for complications
 - Payment systems
- We have the resources to accomplish this
- Only Orthopaedics can make it happen
 - Every project needs a chief

How to start

- ???
- No known goals/gold standards
- Multiple studies, multiple articles, multiple countries
- Bhandari JBJS article
 - More study is needed...

Resources



THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS EVIDENCE-BASED GUIDELINE ON

Management of Hip Fractures in the Elderly

National Hip Fracture Toolkit

June 30, 2011



Alberta Surgical Fractured Hip Care Pathway
Version 1.1: Last Updated January 27, 2012



Acute Care Hip Fracture Clinical Pathway*

October
2011



AO Foundation
Education

AO Course–DAVOS 2008

AO Trauma Course–Geriatric Fractures
December 8–11, 2008

Issues with Emergent Care

- No standards
- EMS choices
 - Ideally, each system would pick a Center for Hip Fracture care
 - PCP/Hospitalists complicate this

Goals

- Move patients through system expeditiously
- Standardize care
- Avoid complications

ER Goals

- Activate protocol
 - Checklists
 - Avoid redundancy (i.e. all labs, x-rays at once)
- Diet
 - Feed if no surgery same day
 - Hydrate- oral vs. IV
- Frequent Q1-2 hour position changes
- EKG and adequate IV access
- Heel sore and DVT prophylaxis

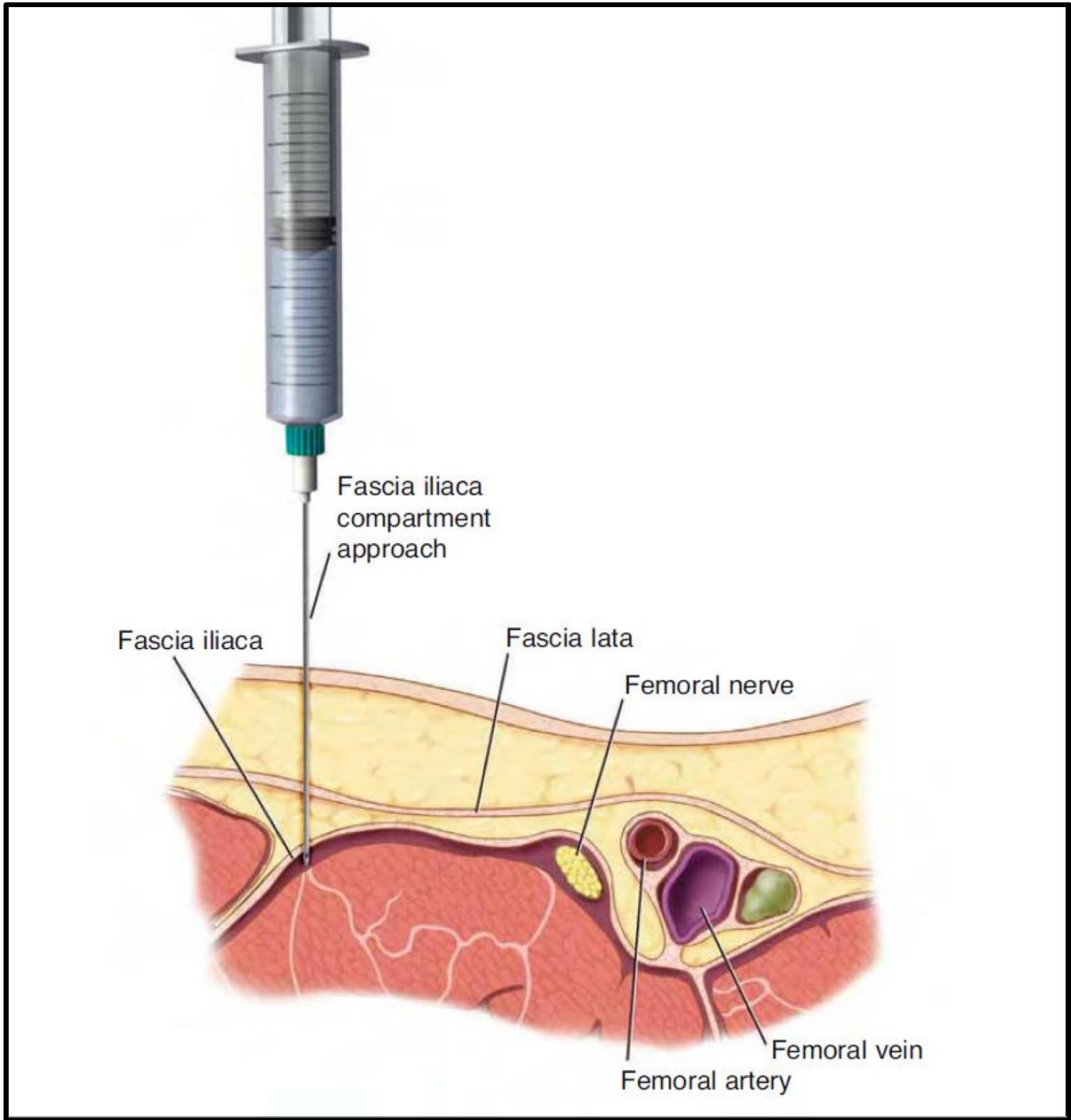
Pain Control Plans

PERIOPERATIVE REGIONAL ANALGESIA

Strong evidence supports regional analgesia to improve preoperative pain control in patients with hip fracture.

Strength of Recommendation: Strong ★★★★★

- ED physician, Orthopaedic PA/resident training in fascia-iliacus blocks
- Safe, quick procedure shown in multiple studies to provide excellent pain control in hip fracture patients
- Goal to have placed in ED within 30-60 minutes of arrival
 - If ED won't, then we should



ER Goals

- #1 Goal: Leave the ED

Pre-op Goals

- Best done on floor, private room
- Patient/family education
 - Setting appropriate expectations
 - Timeline
 - Obtain consents now
 - Confirm POA, DNR/DNI status
- Attempt to re-create standard daily life
 - Family, friends, TV
 - Sitting upright as much as tolerated
 - Regular meals

Consults

- Orthopaedics
- Hospitalist/Geriatician
- Cardiology/others
 - Necessity prior to OR??
 - Does this change outcomes at all??
 - Remember that most of these patients were at their 'baseline' prior to fall/injury

Nutrition

Nutrition: Moderate evidence supports that postoperative nutritional supplementation reduces mortality and improves nutritional status in hip fracture patients.

Strength of Recommendation: Moderate ★★★☆

- Up to 60% show measurable signs malnutrition on arrival
- Consider IV/PO supplementation during hospital stay
- Shown to decrease fracture/surgery related complications
- Potential decrease in mortality

Start Post-op Planning

- Case Management/Social Work
 - Consult prior to end of first day
 - Pick rehab/SNF
- Physical/Occupational Therapy
 - Bed mobility (often same as post-op)
 - Teach exercises, restrictions, goals
- Getting Home ready
 - Fall prevention
 - Order DME

Other System Issues

- Bladder control
 - Avoid foley (Q6 hr bladder scans)
 - Incontinence, immobility, convenience are not indications for a foley
 - Patient or nursing based
 - Foleys used for
 - Surgery about urologic structures
 - Retention/obstruction
 - Monitor in critically ill patients
 - Prolonged immobilization (spine injury)
- Bowel
 - Early use of stool agents
 - Track and titrate meds to what is normal for patient

Other System Issues

- Electrolytes
 - Regular diet
- Reflux, N/V
- O2 sats
 - Titrate >90% or to what is normal for patient
- All for delirium prevention
 - These patients are fragile and have no reserve
 - Small changes in routine can be devastating

Surgery

- Goal within 24 hours

Early Operation on Patients with a Hip Fracture Improved the Ability to Return to Independent Living

A Prospective Study of 850 Patients

By Amer N. Al-Ani, MD, Bodil Samuelsson, RN, Jan Tidermark, MD, PhD, Åsa Norling, RN, Wilhelmina Ekström, MD, Tommy Cederholm, MD, PhD, and Margareta Hedström, MD, PhD

Investigation performed at the Department of Orthopaedics, Karolinska University Hospital, Huddinge, and the Department of Orthopaedics, Danderyd University Hospital, Danderyd, Sweden

An Economic Evaluation of a Systems-Based Strategy to Expedite Surgical Treatment of Hip Fractures

Christopher J. Dy, MD, MSPH, Kathryn E. McCollister, PhD, David A. Lubarsky, MD, MBA, and Joseph M. Lane, MD

Investigation performed at the University of Miami School of Medicine, Miami, Florida, and the Hospital for Special Surgery, New York, NY

ASPIRIN AND CLOPIDOGREL

Limited evidence supports not delaying hip fracture surgery for patients on aspirin and/or clopidogrel.

Strength of Recommendation: Limited ★★☆☆

Surgery

- Implant choice almost always less important than:
 - Technique
 - Reduction
 - Efficiency/time under anesthesia
 - Blood loss
 - Soft-tissue handling

STABLE FEMORAL NECK FRACTURES

Moderate evidence supports operative fixation for patients with stable (non-displaced) femoral neck fractures.

Strength of Recommendation: Moderate ★★★☆

DISPLACED FEMORAL NECK FRACTURES

Strong evidence supports arthroplasty for patients with unstable (displaced) femoral neck fractures.

Strength of Recommendation: Strong ★★★★★

UNIPOLAR VERSUS BIPOLAR

Moderate evidence supports that the outcomes of unipolar and bipolar hemiarthroplasty for unstable (displaced) femoral neck fractures are similar.

Strength of Recommendation: Moderate ★★★☆

HEMI VERSUS TOTAL HIP ARTHROPLASTY

Moderate evidence supports a benefit to total hip arthroplasty in properly selected patients with unstable (displaced) femoral neck fractures.

Strength of Recommendation: Moderate ★★★☆

CEMENTED FEMORAL STEMS

Moderate evidence supports the preferential use of cemented femoral stems in patients undergoing arthroplasty for femoral neck fractures.

Strength of Recommendation: Moderate ★★★☆

SURGICAL APPROACH

Moderate evidence supports higher dislocation rates with a posterior approach in the treatment of displaced femoral neck fractures with hip arthroplasty.

Strength of Recommendation: Moderate ★★★☆

STABLE INTERTROCHANTERIC FRACTURES

Moderate evidence supports the use of either a sliding hip screw or a cephalomedullary device in patients with stable intertrochanteric fractures.

Strength of Recommendation: Moderate ★★★☆

SUBTROCHANTERIC OR REVERSE OBLIQUITY FRACTURES

Strong evidence supports using a cephalomedullary device for the treatment of patients with subtrochanteric or reverse obliquity fractures.

Strength of Recommendation: Strong ★★★★★

UNSTABLE INTERTROCHANTERIC FRACTURES

Moderate evidence supports using a cephalomedullary device for the treatment of patients with unstable intertrochanteric fractures.

Strength of Recommendation: Moderate ★★★☆

Post-op

- Focus on:
 - Safe pain control
 - Prevent delirium
 - Start PT as soon as possible
 - Solid food as soon as possible
 - Sitting upright as much as possible during daytime hours
 - Depression happens
 - Mobilization
 - Go Outside

Pain Control

- Increased use of Tylenol
 - PO vs. IV
 - Scheduled
 - Pharmacy concerns with cost of IV
- Narcotics
 - PO before SQ/IM before IV
- Meds to avoid
 - Phenergan, Demerol, Benadryl, Dramamine, Benzos

Intra-operative Injection

- Popularized in hip/knee joint replacement
- Cocktail of multiple meds
 - Ropivacaine, toradol, clonidine, epinephrine, +/- narcotic
- High Volume
- +/- Exparel (very costly)
- Personal experience shows significant early decrease in narcotics
 - Almost zero narcotic usage in PACU

Delirium Prevention

- Re-orient patients often and aggressively
- Vision/hearing aids
- Diet
- Upright during daytime hours
- Non-Rx sleep aids
- Delirium risk factors that can be modified:
 - Immobility
 - Malnutrition
 - >3 new medications added
 - Foley catheter
 - Iatrogenic event

PT/OT

- Goals:
 - POD 0: Sit upright
 - POD 1: Stand, room ambulation
 - POD 2: Walking in hall
- Bed exercises taught and performed Q2 hrs during daytime
- ADL training to independence
- Almost always can do some therapy

Discharge Planning

- Not much we can do here
 - Start approvals on arrival
 - Very specific and written criteria from centers on when they will accept transfer
 - Specific reasons for denial
 - 24 hour/7 days transfer policy
- Out of our hands

Osteoporosis Management

- No need to wait for imaging (DEXA) results
- Initiate Calcium/Vitamin D
- Fall prevention
- Follow-up visits for possible 2nd tier meds

Osteoporosis Management

- This can be an entire presentation
- Hugely important in preventing next fracture
 - Highest risk for fracture is previous fracture
- Challenge to set up, but then there are algorithms that simplify management

Does this work?

- Yes

Proof of concept Rochester Model Results

- Length of stay ~ 4.1 days
- Re-admission rate ~10%
 5% medical, 5% surgical
- Hospital mortality rate <2%
- Costs: 61% of US average
- Reduced infections
- Improved quality

How

- Need:
 - A single champion to obtain clinical, administrative, and financial support
 - Develop standards, time-based goals from Ortho, Medicine, nursing, PT/OT, OR leadership, CM/SW, etc.
 - Accountability when goals not met
 - Continuous process improvement via real-time data collection

Previous State

- Not ideal
- Data on @150 patients:
 - Length of Stay: 7 days
 - ED to Ortho note: 10 hours
 - Arrival to OR: 30 hours
 - PACU to PT: 48 hours
 - Arrival to CM: 38 hours
 - ED to floor: 6 hours

Medicine Promises

- Note in electronic medical record within 2-4 hours clearly stating if patient is cleared
 - If not, then what needs to happen and estimated time to clearance
- Easy access to hospitalist covering patient
 - Phone/text
 - Pending
- Nutrition
- In general, follow protocol
 - Cardiology, nephrology, etc

Nutrition: Moderate evidence supports that postoperative nutritional supplementation reduces mortality and improves nutritional status in hip fracture patients.
Strength of Recommendation: Moderate ★★★☆

Cardiology

- 5 reasons for pre-operative cardiac clearance:
 - Acute coronary syndrome
 - Decompensated heart failure (hypoxia)
 - Aortic stenosis without echo in one year
 - Recent stent placement (6 weeks)
 - Uncontrolled arrhythmia (i.e a-fib with rvr)
- Eliquis is not a reason for 48-72 hour delay
 - Neither are the others

ED promises

- Use of order sets to ensure appropriate x-rays, labs performed on presentation
- Use of fascia-iliacus blocks
 - Goal within 1 hour of arrival
- Initiate remainder of protocol if no rooms available

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Anesthesia Promises

- Consider regional anesthesia more often
- Be available for regional anesthesia on floor/preop/ED
- Pre-op EMR review

Administration Promises

- Enforcement
- OR time (i.e. '7 am hip fx' slot)
- Increased PT/CM support (especially weekends)
- Will (can) not help with rehab placement
- Marketing/certifications to improve volume
- IV Tylenol

Orthopaedic Promises

- Surgery within 18 hours

- If not,
- Blood

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- Note in E

- Not a

- Use of e

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Orthopaedic Promises

- Evidence based surgery, implants, techniques
- Study results, discuss new treatment strategies openly
 - Use of superior implants/techniques
 - Share strategies
 - Share patients

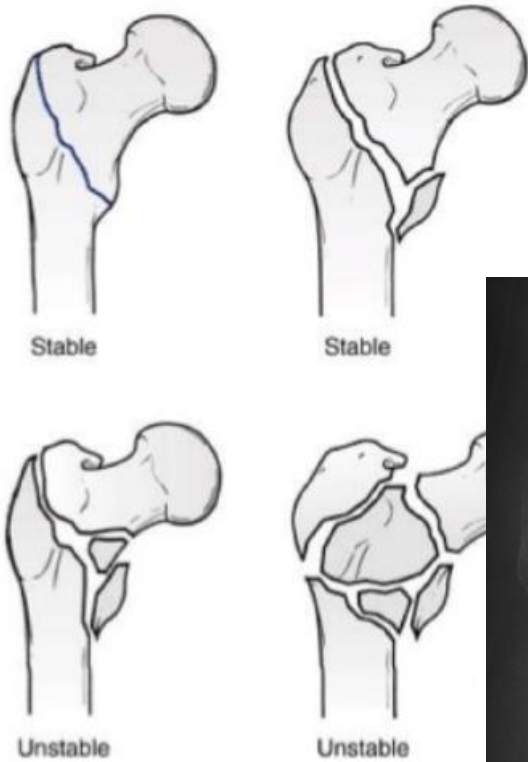
Hip Fracture Protocol Results- Live for 1 year

- Early positive results:
 - Length of Stay has improved from average of 7 to 4.5 (if sets used)
 - >50% fractures affixed within 18 hours
 - Delay for cardiac clearance non-existent with minimal effort
 - Delay for anti-coagulation fully surgeon dependent
 - Easy availability of arthroplasty cocktail for all procedures
 - Availability of IV Tylenol
 - 6 month protocol completed and data analysis on-going
- Early difficulties
 - ED performing fascioiliacus blocks
 - Hospitalist early documentation of clearance
 - Ortho Buy-in

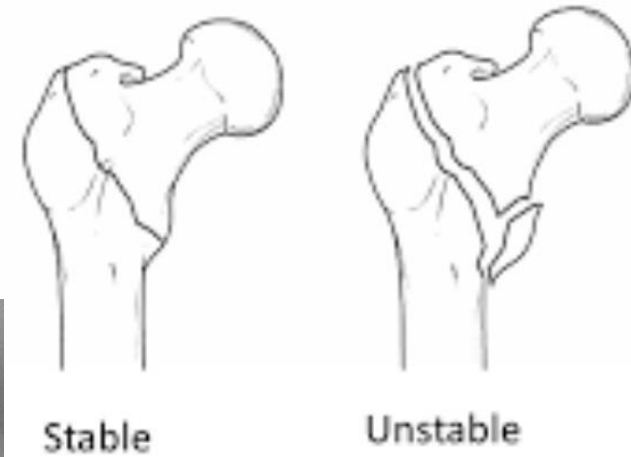
Questions?

Initial Surgical Evaluation

Evans Classification



Stable vs Unstable Fractures



- Avoid failures
 - What to do with

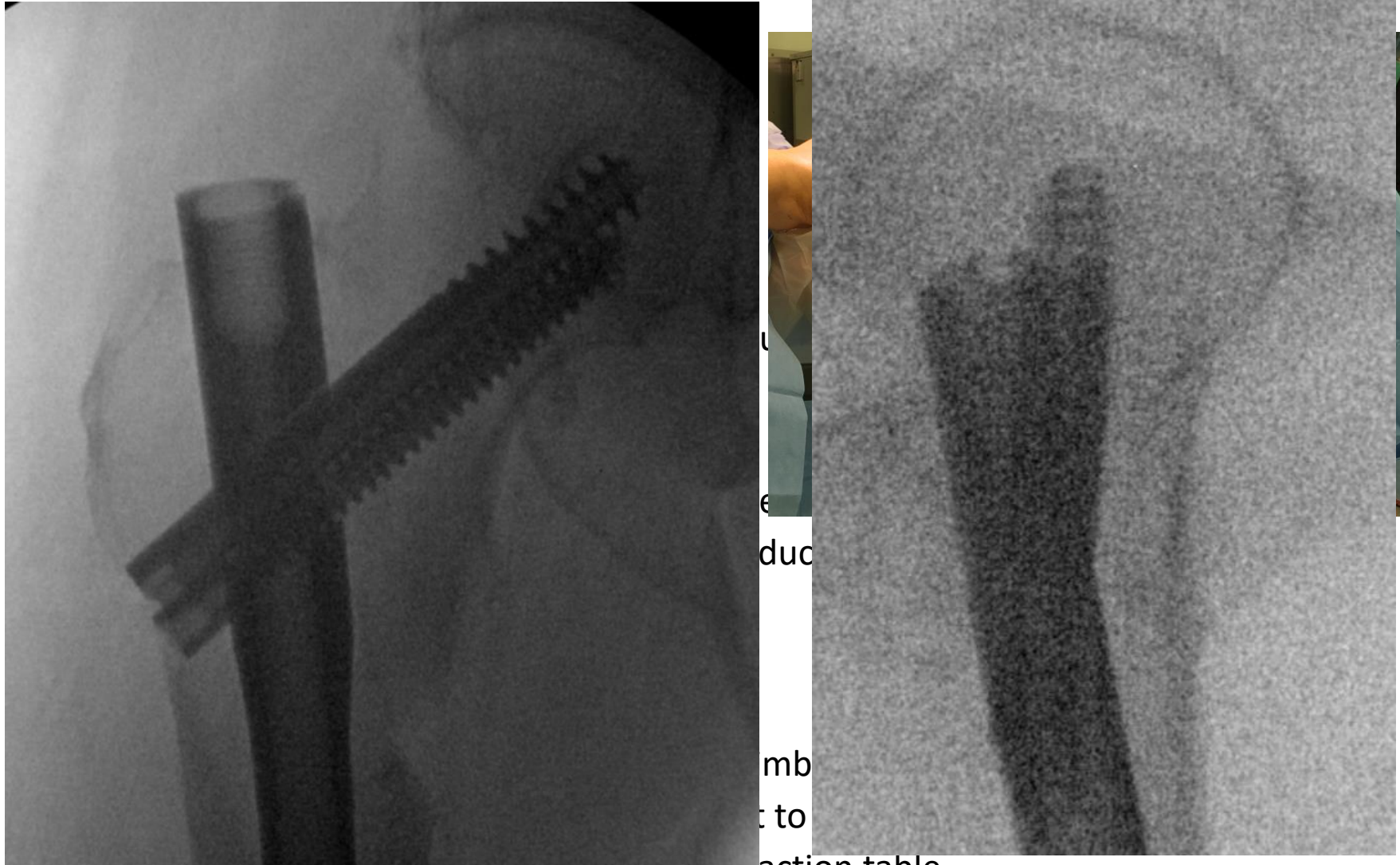
Pre-Operative Planning

Imaging

- Traction views
 - Not just for j
- Surgical planning
 - Assess anat
 - fixation
 - Proximal/dis
 - fracture
 - General redu
 - with fracture
 - Planning for
- Anterior femoral b
 - Difficult to m
 - Easy to evaluate
 - Various radii curvature



Pre-Operative Planning

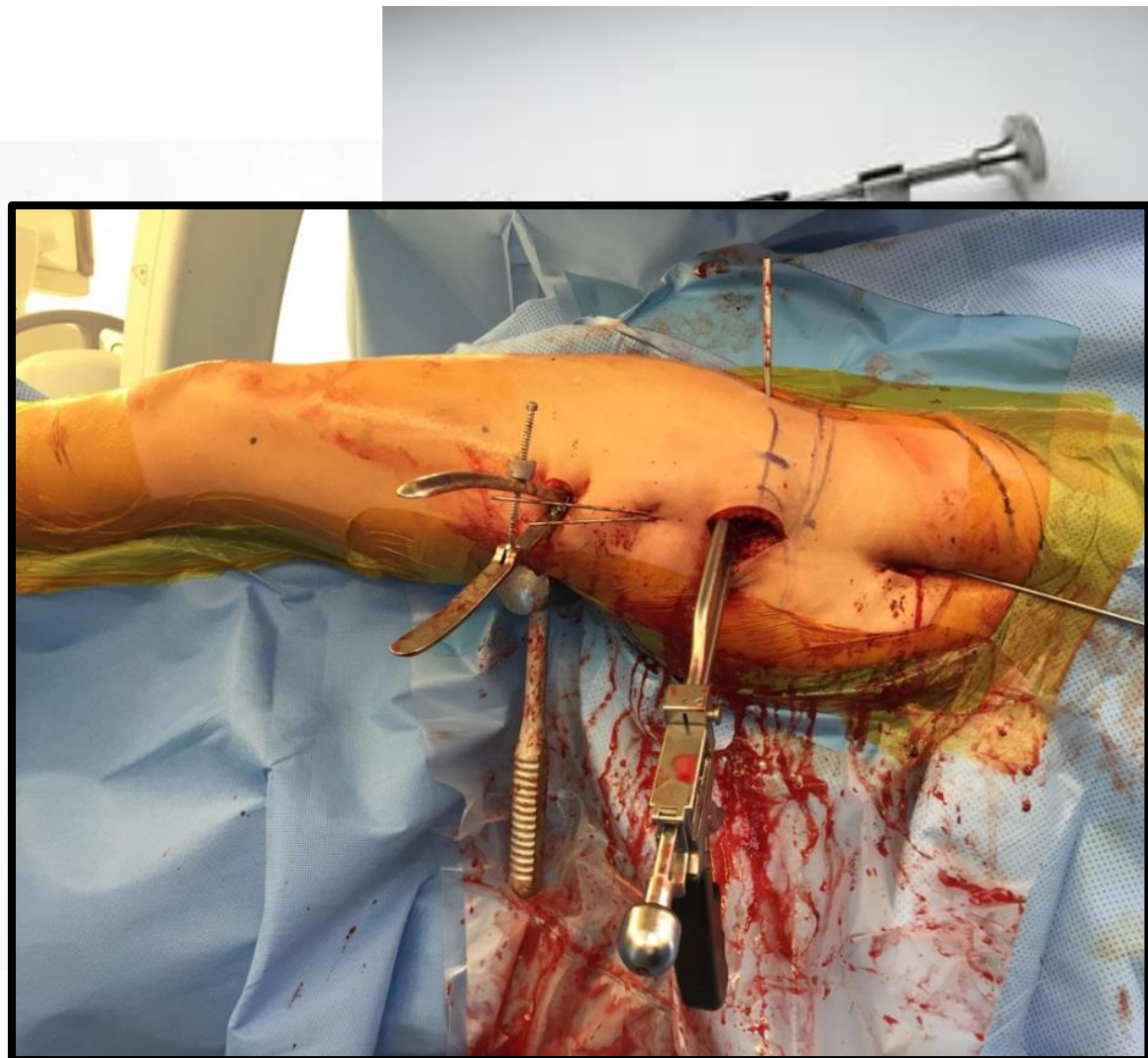


• closed or Percutaneous reduction use traction table

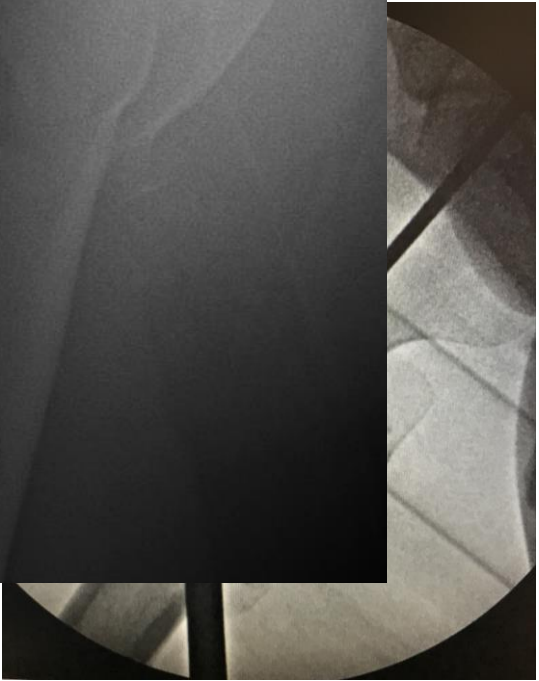
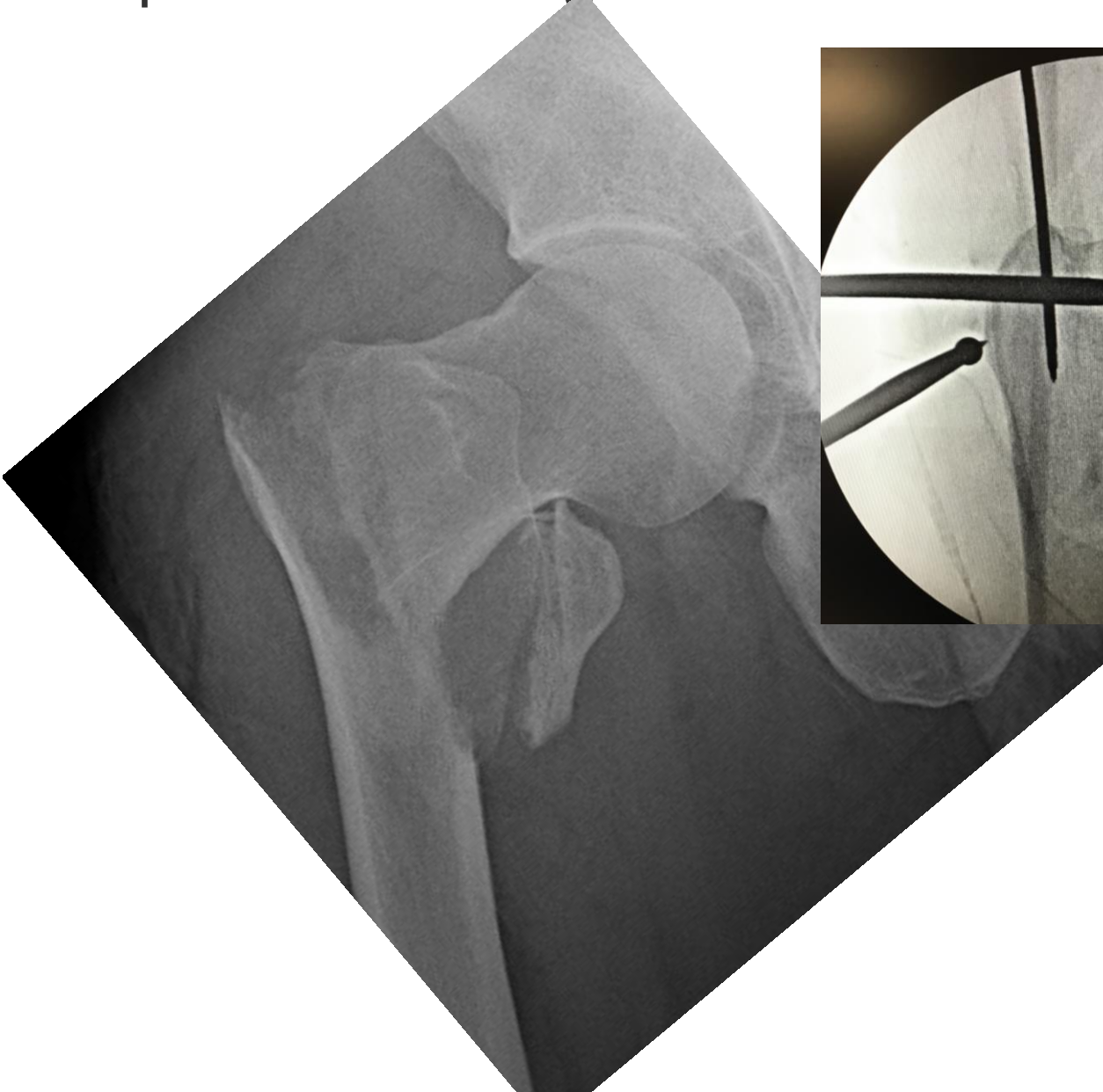
Pre-Operative Planning

What to have in the room

- Pig stickers, hooks
- Mallets
- Clamps
 - Turkey claw
- Retractors
 - Bennett/hohman
- Mini-frag, small frag
 - Schanz pins
 - Ex-fix



Ball Spike Pusher/Pig Sticker



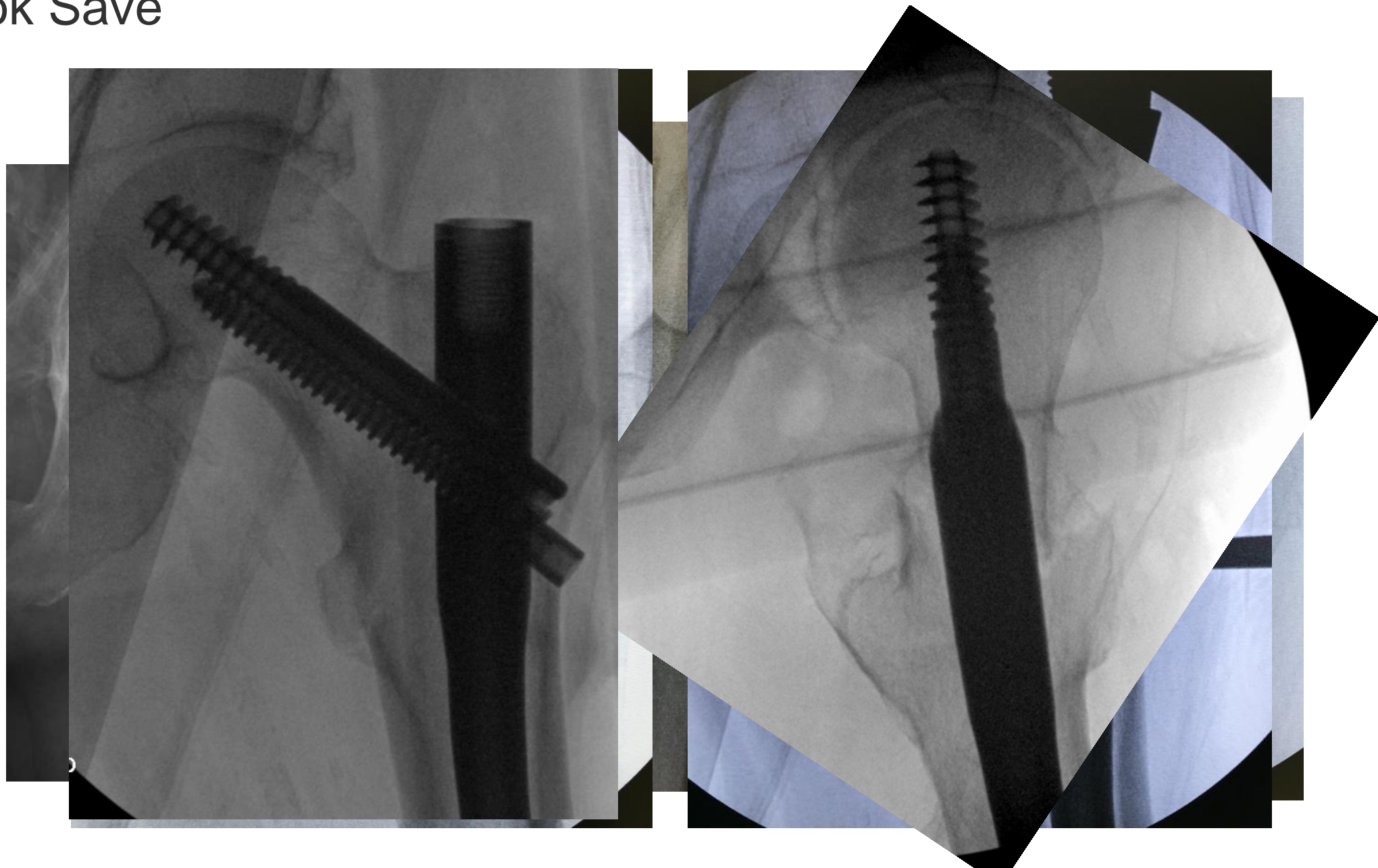
Pig Sticker with Hook



Free Fragment



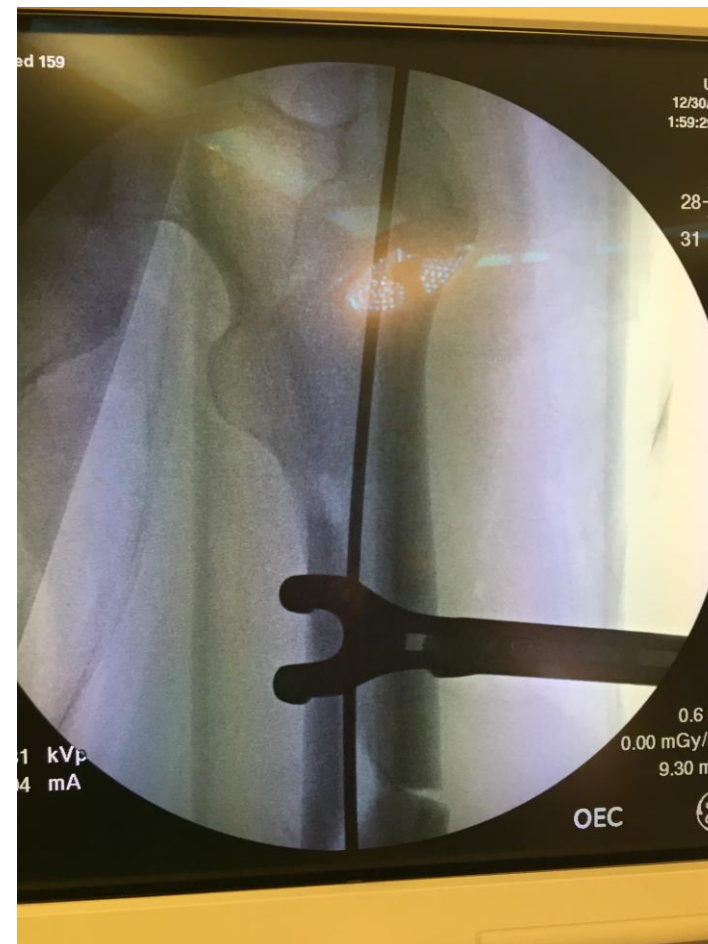
Hook Save



Clamp



Turkey Claw



Mini frag



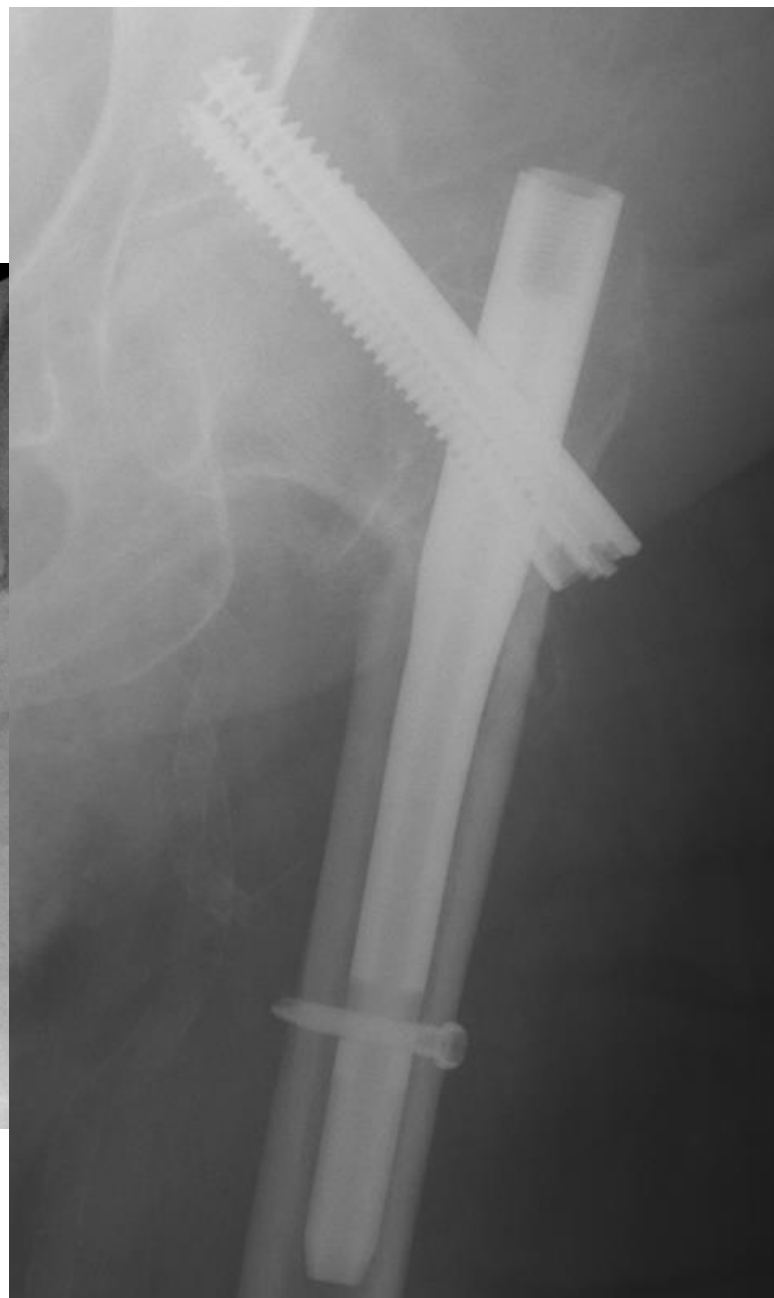
Temporary fixation



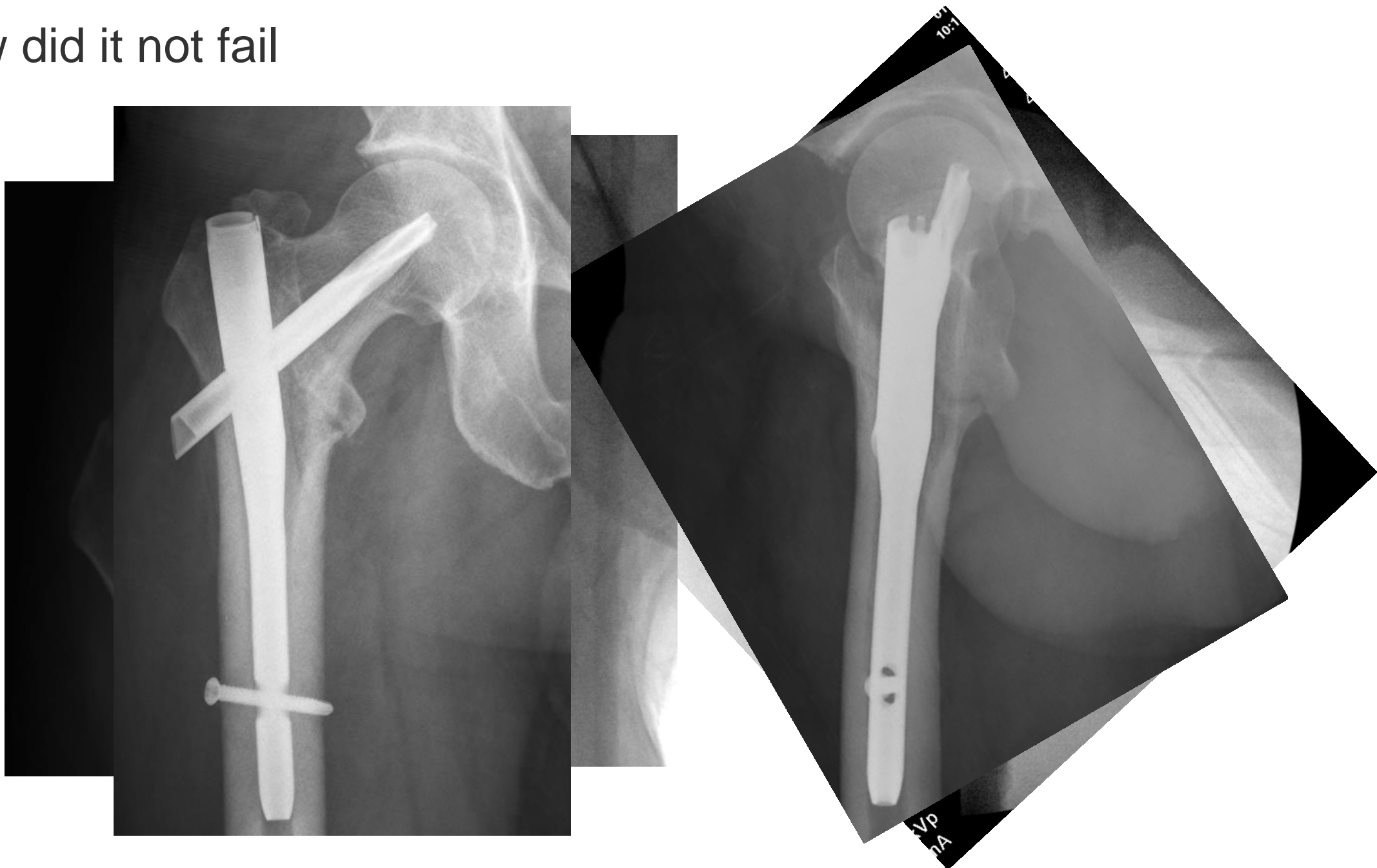




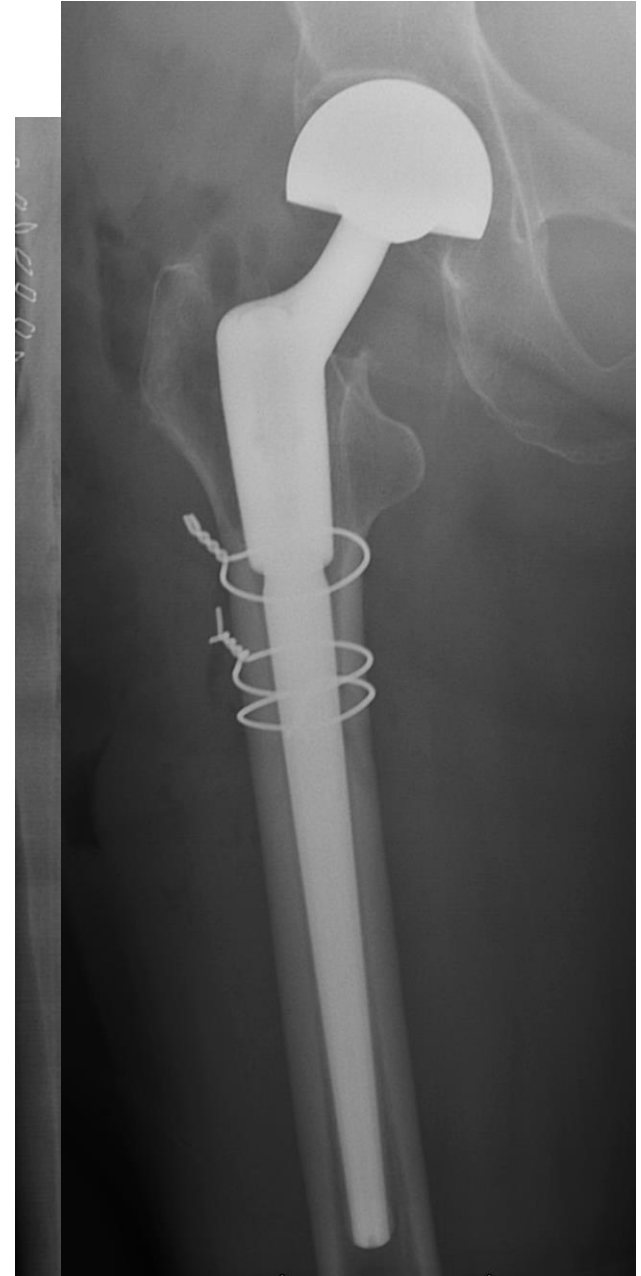
Complications

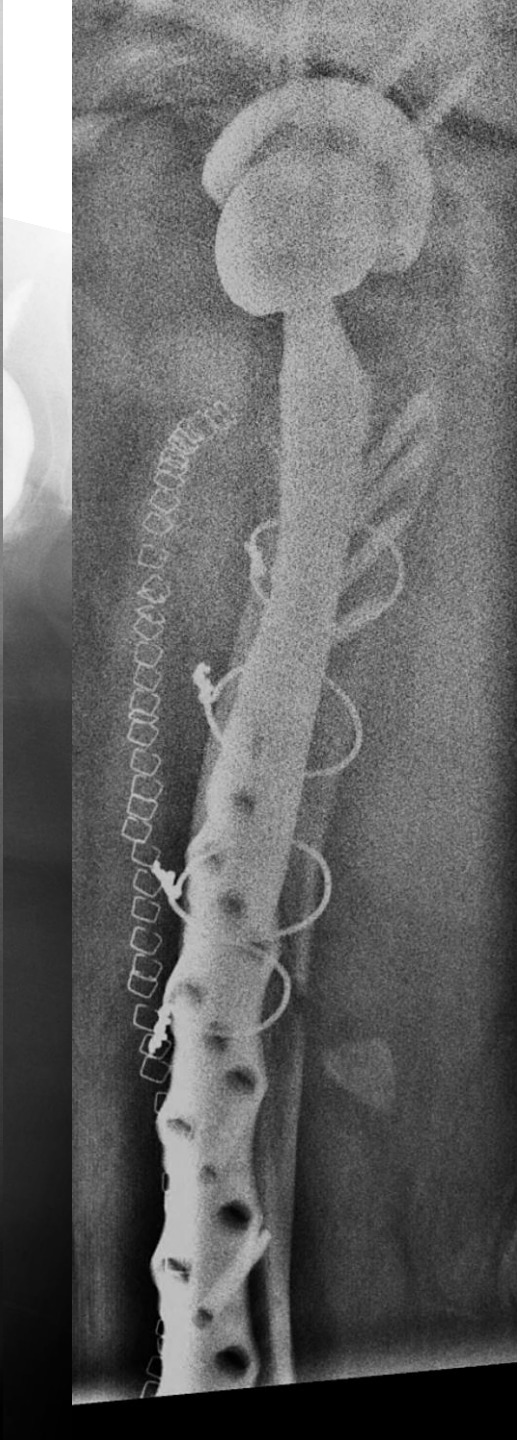


How did it not fail

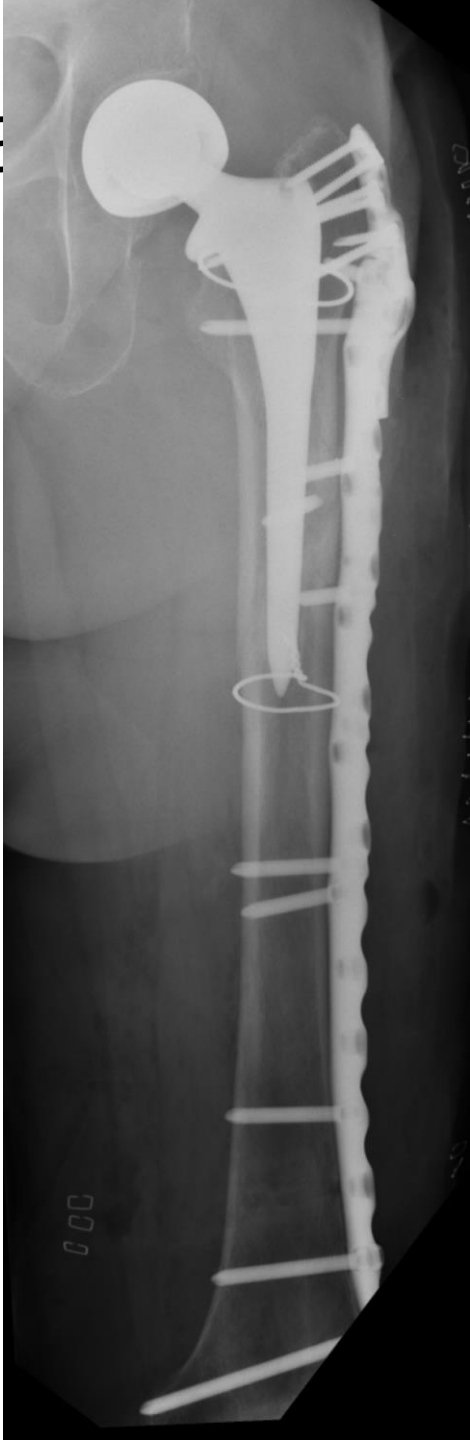


Complications





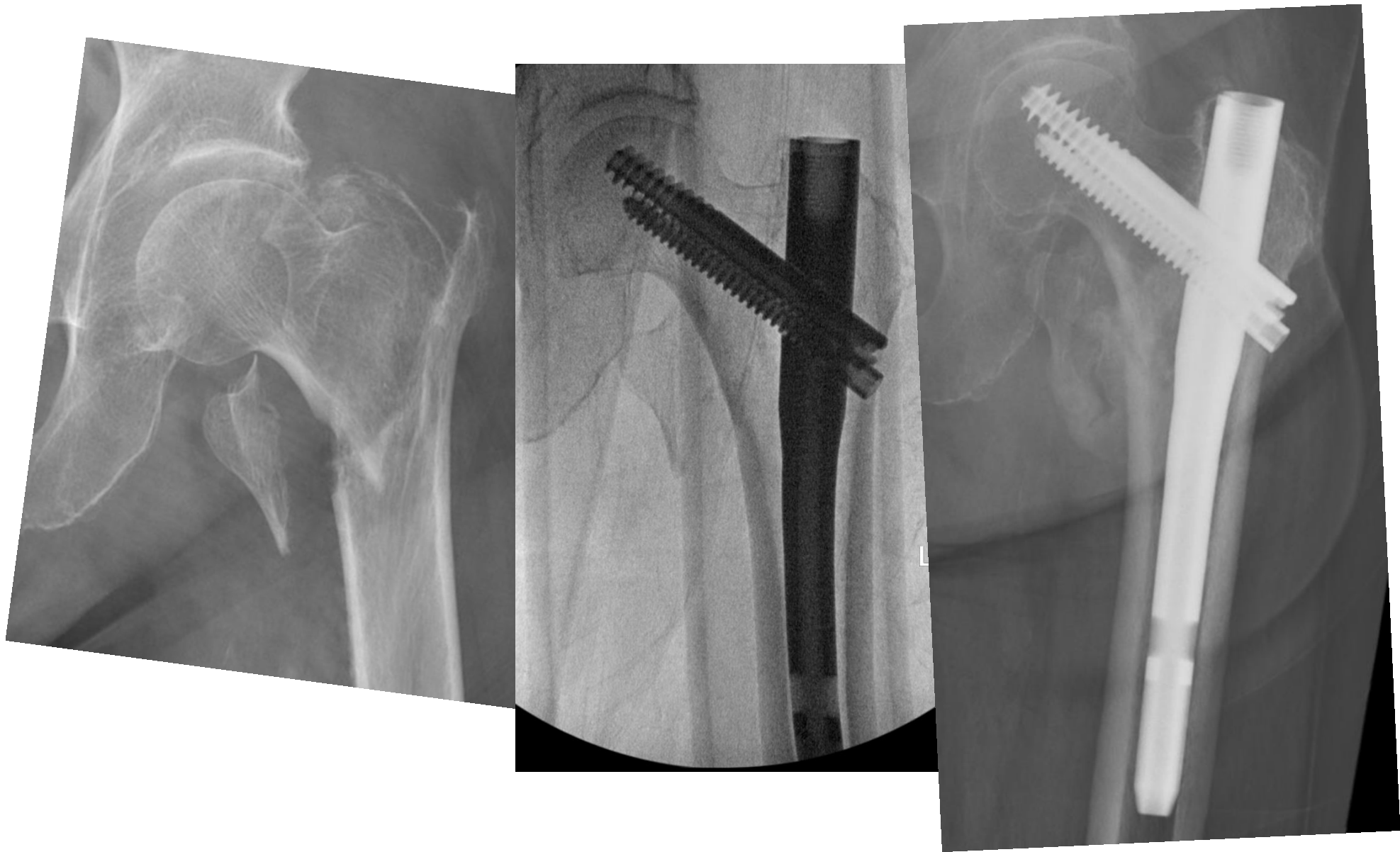
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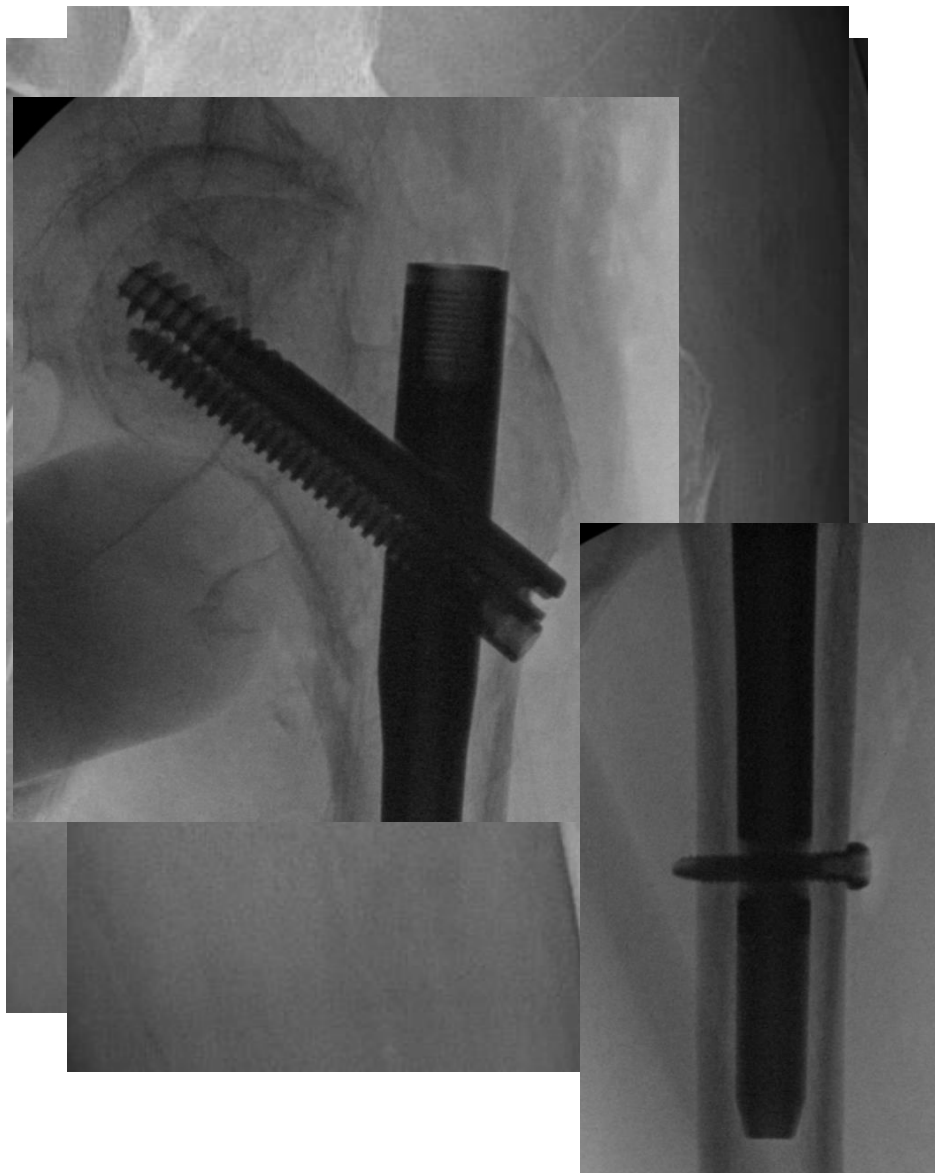
Mild Controversies/Challenges

- Distal interlocking screw
 - Necessary?
- Short or long nail for geriatric hip fractures
- Total hip arthroplasty for femoral neck fractures
- Fractures with pre-existing DJD
- Fractures with pre-existing distal implants
- Bisphosphonate related fractures
 - Contralateral prophylactic nailing?
- DHS
 - Still a viable implant option?

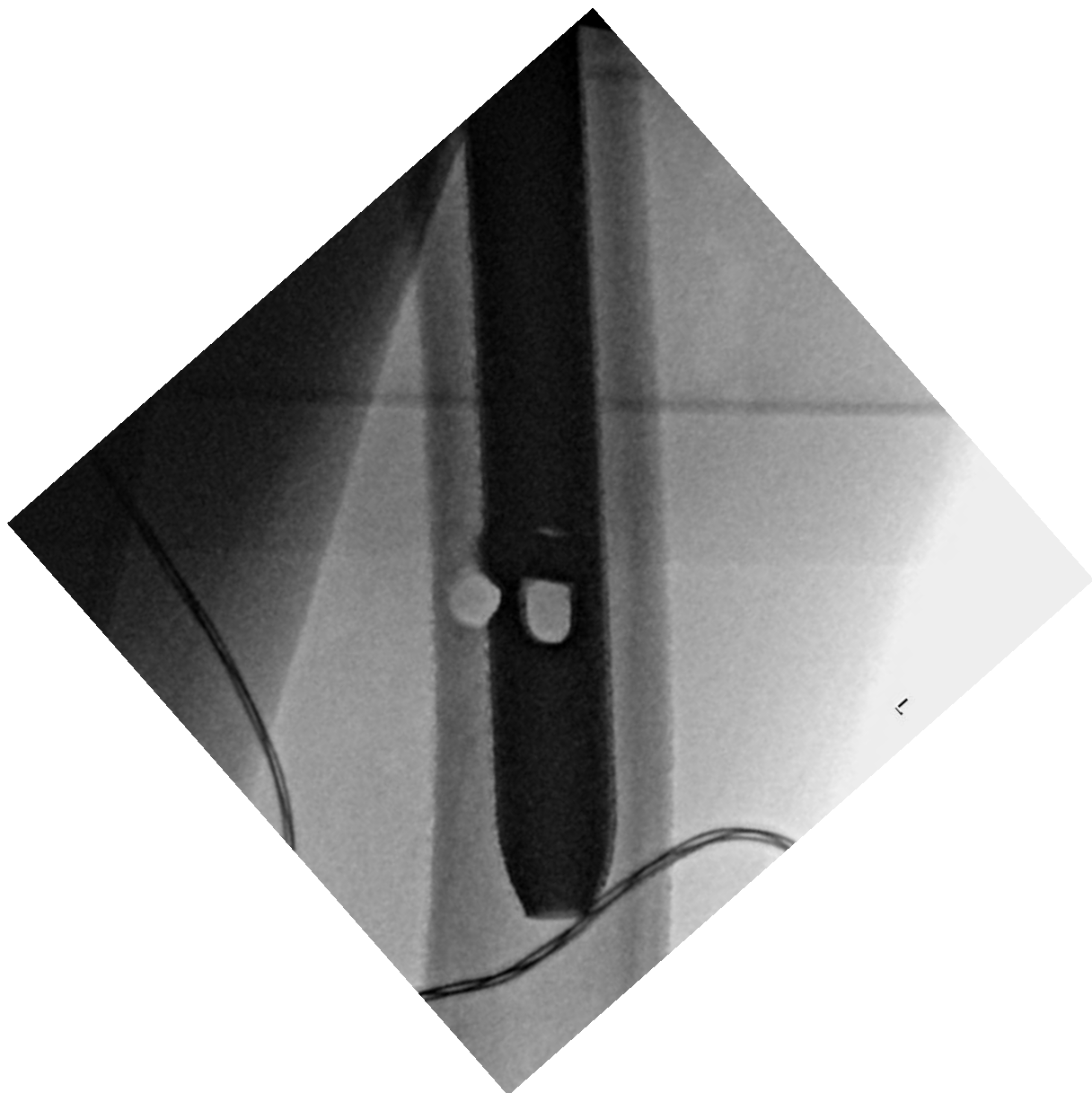
Distal screw or not



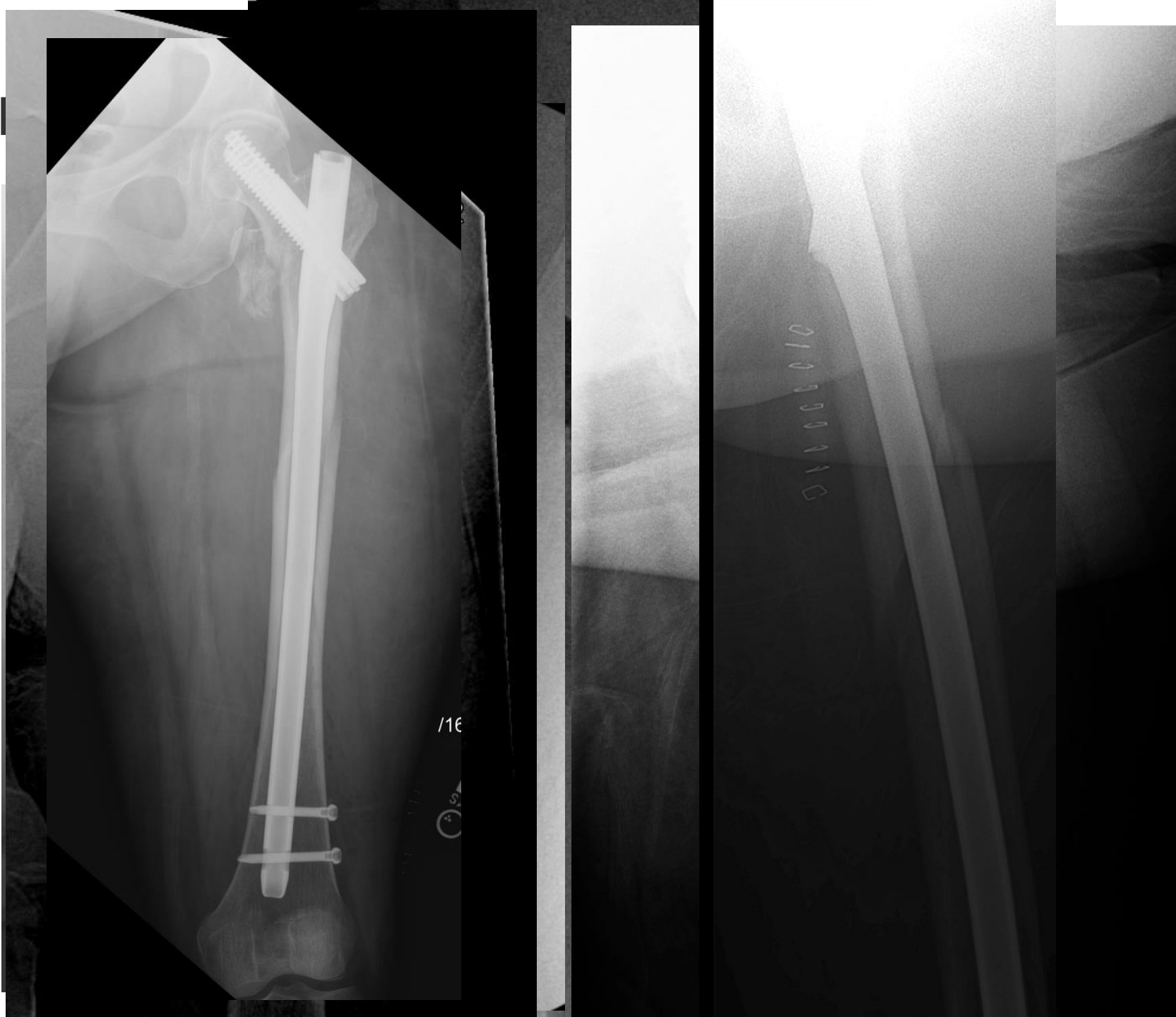
Short or long



Missed IL



Short vs L



Short vs Long





Screenshot





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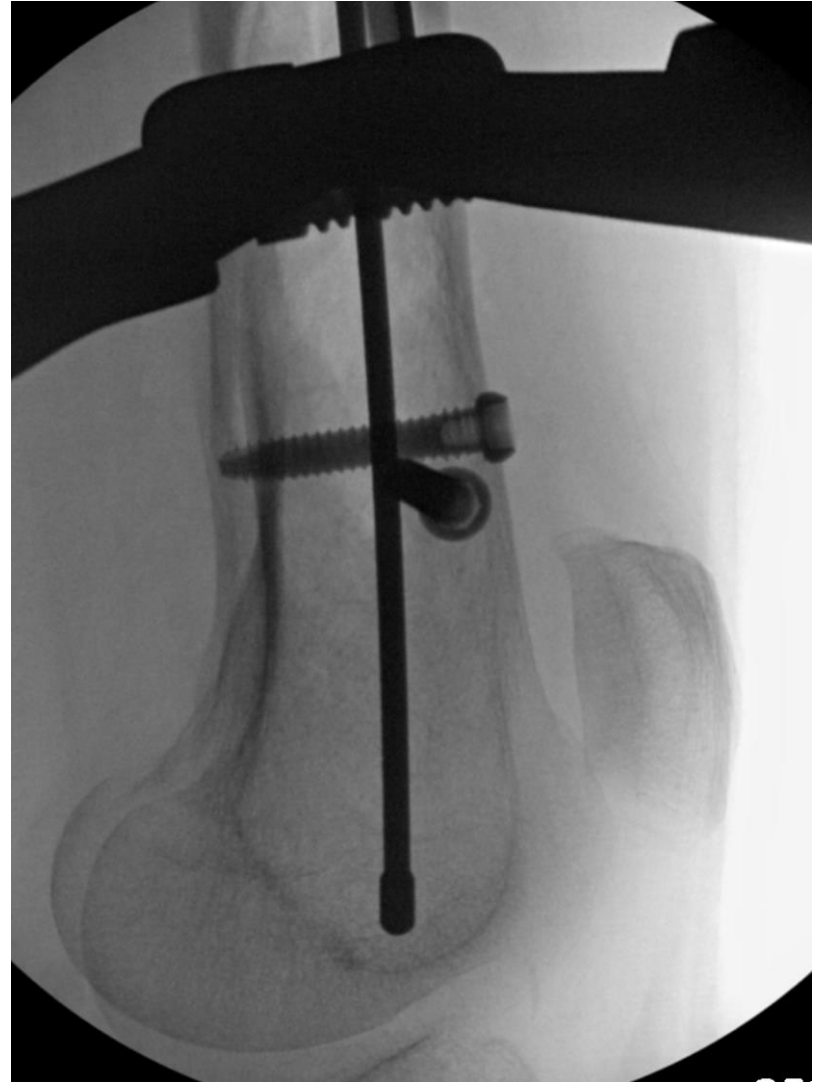
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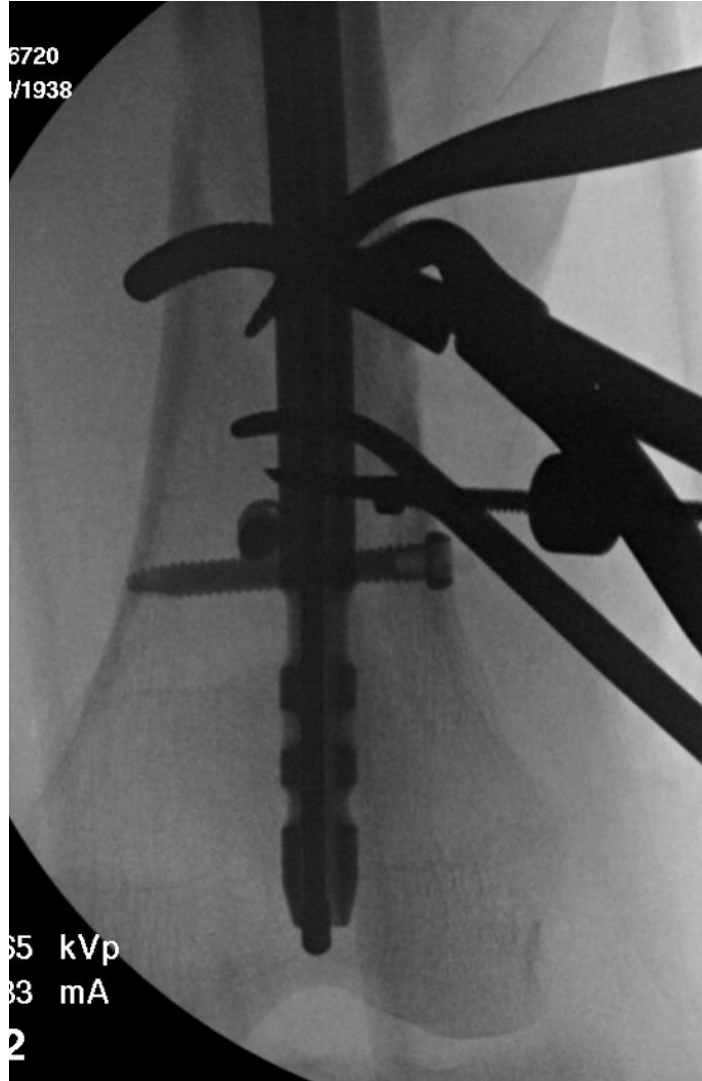
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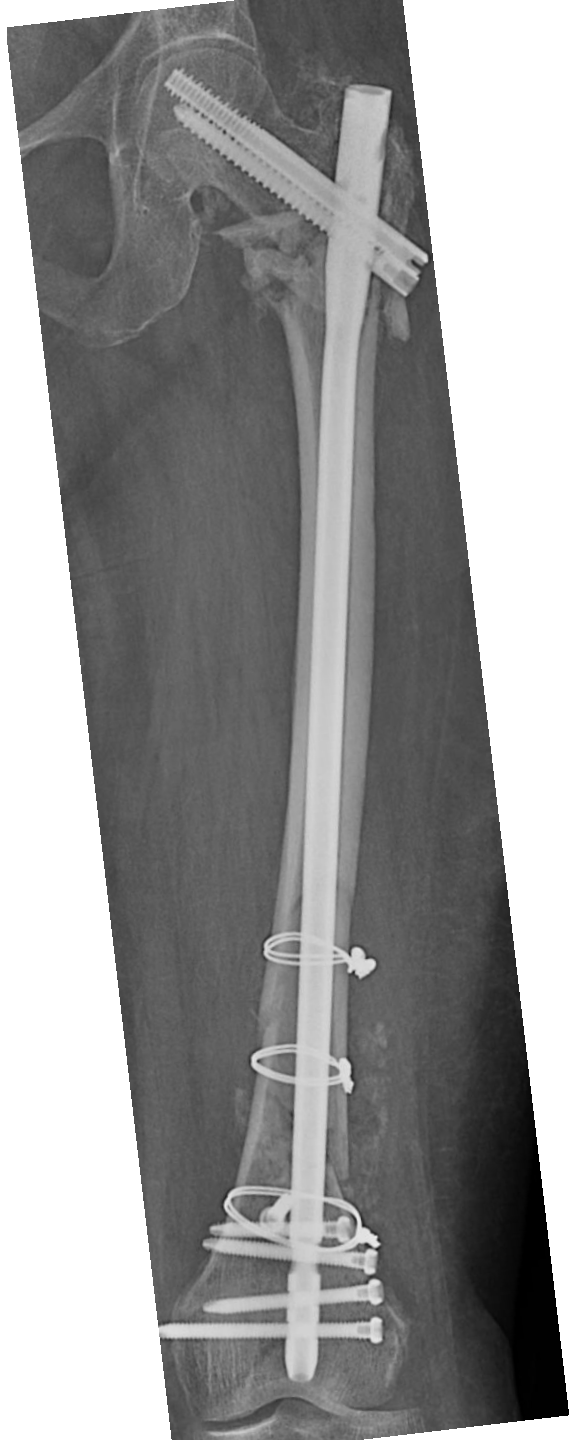








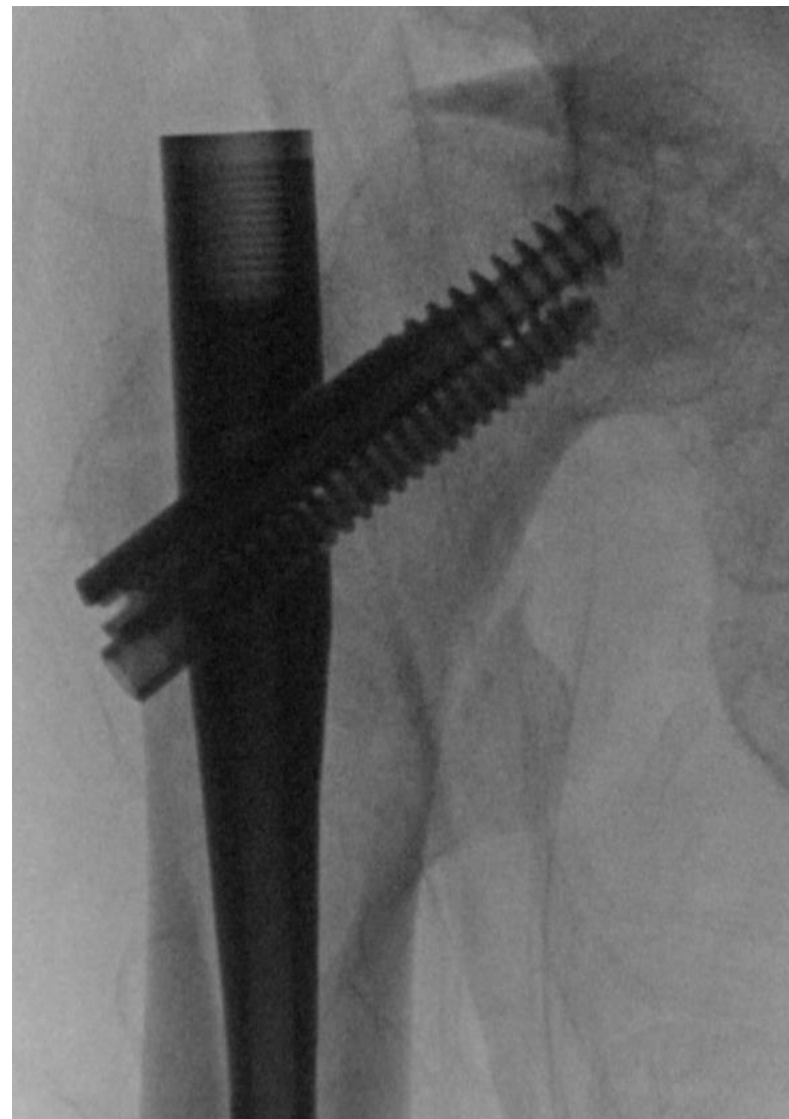




ORIF, CRPP, Hemi, vs. Total



Severe DJD



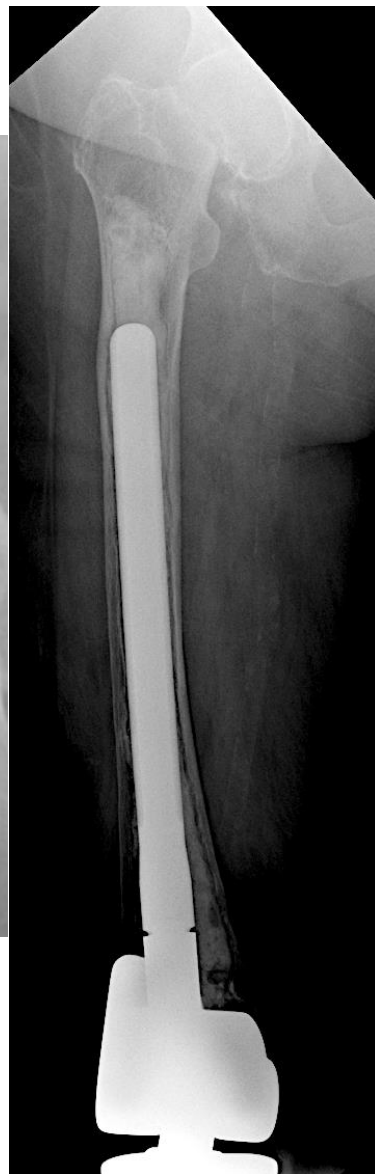
Bisphos



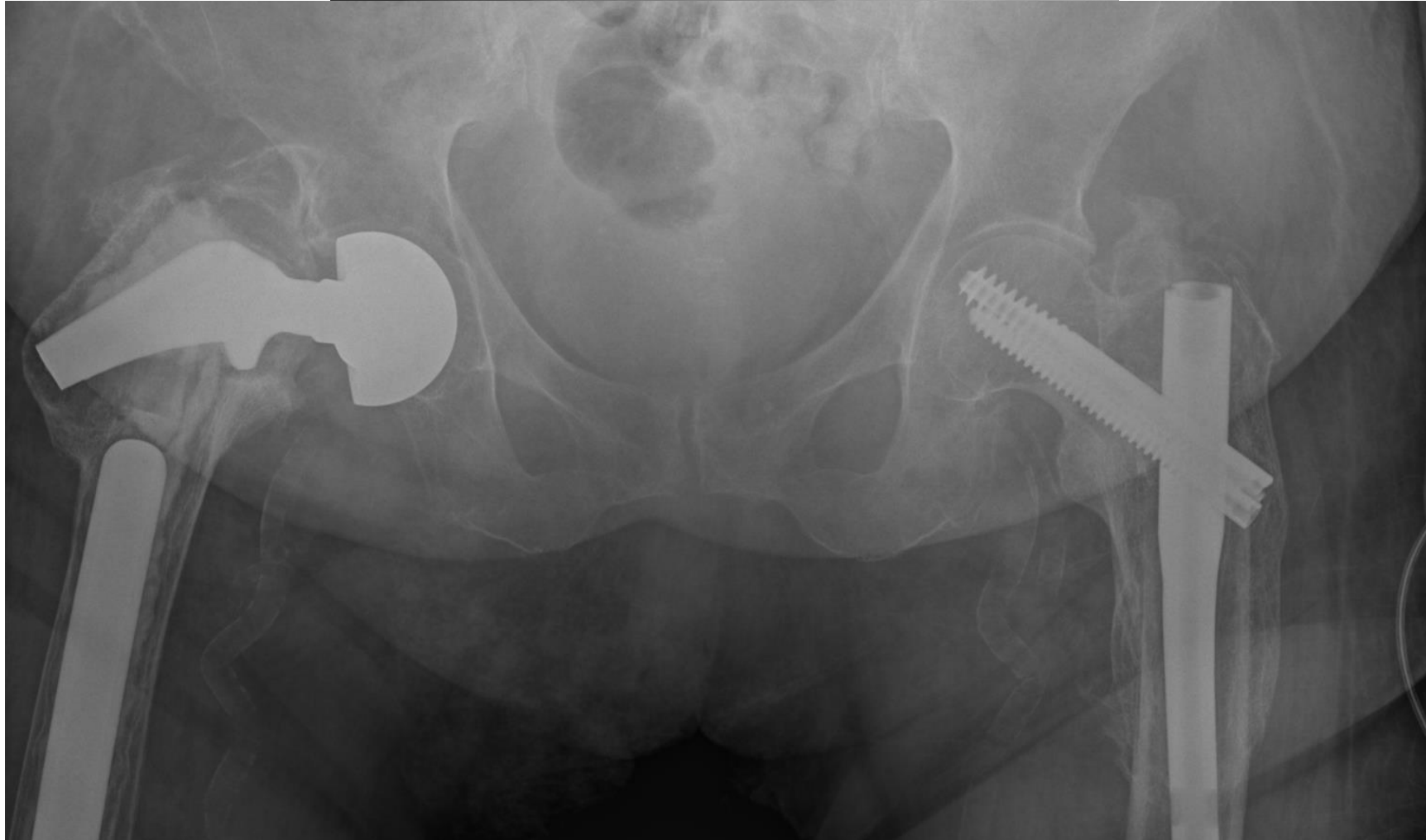
Distal Implant



Distal Implant



Cont



DHS – Still viable??



What are the advantages of DHS in osteoporotic patients, due to the increased risk of cut out.

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DHS vs. Nail

