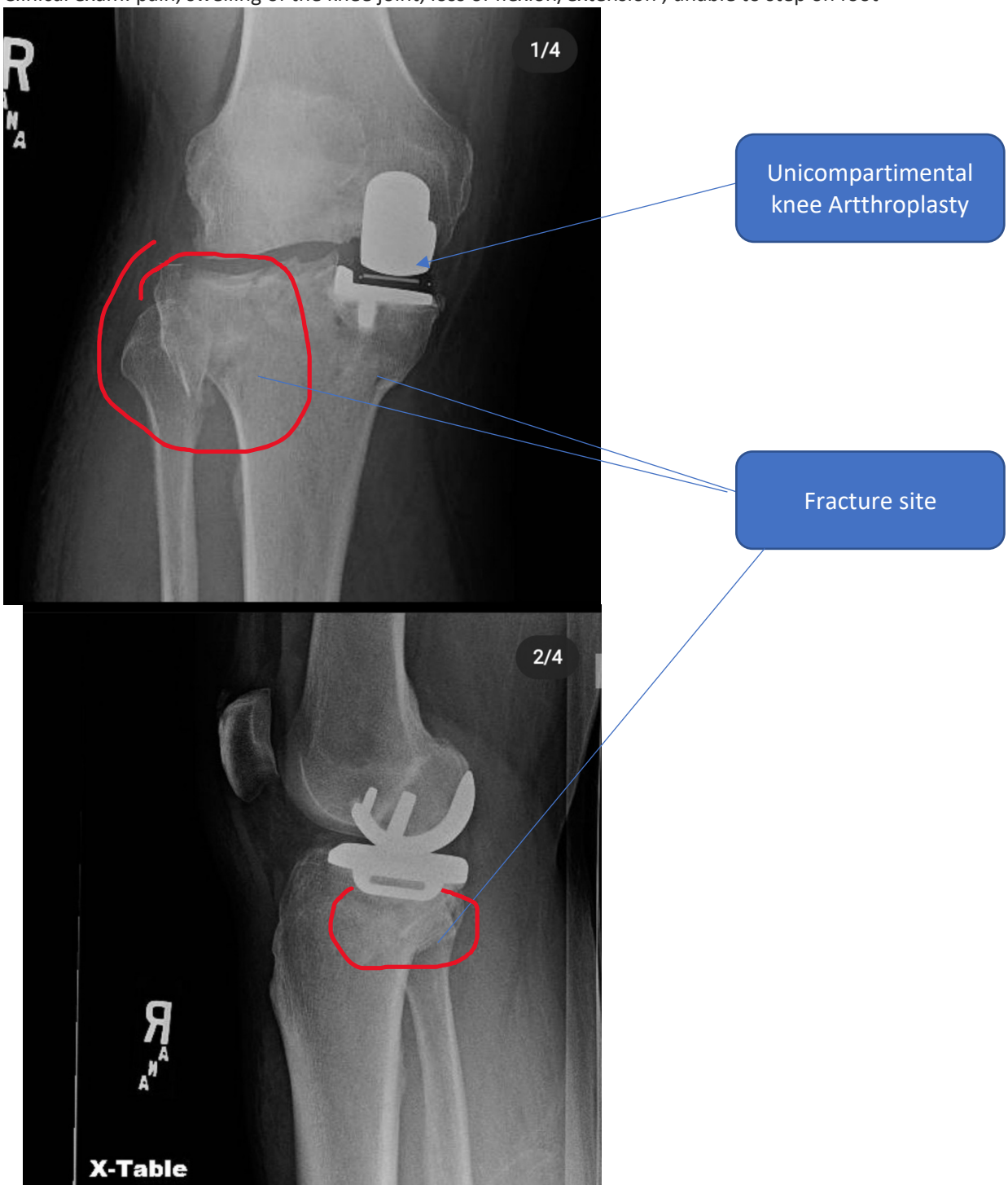
Case presentation

Case no.1

58yo active male, bilateral medial UKAs (well functioning, no pain), fell while skiing.
No preceding lateral, patellofemoral or medial compartment pain.

Clinical exam: pain, swelling of the knee joint, loss of flexion/extension , unable to step on foot



Preop X rays

CT image

Diagnosis: periprosthetic bicondylar tibial plateau fracture around a medial UKA (unicompartimental knee arthroplasty)

Preoperative planning:

1) history- before the injury, was this a well functioning implant? Is it in good condition? Yes. No knee pain, no problems before this injury.
2) arthritis in other compartments? No.
3) is the implant loose because of the fracture, or well fixed? While this is a bicondylar pattern, the tibial component is well fixed.
4) incisions- where are they and does it alter your surgical plan? His is a just medial to midline incision.

Treatment: So based on this information, and the guy being relatively young and very active- fixing it is mandatory. Non op is not an option

Surgery type: open reduction , internal fixation using locking plate

Postop images

Intraop image

Case no.2

23yo, fell 12 feet bouldering.

Closed isolated injury

Clinical exam: swelling, echymosis, acute pain , crepitus present at gentle manipulation, abnormal mobility, total functional loss

Chech for complications

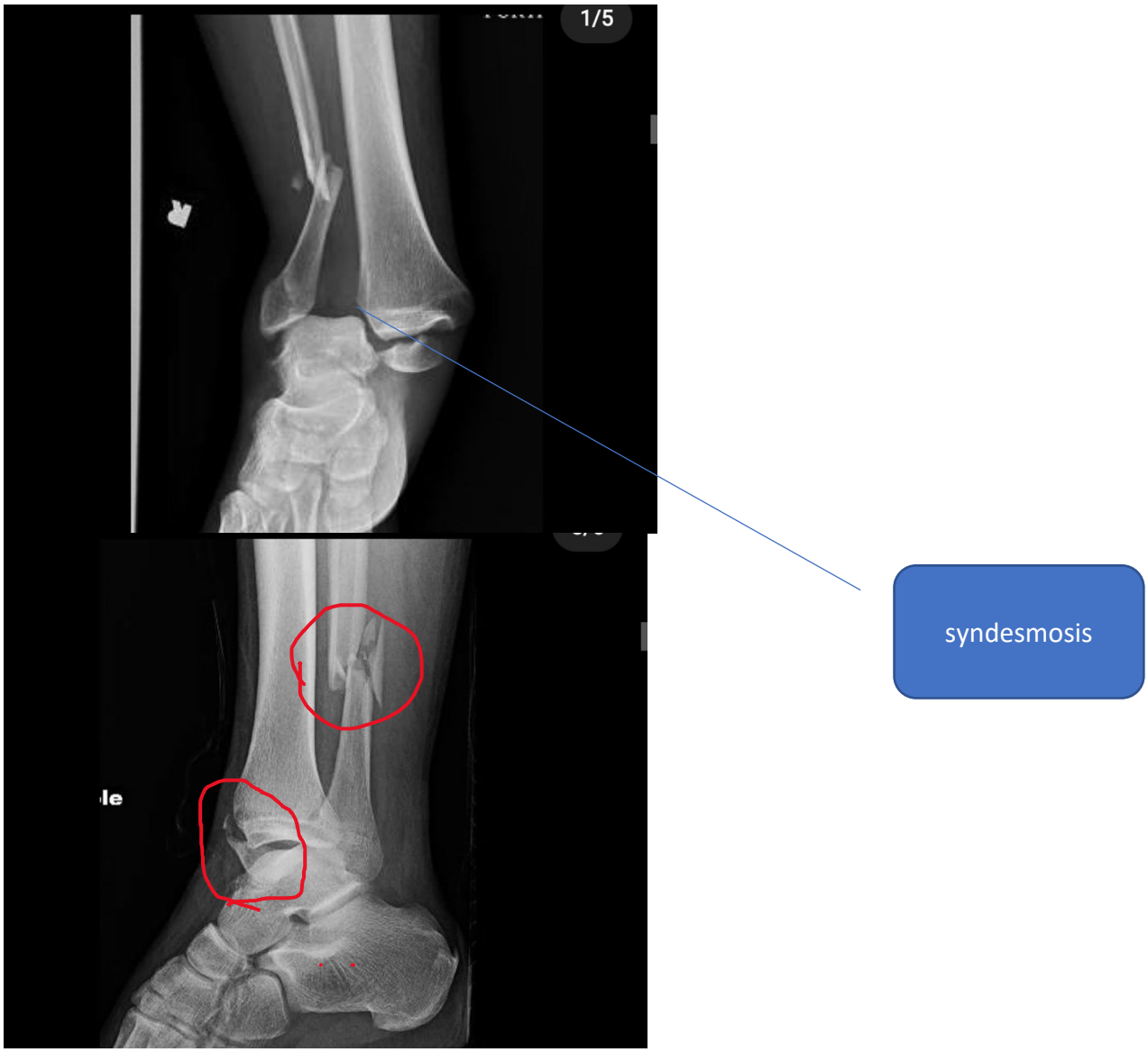
- Open Fracture
- Associated distal nerve dysfunction
- Decreased pulses may indicate a vascular injury

Laboratory studies

- Complete blood count (CBC): If a vascular injury is suspected, to check the hemoglobin and hematocrit values

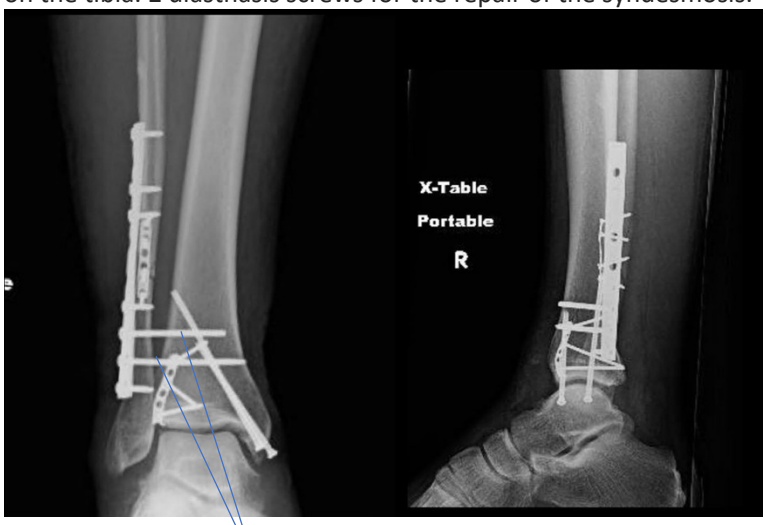
Imaging

- AP and lateral view X-rays of the ankle



AP and Lateral X-rays

Diagnostic: Trans syndesmotic Bymaleolar right ankle fracture dislocation AO 44 B2.3
Treatment: Open reduction internal fixation using double plating on the fibula, and 2 screws and a plate on the tibia. 2 diasthasis screws for the repair of the syndesmosis.



Dyastasis screws

Case no.3

22yo male. Open injury. High energy

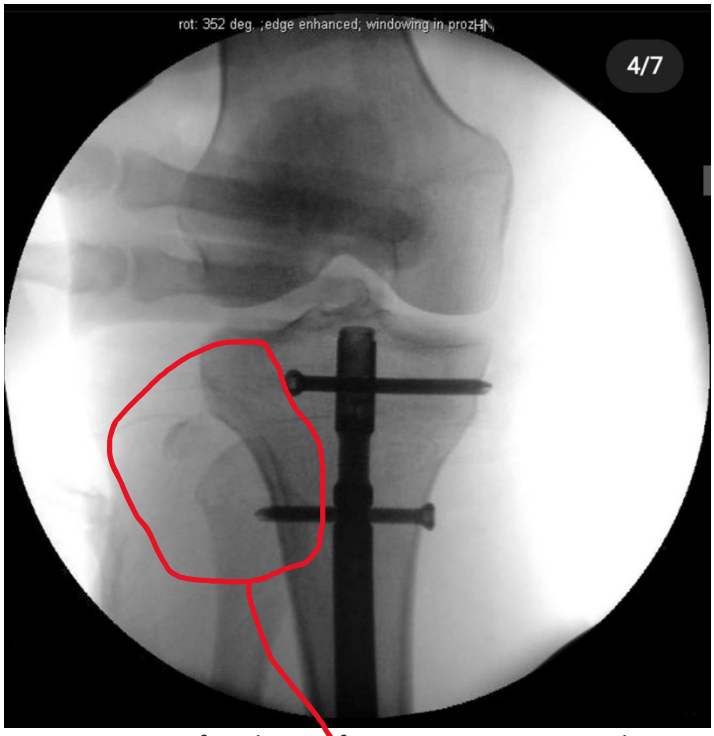
This guy presents 30 minutes from time of injury with a massively swollen leg. ABI normal, palp dp and pt pulses. Moderate pain, not worse with passive stretch. High energy mech. But SWOLLEN .

Possible risk: **Compartment syndrome!!!**

Diagnosis: Medial 1/3 tibial and peroneal mltifragmentary shaft fracture AO 42 C2

Treatment options:

1. Fasciotomy , to prevent / treat compartiment syndrome
2. Closed reduction, internal fixation using locking intramedullary nail.



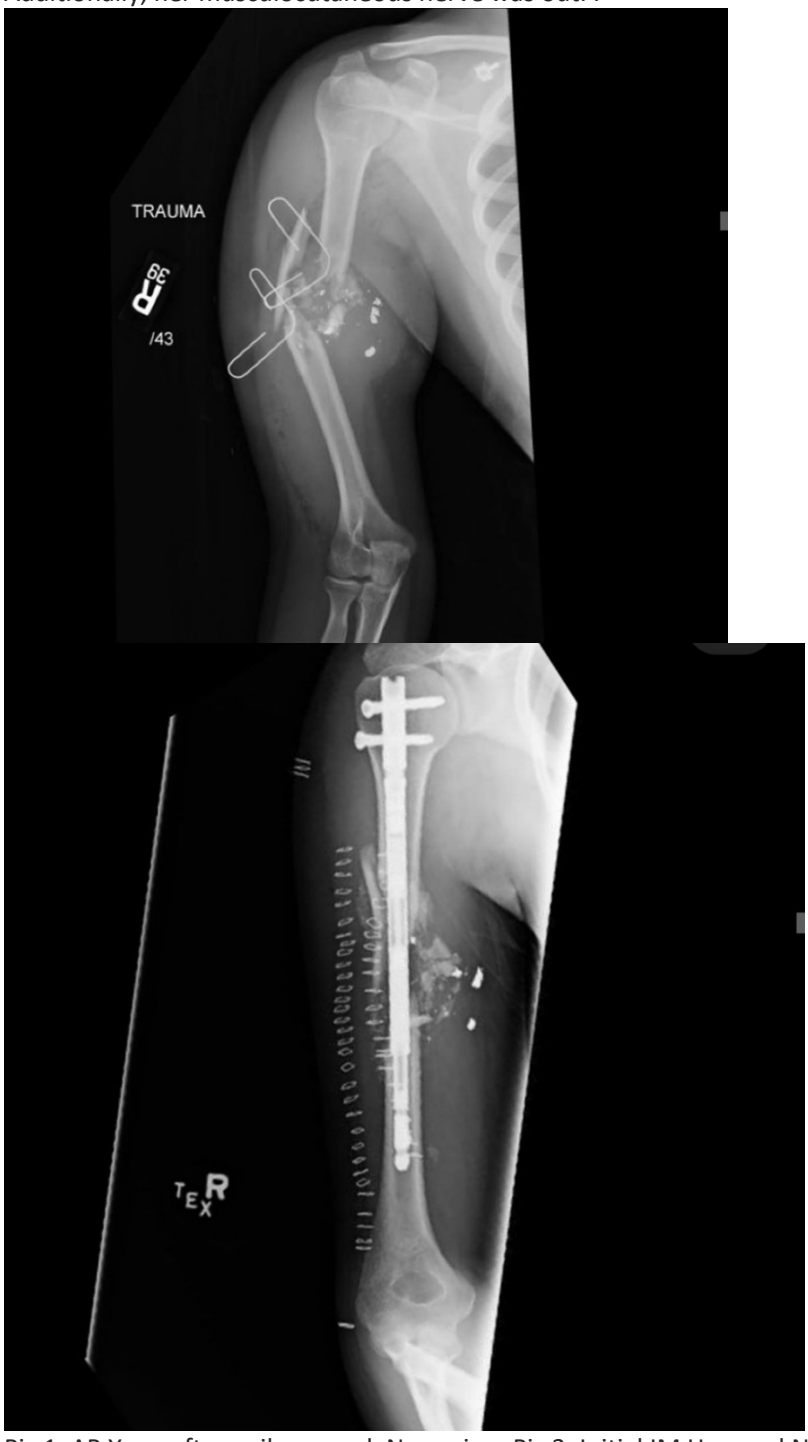
As you can see, after the nail fixation , intra op x rays show proximal fibulo-tibial joint luxation

Proximal fibulo-tibial joint luxation

Final postop x -rays

Case no.4

In brief, this young woman got shot and was treated at an outside hospital with a lengthening nail ,radial nerve grafting. Unfortunately she went on to a nonunion and her radial nerve graft didn't work out. Additionally, her musculocutaneous nerve was out. .



Pic 1. AP X ray after nail removal, Nonunion; Pic 2. Initial IM Humeral Nail

Lab tests: Nonunion labs normal, no infection. .

Treatment: Nail out, modified gerwin approach with a painful radial nerve neurolysis, fibula strut, iliac crest bone graft (combo of corticocancellous and cancellous), a biologic with osteogenic properties, double plating. .

Intra-op images

Post-op AP and lateral X-rays

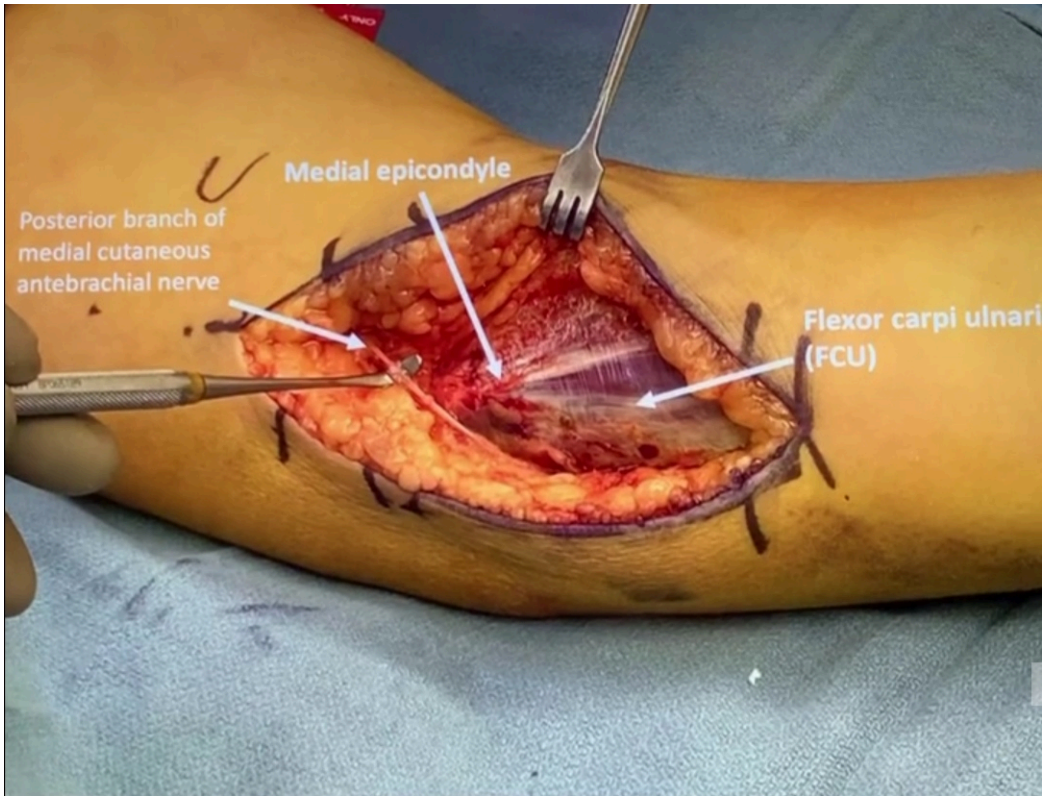
Case no.5

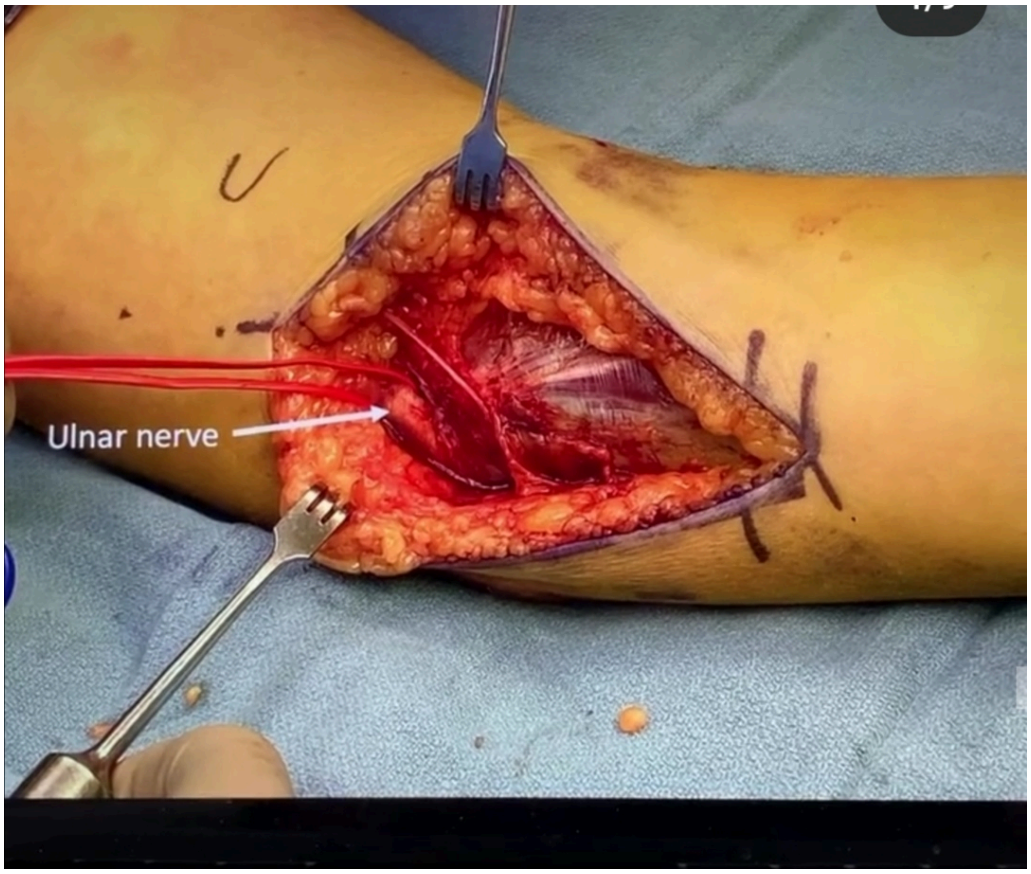
Elbow time 💪 34yo, fell bouldering. Isolated closed injury. No neurologic or vascular injury.

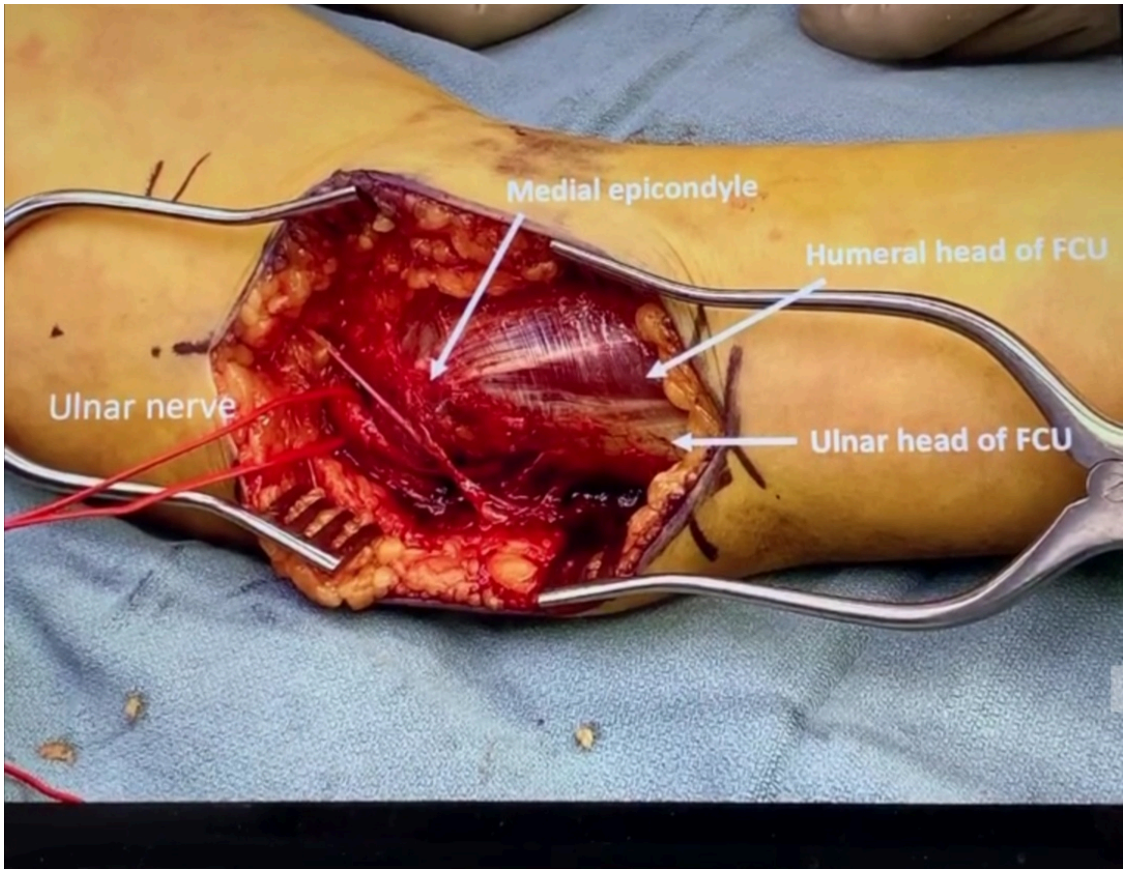
Diagnosis?

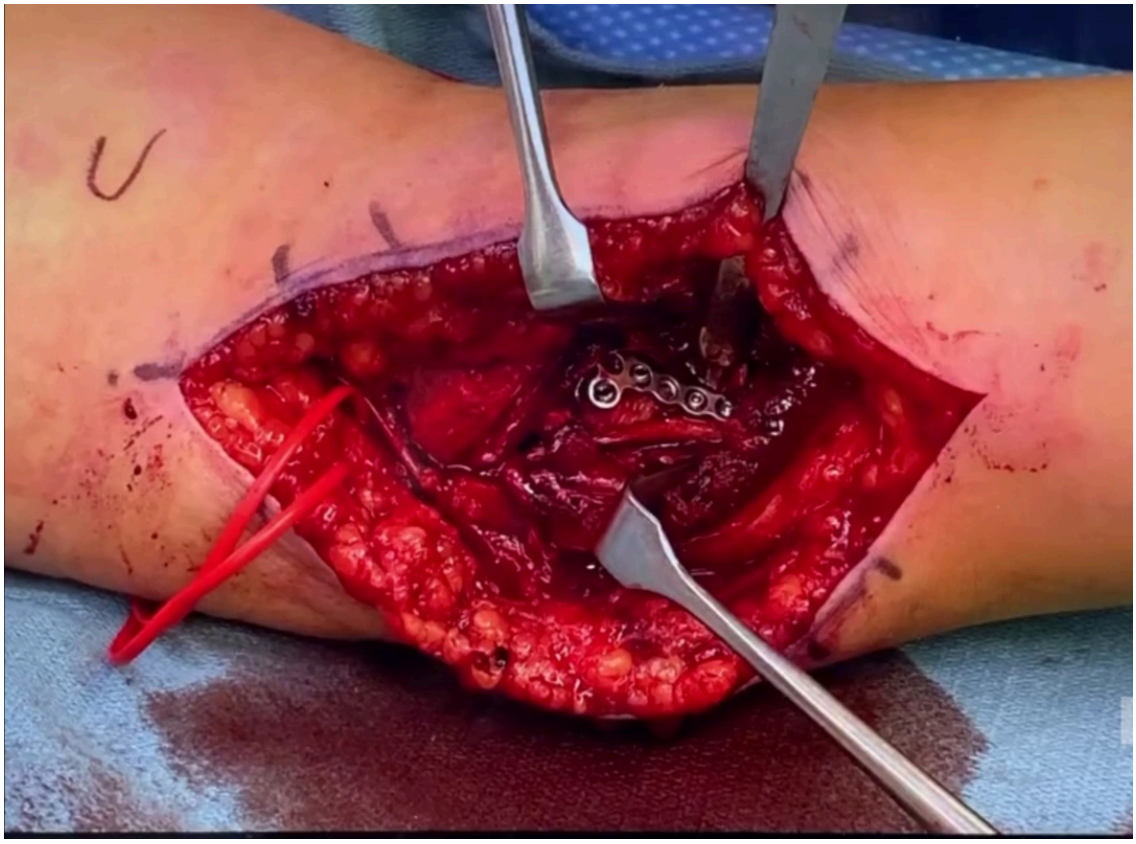
Plan? Post op protocol? .
Common complications? What to counsel the patient about?
This patient fell bouldering and sustained a posterolateral elbow dislocation with a large coronoid base and a separate anteromedial facet fracture, with an associated lateral ulnar collateral ligament (LUCL) rupture.

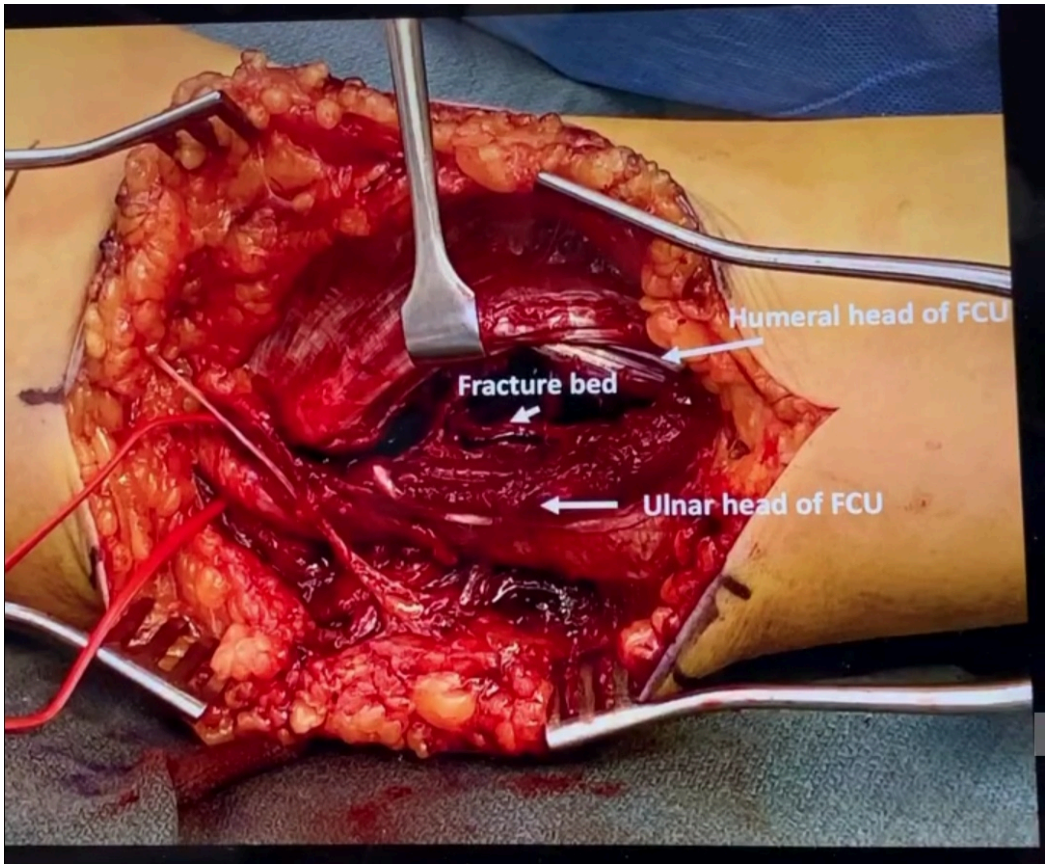
In order to stabilize the elbow, both sides should be addressed.
The coronoid base is reduced first and then the anteromedial facet (which has the medial ulnar collateral ligament on it). After fixing with a 2.0mm t plate and screws (make sure they aren't intraarticular), the elbow should be much more stable... but the LUCL still neeeds to be repaired.
It is repaired with a suture anchor and elbow stability is tested through a full range of motion.


Medial epicondyle
Posterior branch of
medial cutaneous
antebrachial nerve
Flexor carpi ulnari
(FCU)

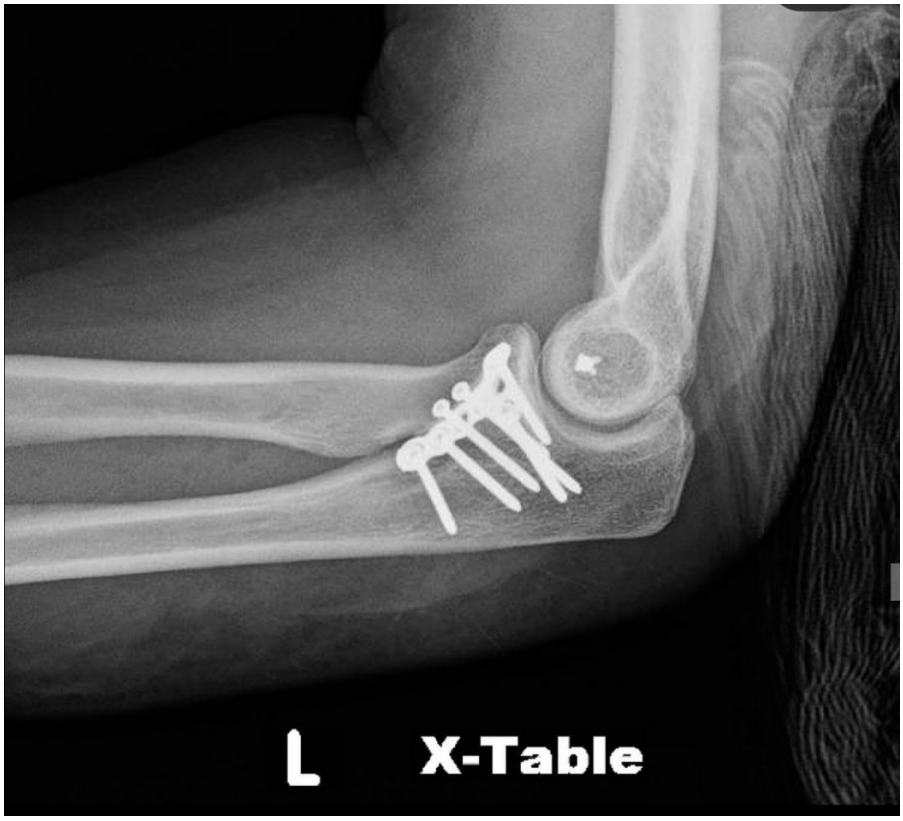

Ulnar nerve


Medial epicondyle
Humeral head of FCU
Ulnar nerve
Ulnar head of FCU





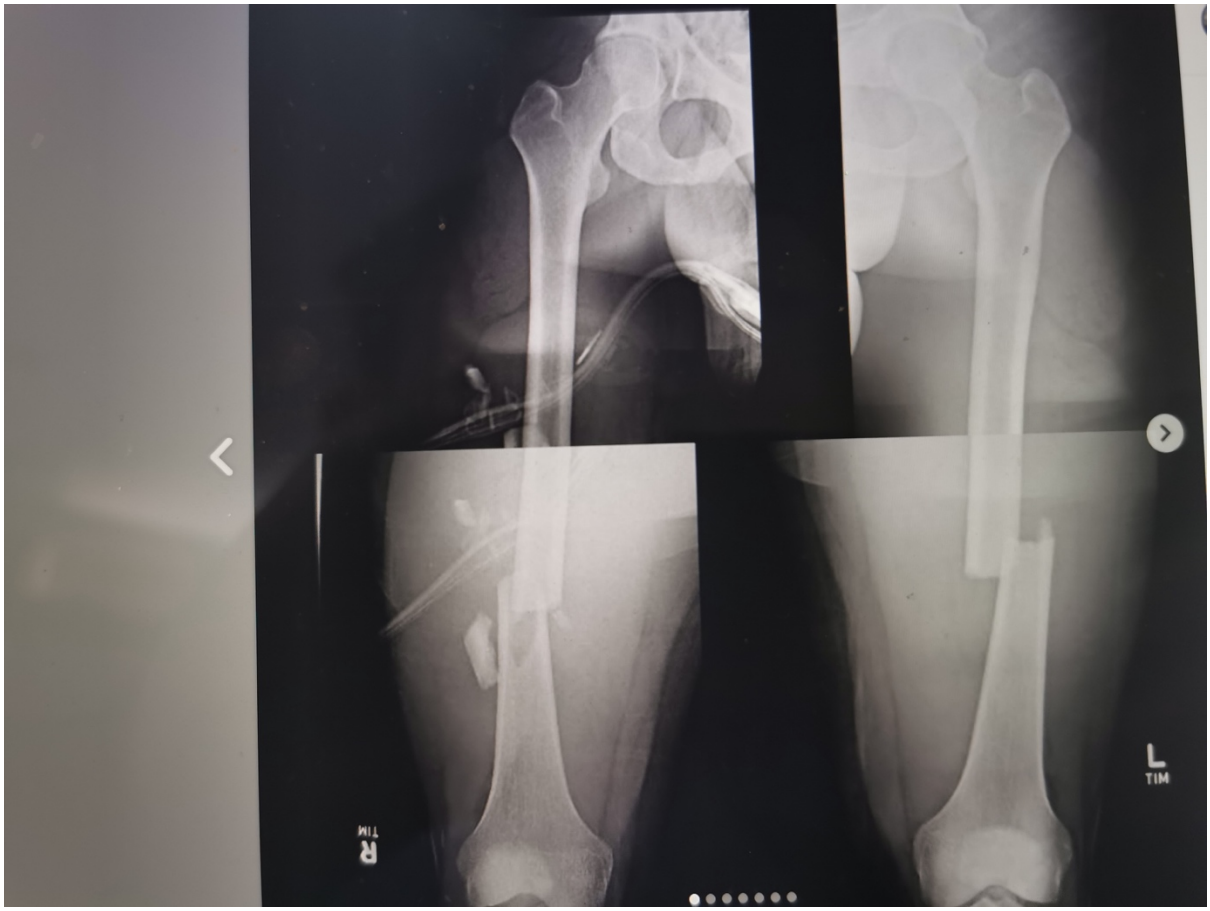
Intra – op images



Post – op X-ray control

Case no.6

Polytrauma case- talk damage control and the spectrum of early aggressive care. .
This is a 35yo male high speed MVC, car vs semi truck.
Patient is intubated in the field, arrives with a lactate of 3.0, hct 29, tachycardia to 110s, normotensive.
Multiple facial fractures, rib fractures, minor pulmonary contusions, minor head bleed (stable), bilateral femur fractures, bilateral traumatic knee arthrotomies, left complex talar body fracture, humerus shaft fracture.




X-Table
MIT
R


MIT

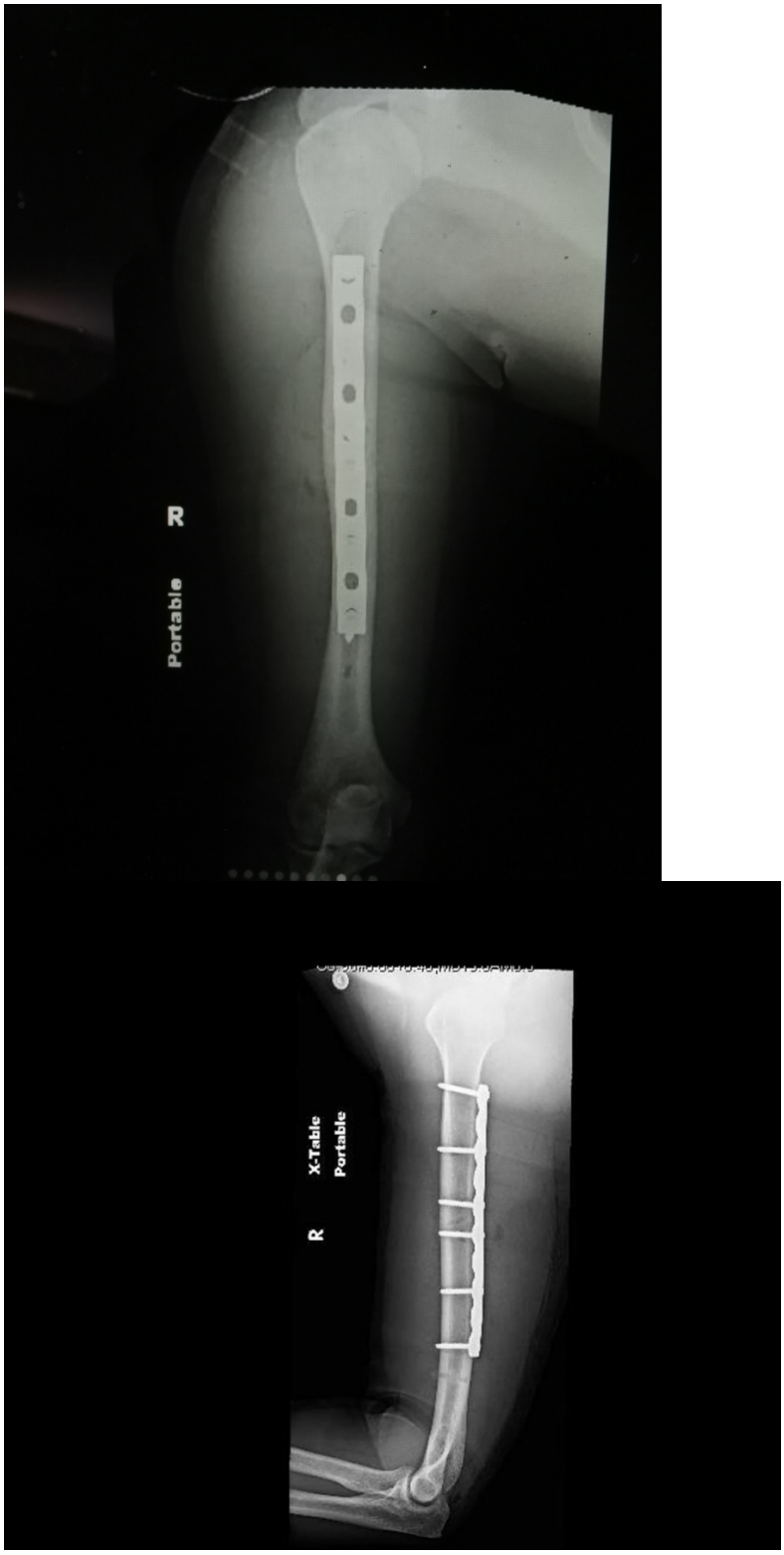
After IVF and 2u prbc patient is normotensive, hr In 90s, lactate 2.4, platelets, coag studies, kidney function normal.
Not indicated for OR for anything other than orthopaedics and facial plastics. .
.
.

LOTS of moving parts here. How are you going to manage this patient? How much or little are you going to do on the first trip to the OR? Table, position, sequence?

Treatment: For this case- traumatic arthrotomies debrided, bilateral femurs nailed. Second operation humerus and talus fixed.

Right femur post- op X-ray; Closed reduction internal fixation using IM locked nail

Left femur post-op X-ray; Closed reduction internal fixation using IM locked nail

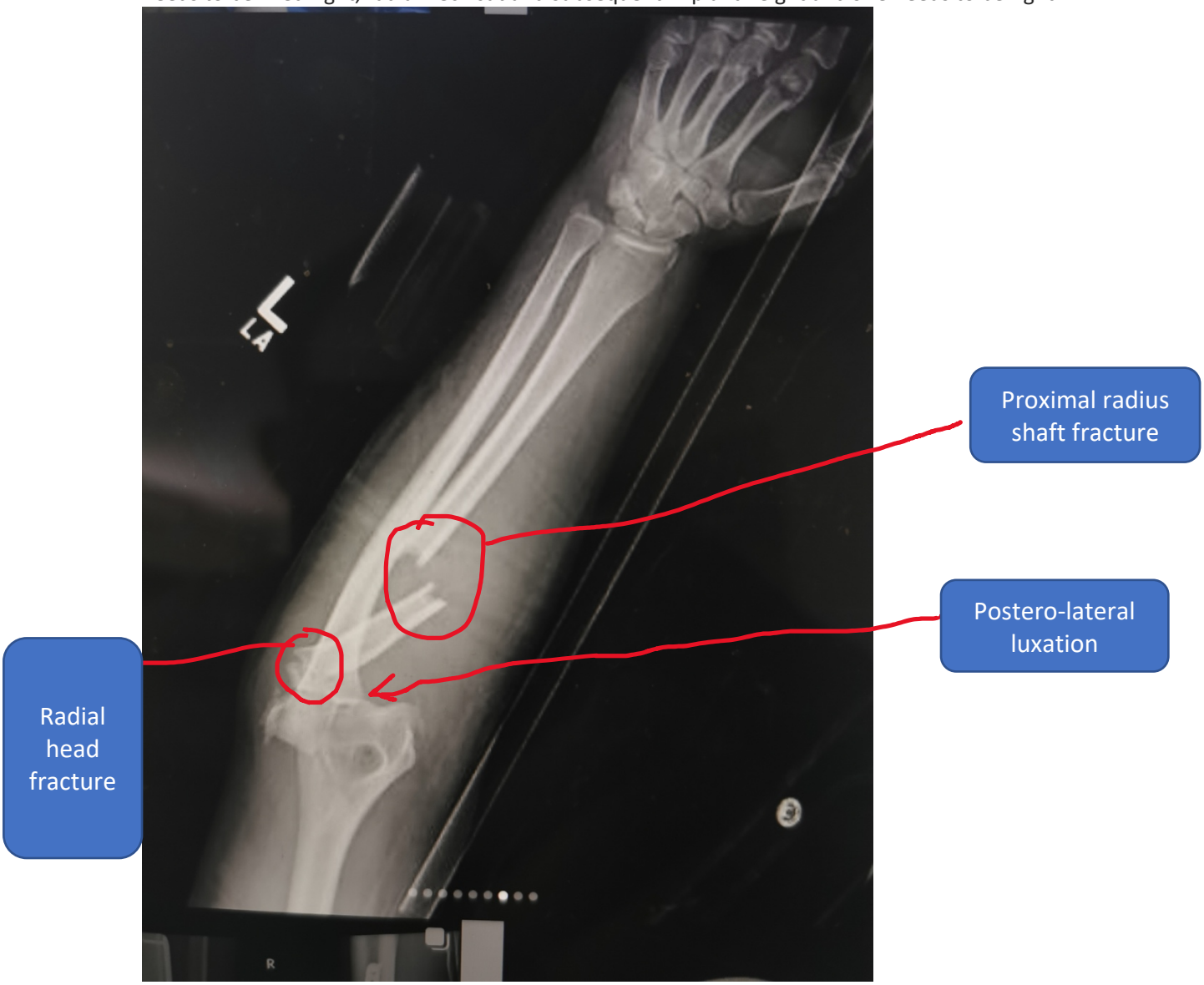


Right humerus post -op x-ray control; Opern reduction ,internal fixation with locking plate

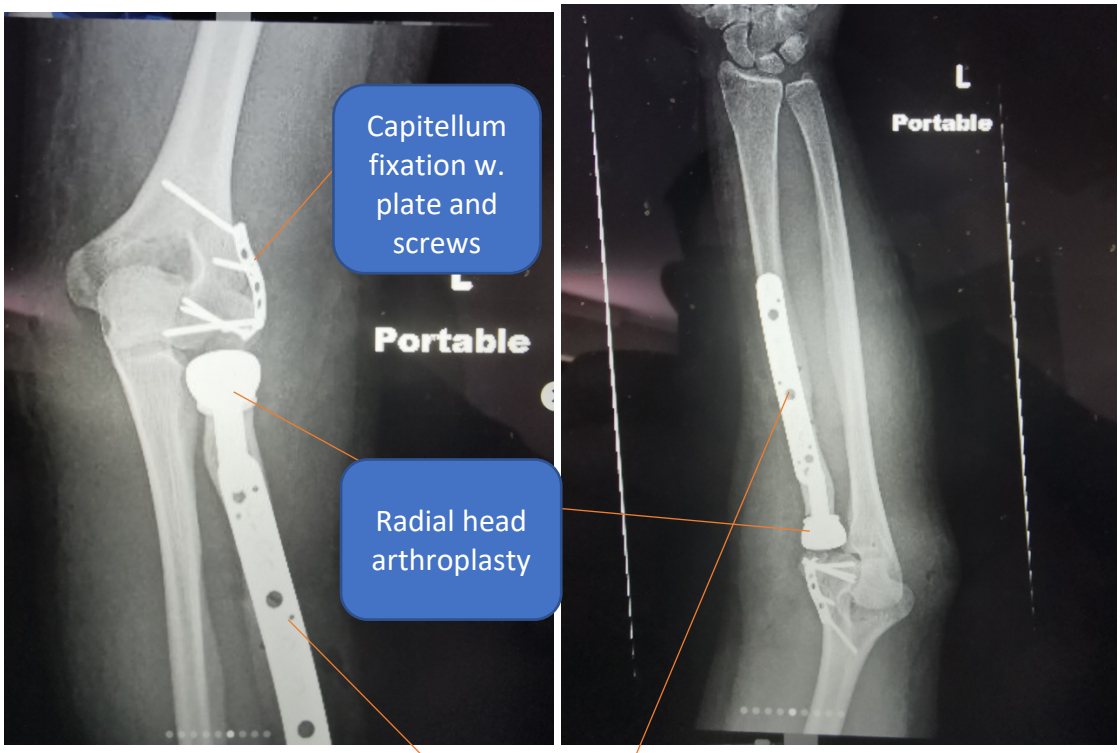
Left Talus fracture post-op X-ray

Case no.7

28yo, car v falling tree.
Not an isolated injury, but assume ready for definitive surgery.
1 cm open fracture, distal dorsal forearm. Vascular status ok.
Issues.
1)open- needs debridement – Risk: INFECTION !!!
2) very tight, needs compartment release
3) proximal radius fracture- simple pattern, needs compression, absolute stability. What approach?
4) radial head... fix or replace?
5) capitellum fracture- how to approach and fix?
6) ligament situation?!
Sequencing and approach is important here.
-Fix radius first- open reduction internal fixation w. plate and screws
-Then capitellum - open reduction internal fixation w. plate and screws
- then radial head – radial head replacement
-then ligaments.
Each step needs t be done right to end up with a stable elbow. Radius needs to be fixed right, capitellum needs to be fixed right, radial neck cut and subsequent implant height and size needs to be right.

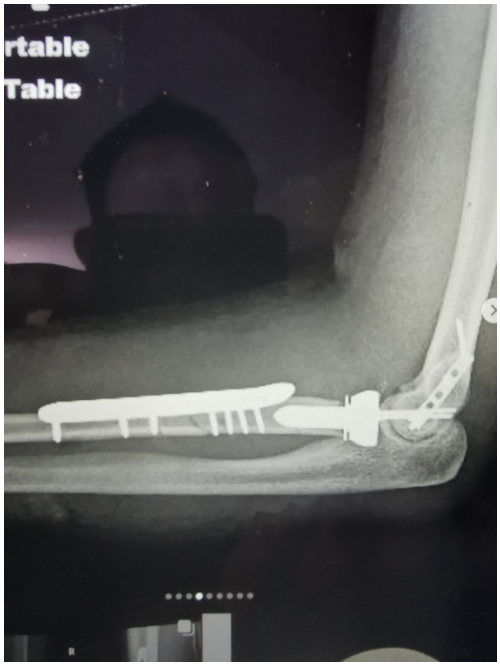


Initial AP forearm X-ray



Post-op AP X-ray

Radius shaft fr ,fixted w. compression plate



Post-op lateral X-ray control

Case no.8

This is a young healthy patient, high energy trauma

Clinical exam

Pain on the left arm, crepitations, lack of function
No vascular and nervous complications,
The patient may support the injured extremity with the uninjured arm
Swelling, ecchymosis, and tenderness
Crepitus from the fracture ends rubbing against each other may be noted with gentle manipulation

Initial AP X-ray

Diagnostic

displaced 2 part proximal humerus fracture

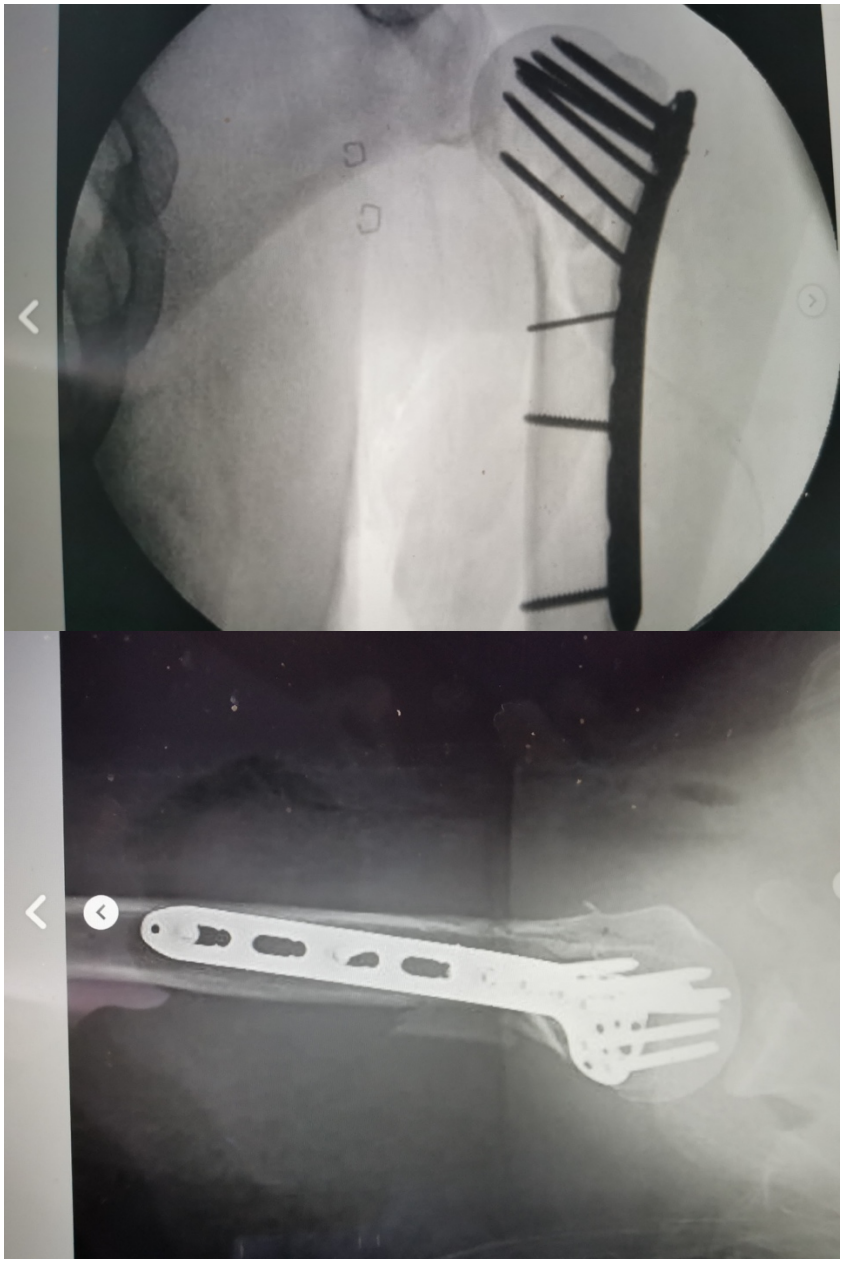
Treatment options:

1. Conservative (orthopedic) treatment – closed reduction and Dessault type imobilization
2. surgical treatment

INDICATIONS for surgical treatment

- Complete fracture displacement
- Severe displacement
- Comminuted fractures
- Neurovascular compromise
- Polytrauma (with multiple fractures): To expedite rehabilitation
- Open fractures
- Fractures with interposed muscle

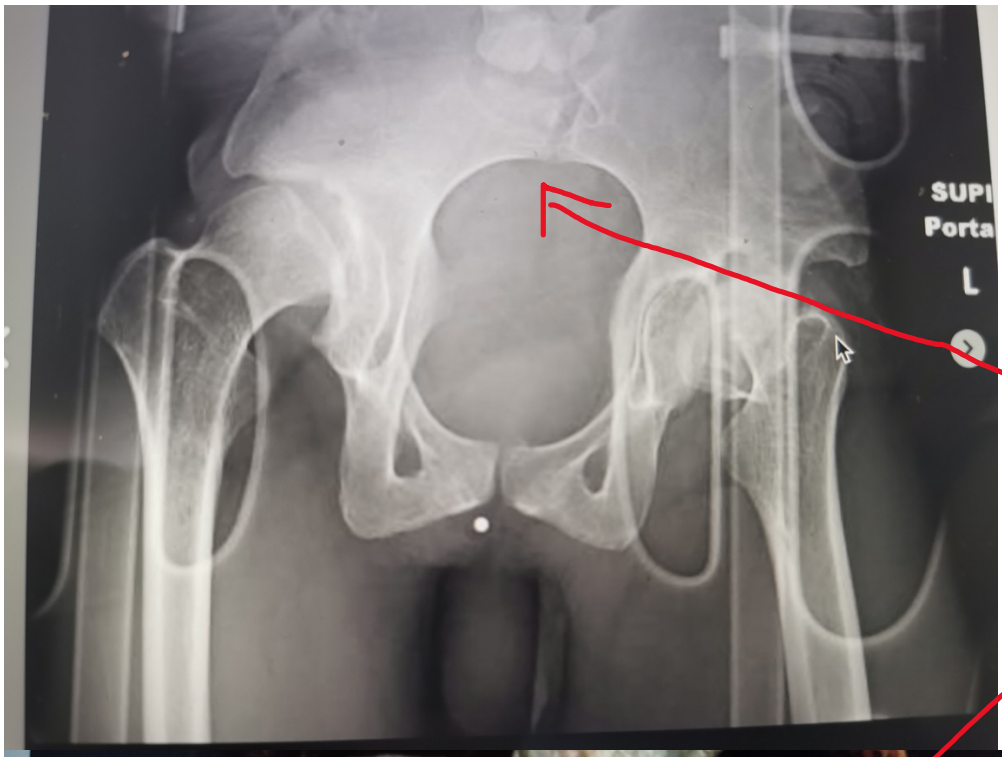
In this case , having a young healthy pacient, with a displaced 2 part fracture, the correct indication is Surgical Treatment – Open reduction and internal fixation using a plate and screws

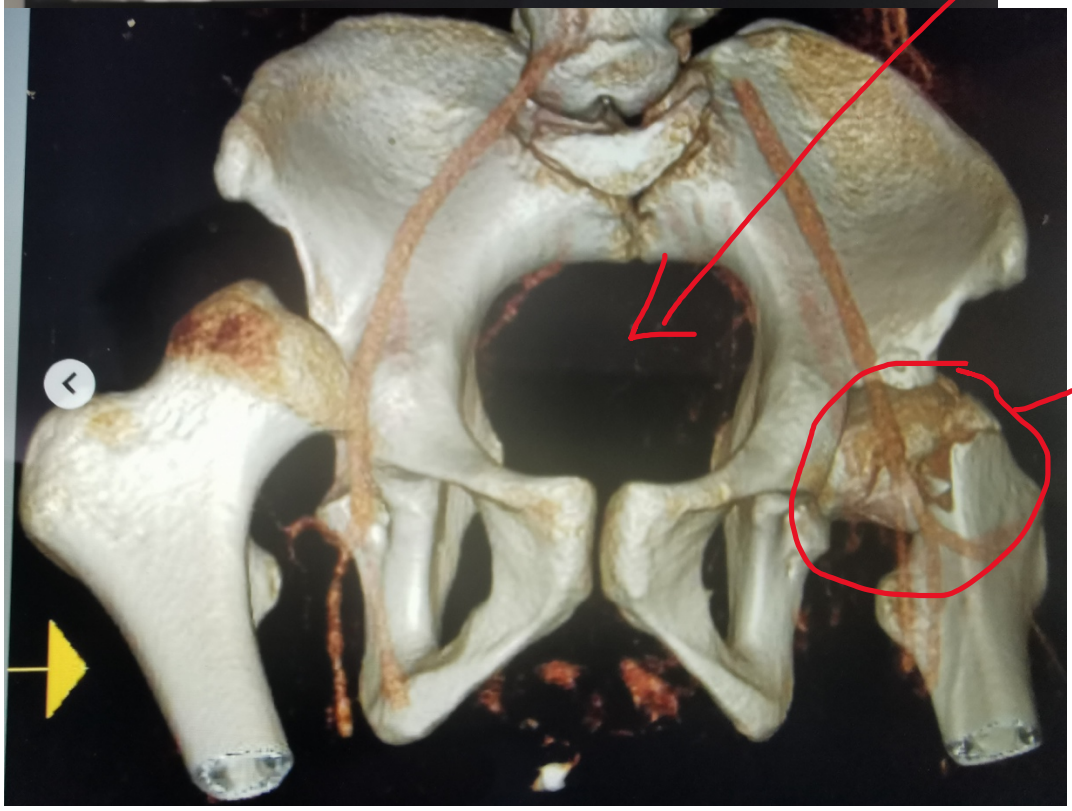


Post – op AP and lateral X-rays

Case no.9

24yo man, hit at highway speeds on a scooter. .
Diagnoses? ... unusual maybe a little?
Thoughts regarding treatment?





Sacral agenesis

Femoral neck fracture

This is a young active man with caudal regression syndrome (sacral agenesis) who sustained a displaced comminuted subcapital femoral neck fracture when he was struck by a car while on his scooter.
Caudal regression syndrome occurs in 1/25000 births. It primarily affects the genitourinary system, the lower GI system and the lower extremities. .
Despite complete absence of his sacrum and bilateral congenital hip dysplasia, he ambulates without hip pain.

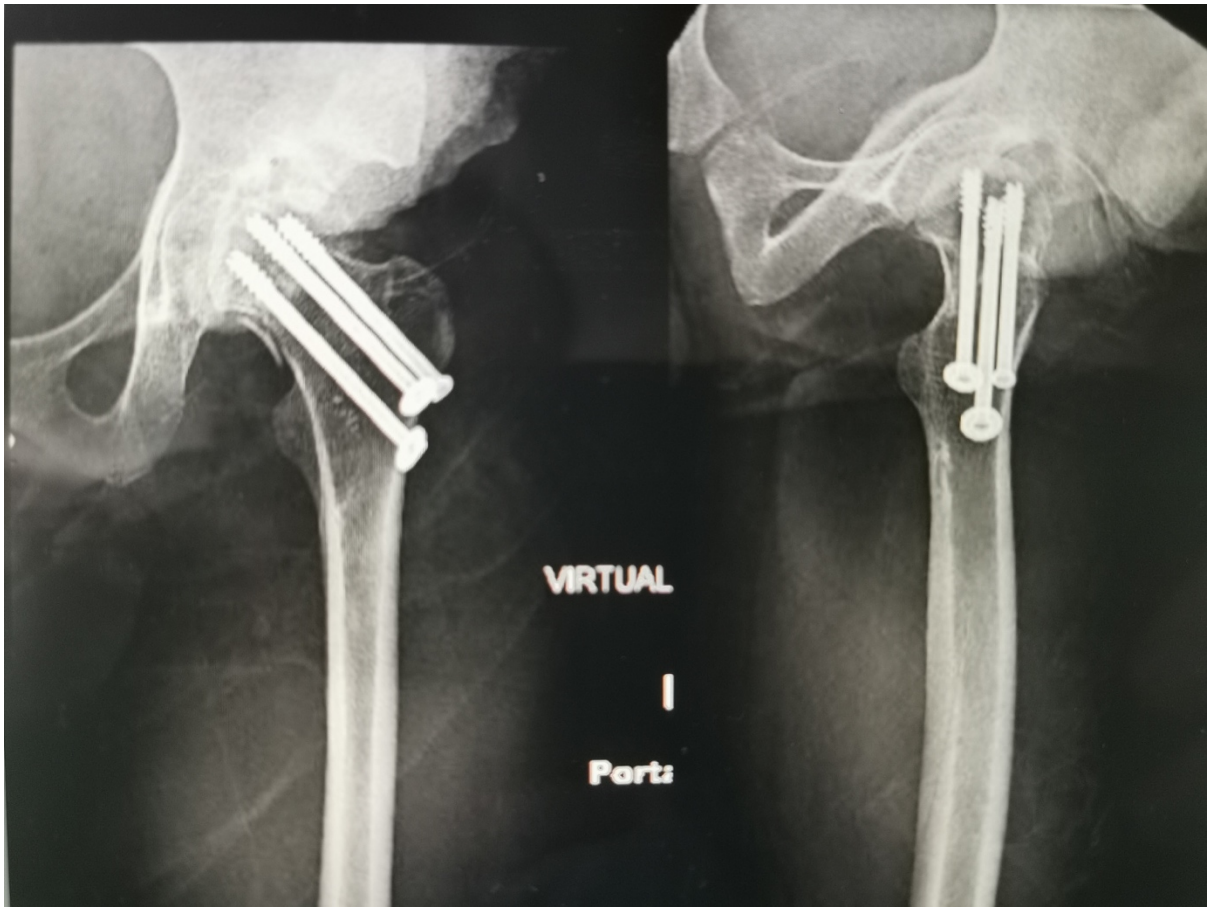
Treatment options:

1) Partial hip arthroplasty
2) Closed reduction and internal screw fixations

"Why closed reduction and why screws", you ask? Great questions.

Goal 1)for young displaced femoral neck fracture = anatomic reduction. This is best done with an open approach. Two reasons this patient did not get an open approach. One, look back at the CT- if the anterior neck is comminuted, you have no reads... thus the benefit of open is lost. Two- this patient has a urostomy and colostomy VERY near where the upper limb of the anterior incision would be. So for those reasons, closed reduction.

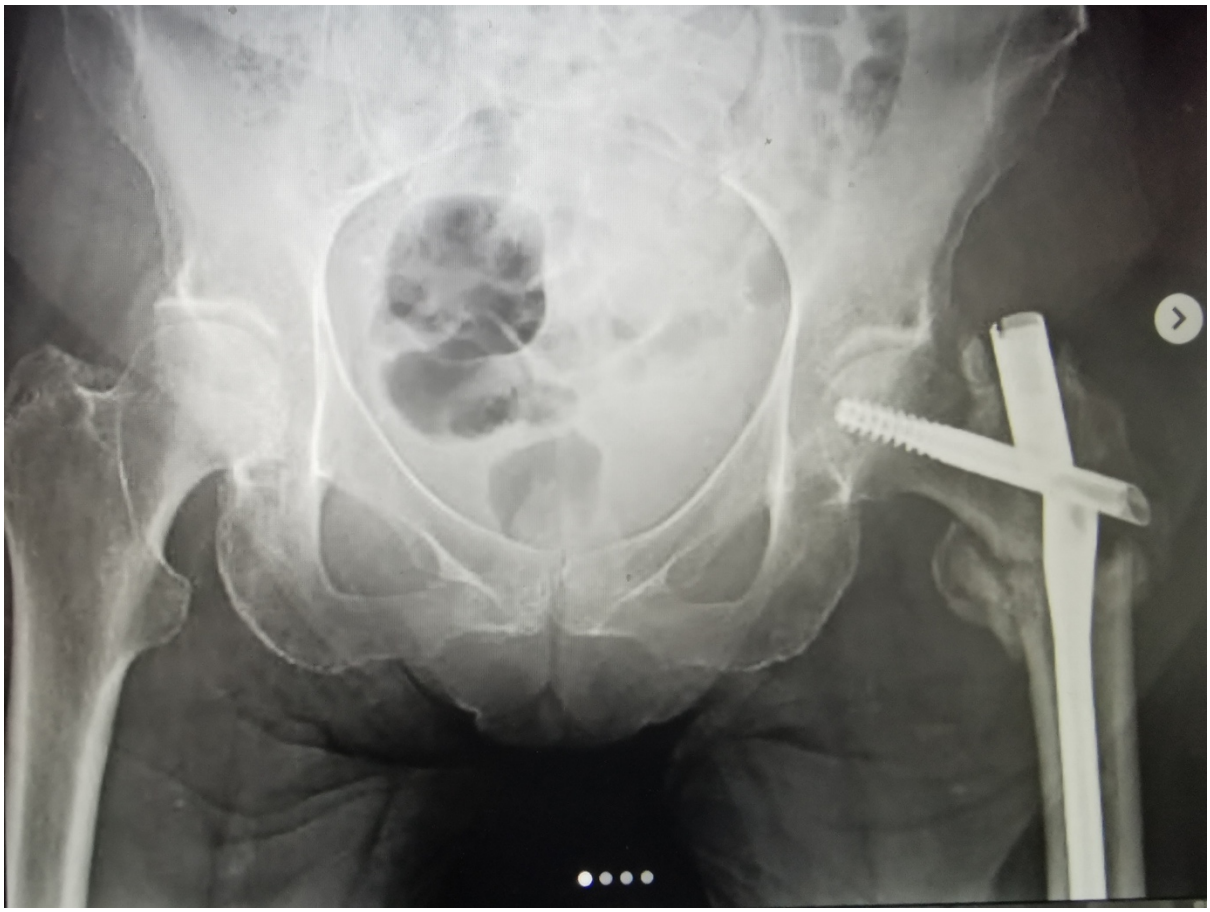
2)Why screws rather than fixed angle? In subcapital patterns, screws allow more fixation into the small segment.



Post-op AP and lateral X-rays

Case no.10

74yo female, 4 part intertrochanteric femur fracture after a ground level fall. She was treated at an outside hospital with closed reduction and CM nailing. She was weight bearing with a walker and improving over a 6 week period. At 7 weeks she developed increasing pain. She presents to clinic with these images.

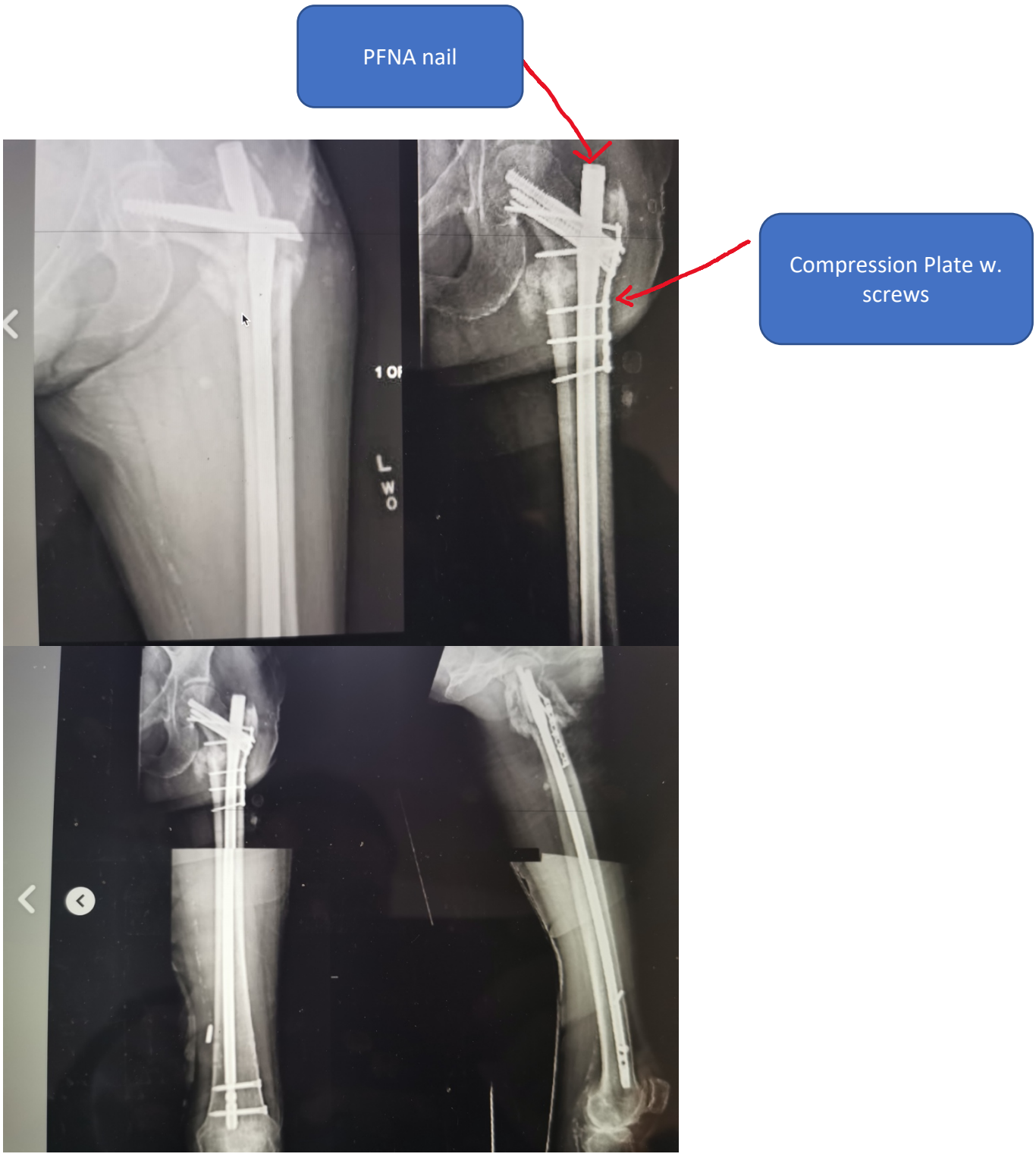


Diagnostic

Intertrochanteric non-union and implant deterioration

Treatment

Blade vs nail? Both have their pros and cons- let's discuss. A blade is by far and away a better tool to generate massive compression and maintain it (which is of course ideal for this situation). But in a frail geriatric patient, a nail has distinct benefits over a blade. If this was a younger patient with good bone, this is a blade plate every time. But in a geriatric patient my preference is a plate + ATD assisted reduction and compression followed by revision nailing to protect the whole femur.



Post-op X-rays