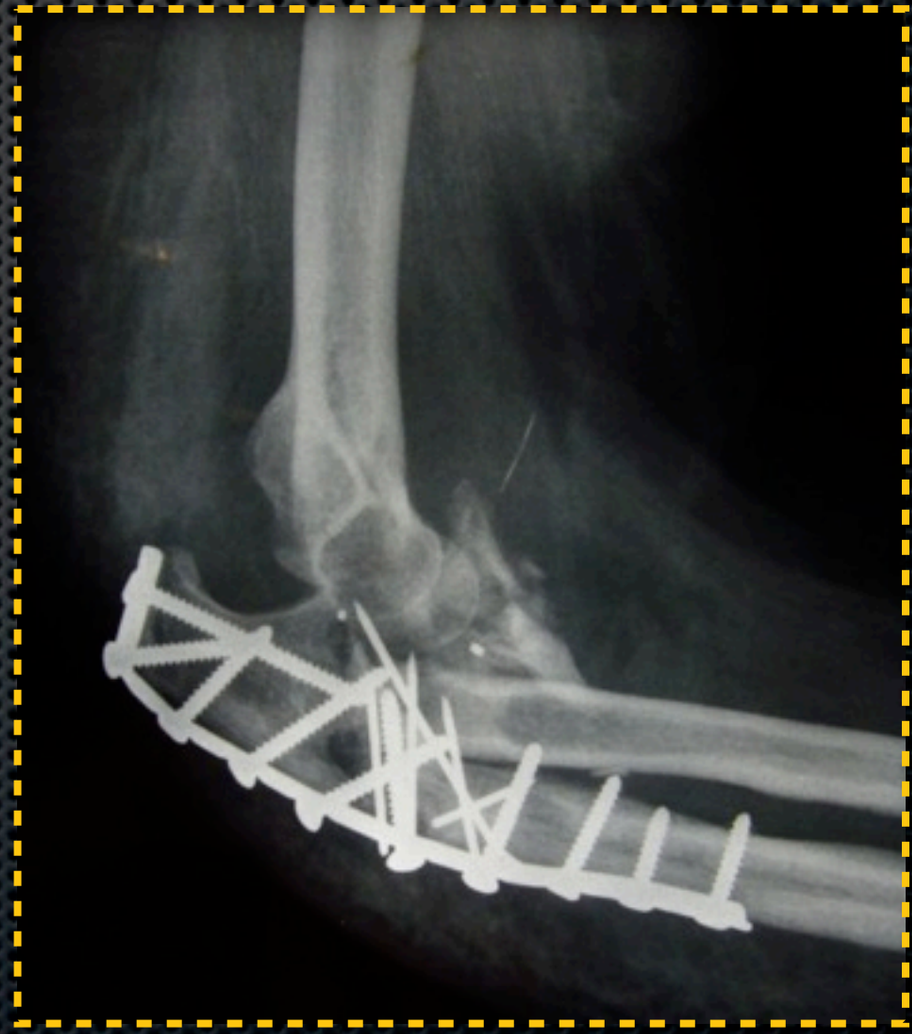
Sequelae of Monteggia's fracture-dislocation (in adults)

What's up doc ?

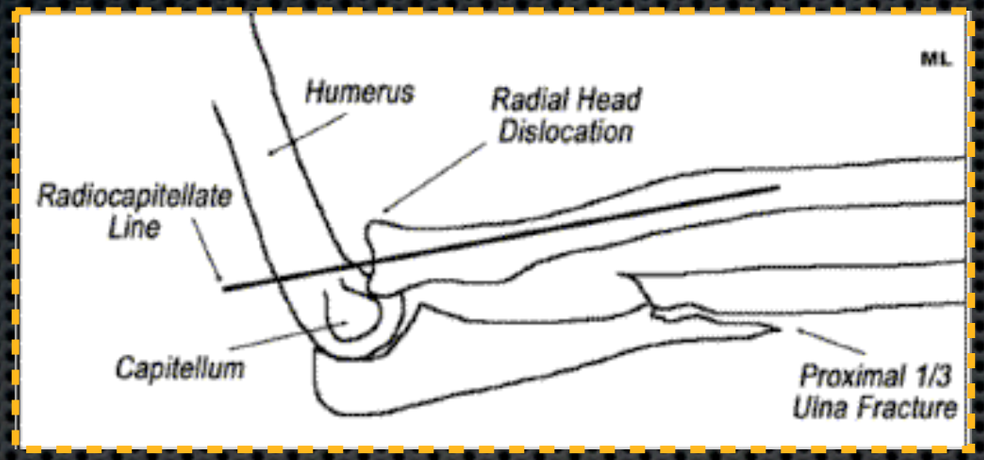


Christian Dumontier, MD, PhD

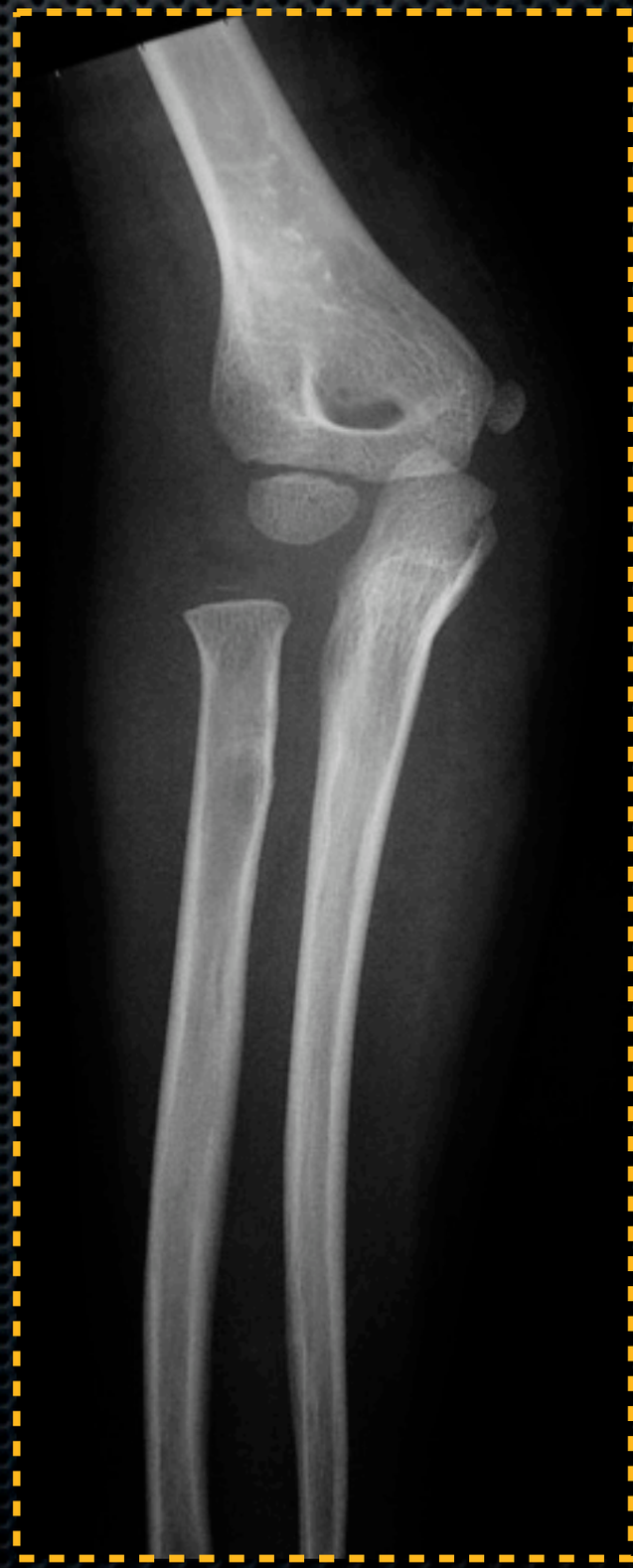
Institut de la main & hôpital saint Antoine, Paris

Avec l'aide de Thierry Judet et des journées du coude de Garches

Monteggia's fracture



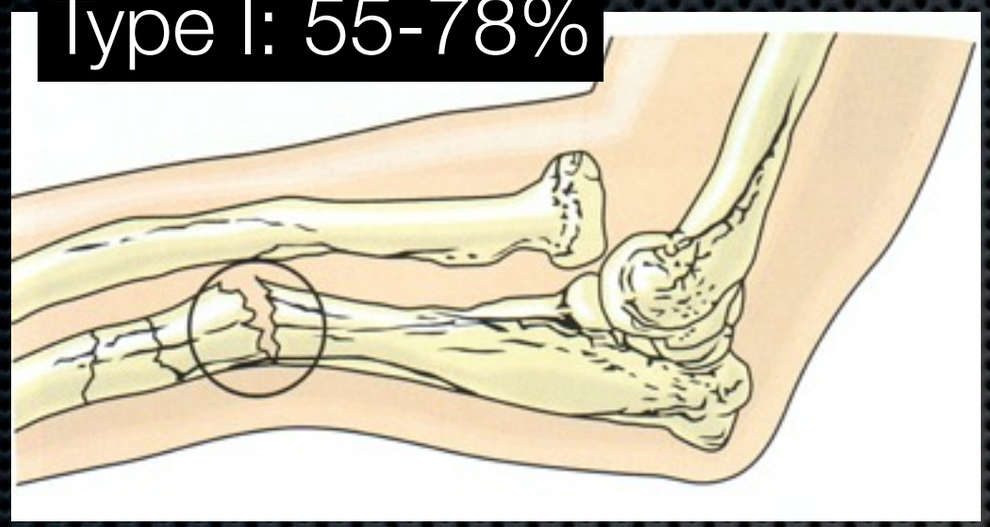
Giovanni Battista Monteggia, Milan, 1814



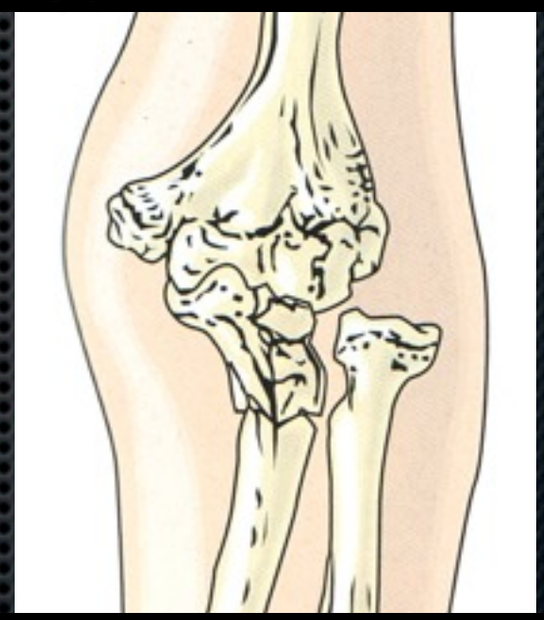
- Fracture of the ulna
- Anterior radial head dislocation

Bado's classification (1967) - 4 types

Type I: 55-78%

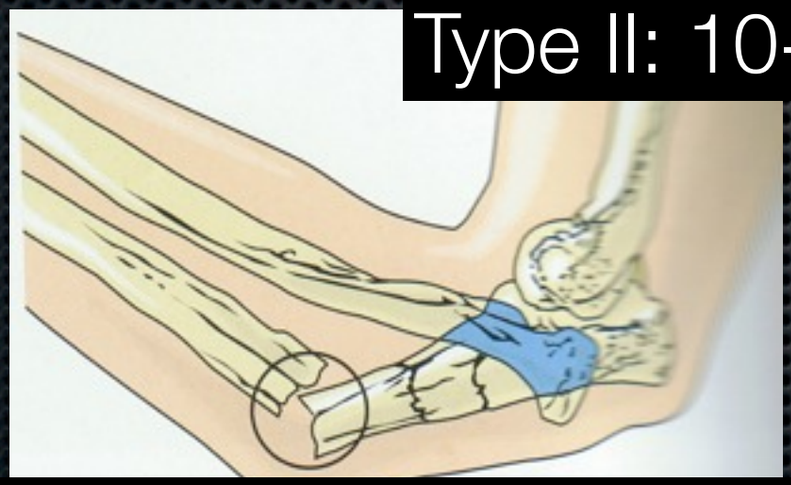


Type III: 7-20%

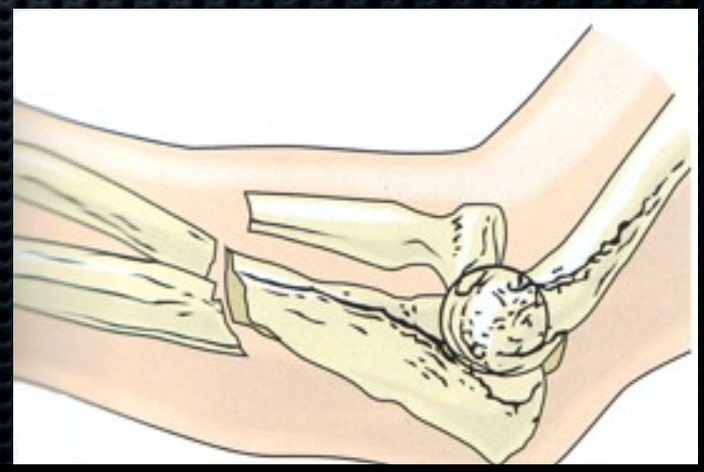


Children «only»

Type II: 10-15%

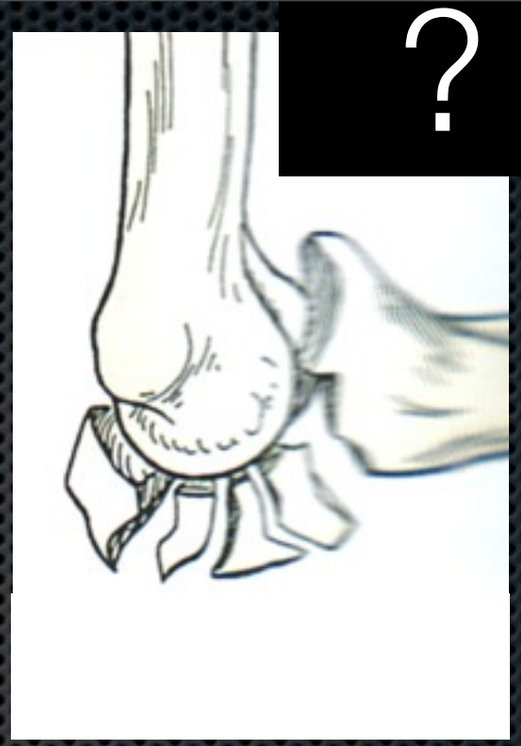


Predominant in adult ?



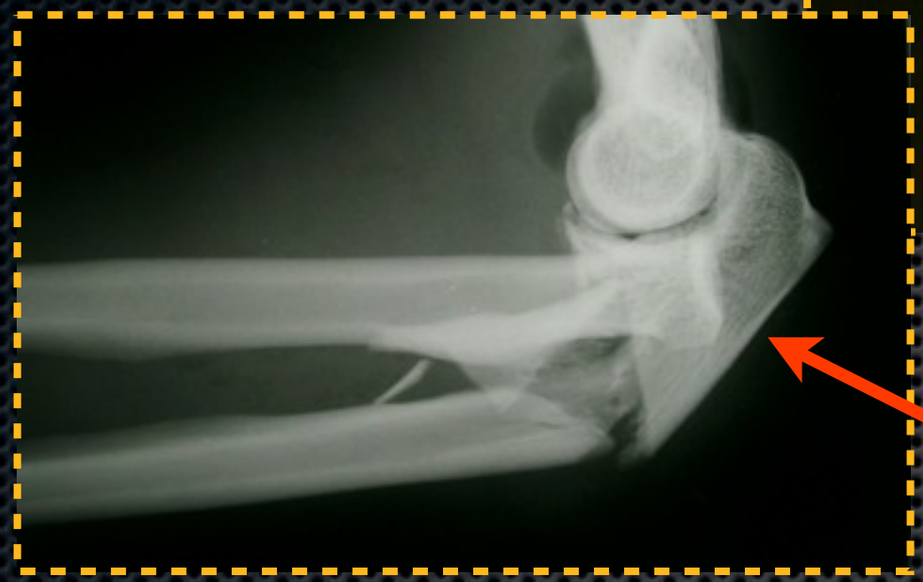
Type IV: 5%

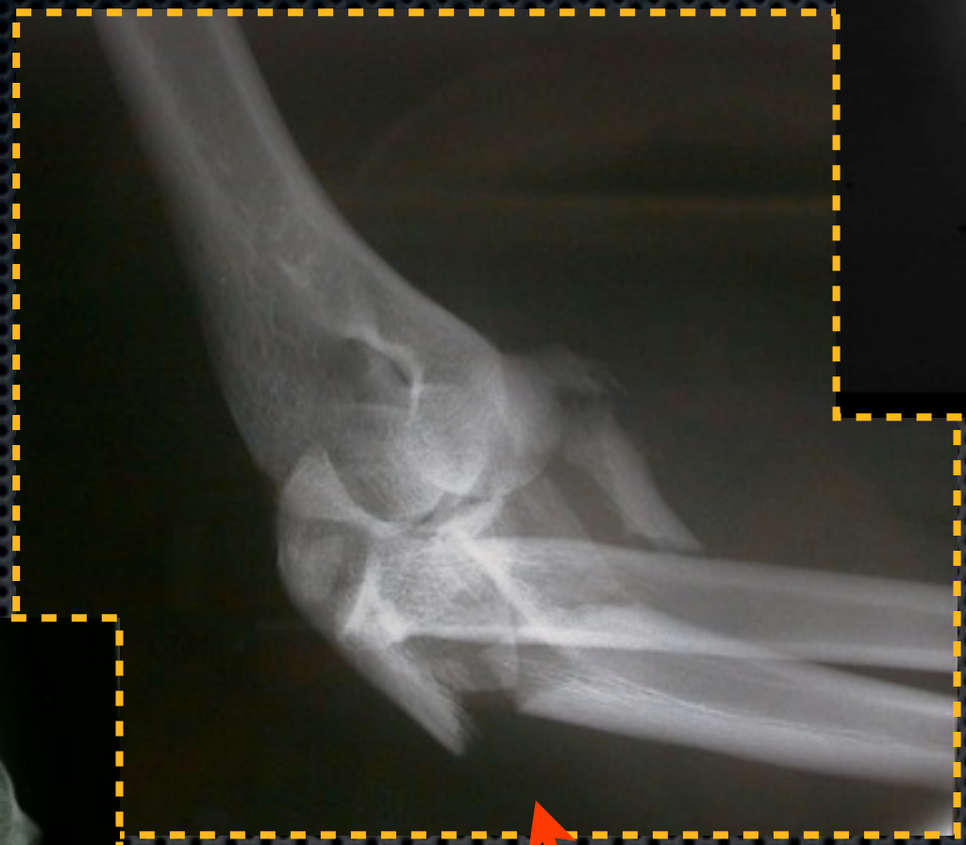
Limits of this classification

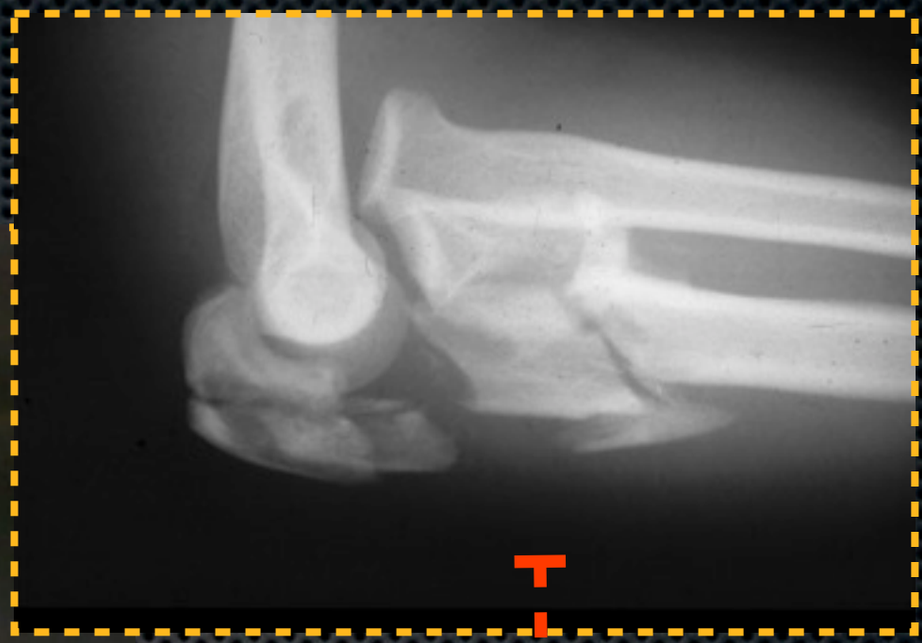


- Some fractures of the proximal ulna extend into the articular surface
- Those are the most complex to treat (Ring)
  - 48 pts, > 2 yrs FU,
  - 26 «Bado type II» also had a radial head fracture. 10 also a coronoid fracture
  - Broberg and Morrey score: 86 points (15-100)

Monteggia's-like fracture?







?

- Epiphyso-metaphyseal fracture + radial dislocation (+/- radial head fracture)

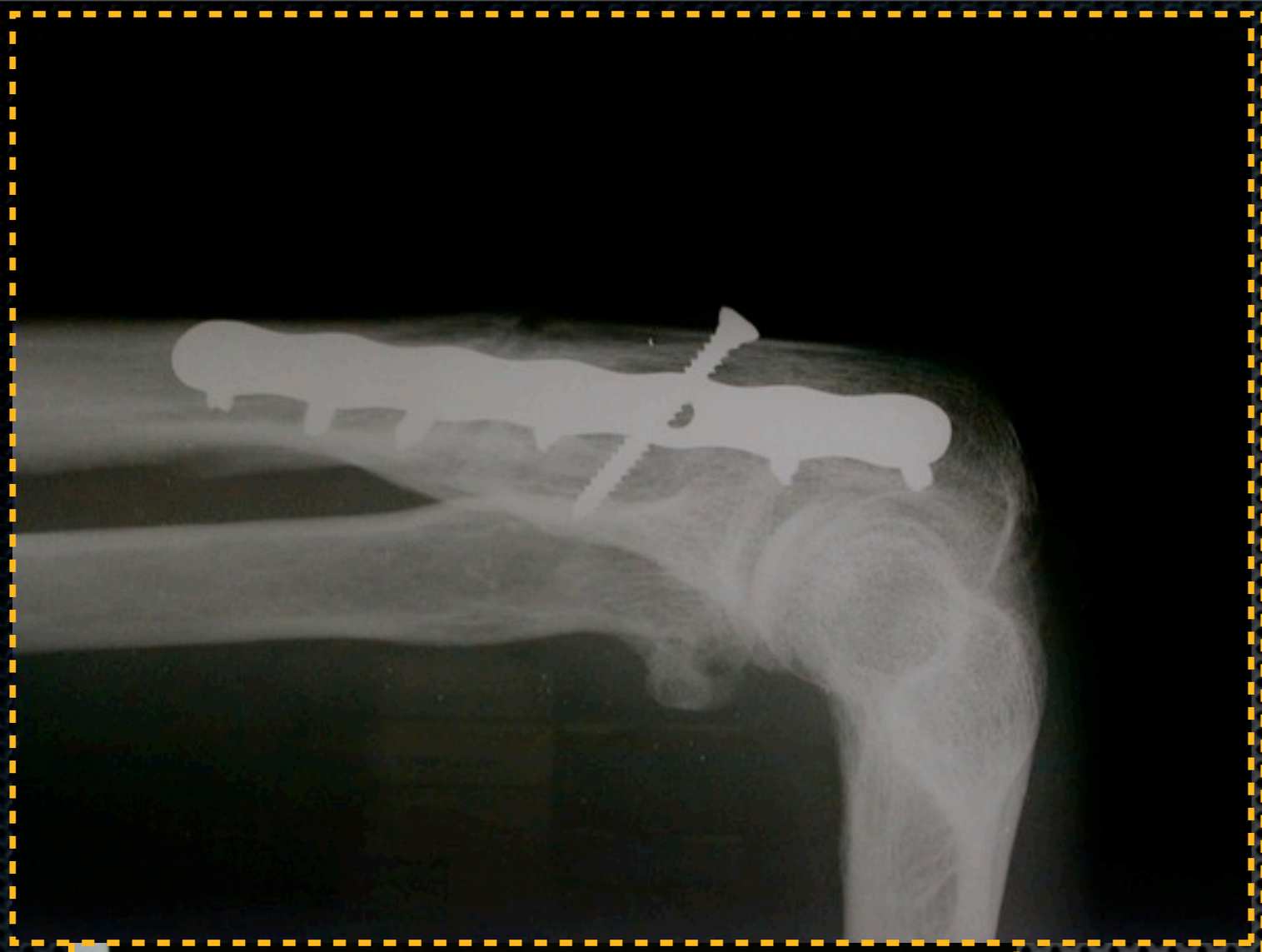
Table 2
Subclassification of the posterior Monteggia lesion

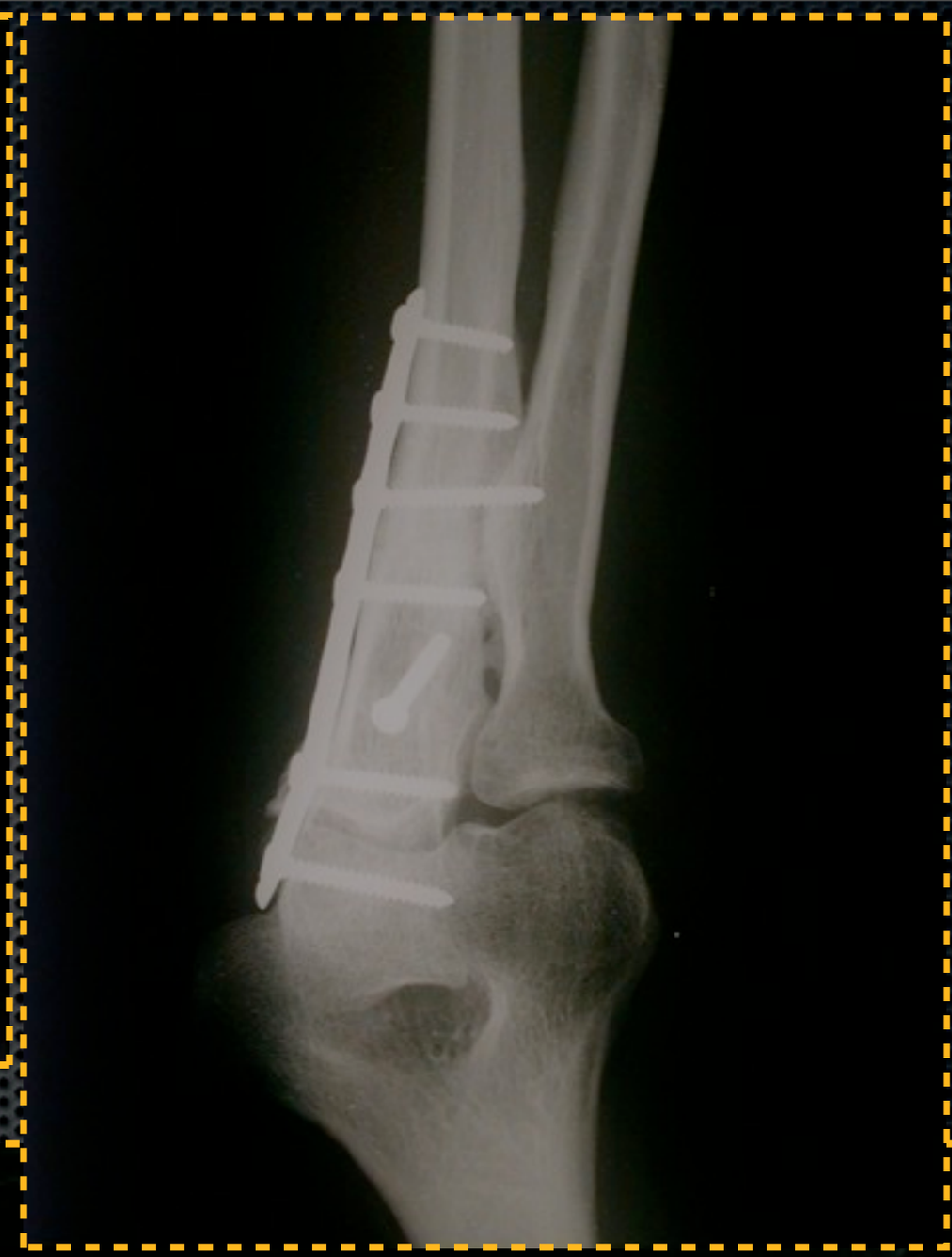
Subtype	Description
Type IIA	Ulnar fracture involves the distal olecranon and coronoid process.
Type IIB	Ulnar fracture at the metaphyseal-diaphyseal juncture distal to the coronoid.
Type IIC	Ulnar fracture is diaphyseal.
Type IID	Complex ulnar fracture extends from the olecranon to the diaphysis.

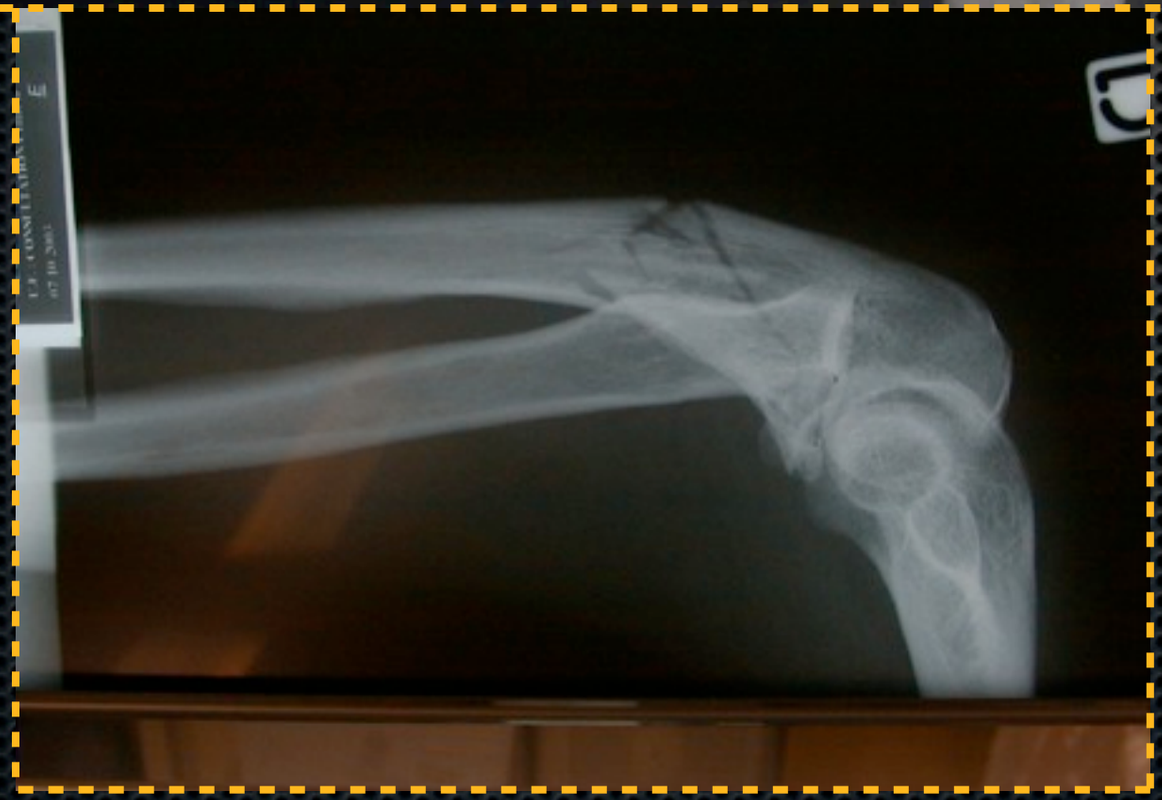
From Jupiter JB, Leibovic SJ, Ribbans W, et al. The posterior Monteggia lesion. J Orthop Trauma 1991;5: 395–402; with permission.

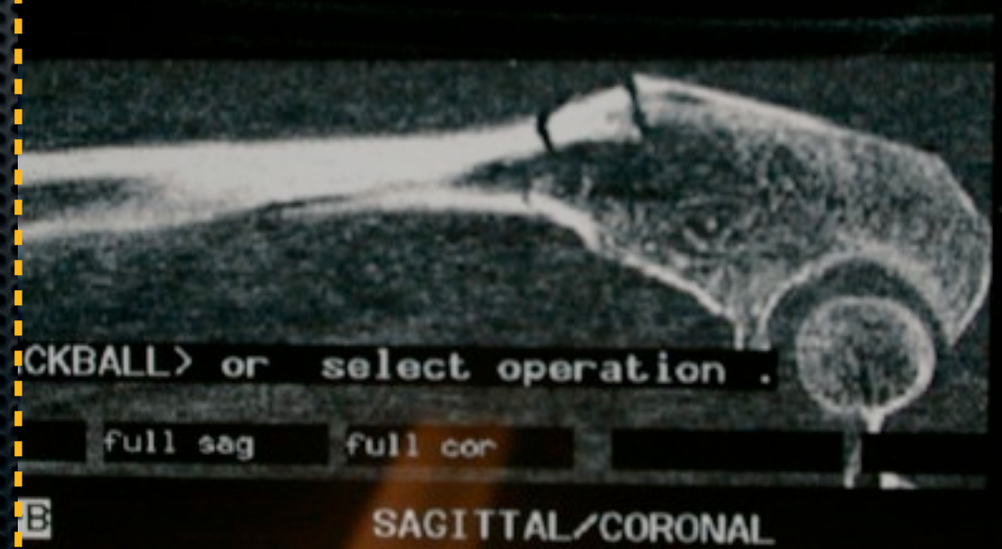
Epidemiology

- ≈ 10% of upper limb fractures are fracture of the proximal ulna
  - Olecranon fractures
  - Coronoid fractures
  - Metaphyso-epiphyseal fractures and fractures dislocations of the proximal ulna (≈ 7% of ulnar fractures, 0,7% of elbow injuries - Beck 1984)








CKBALL> or select operation .
full sag
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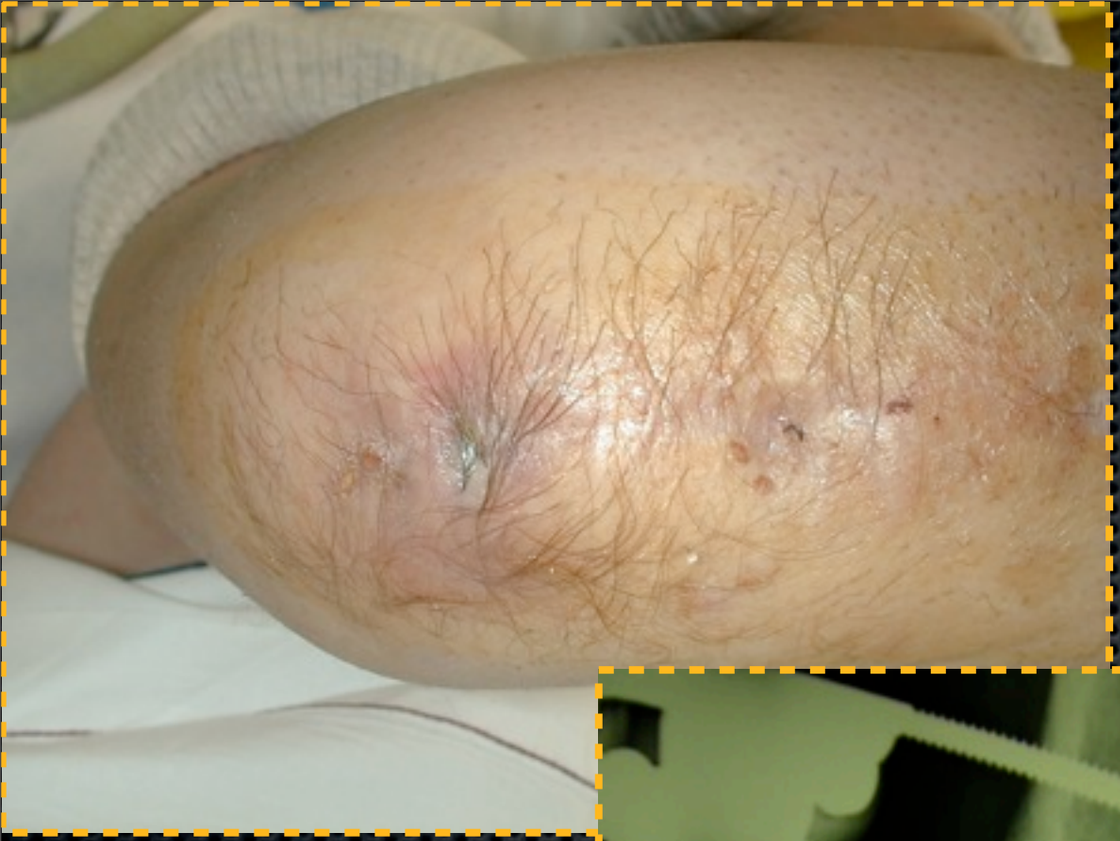
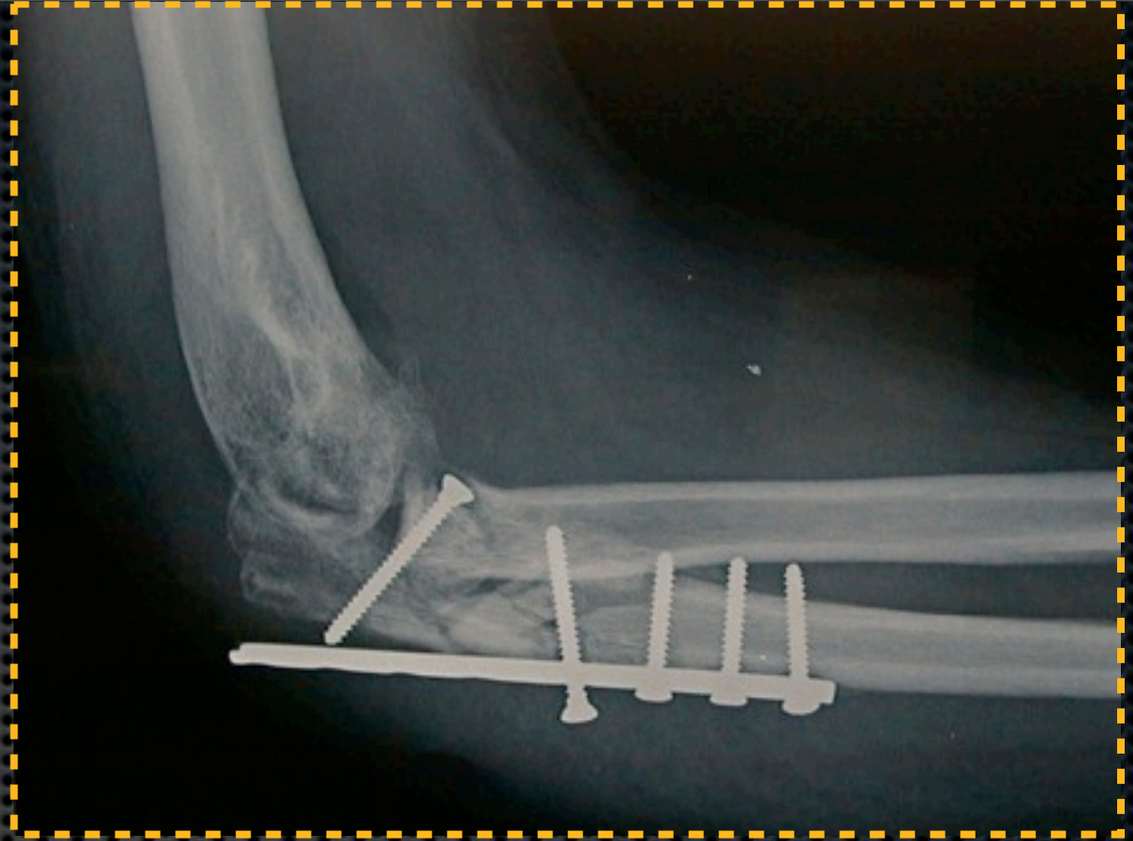
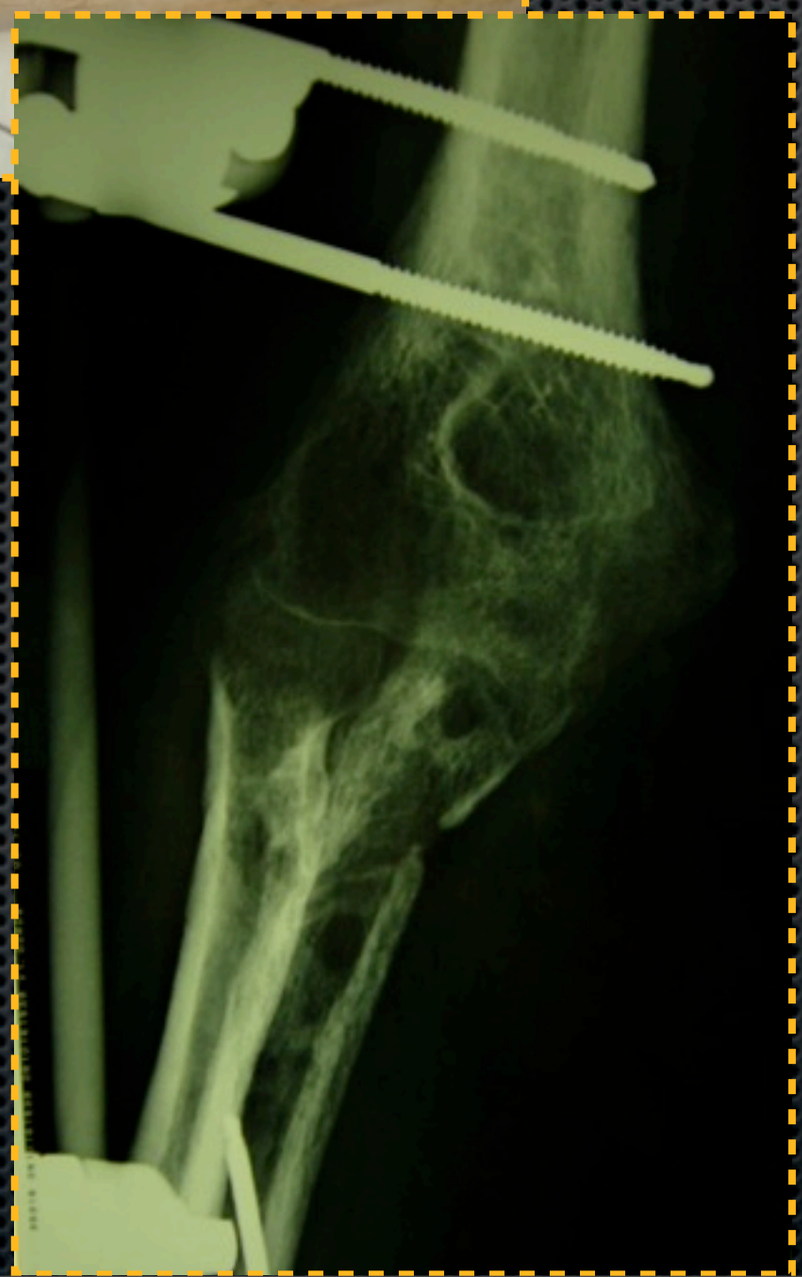
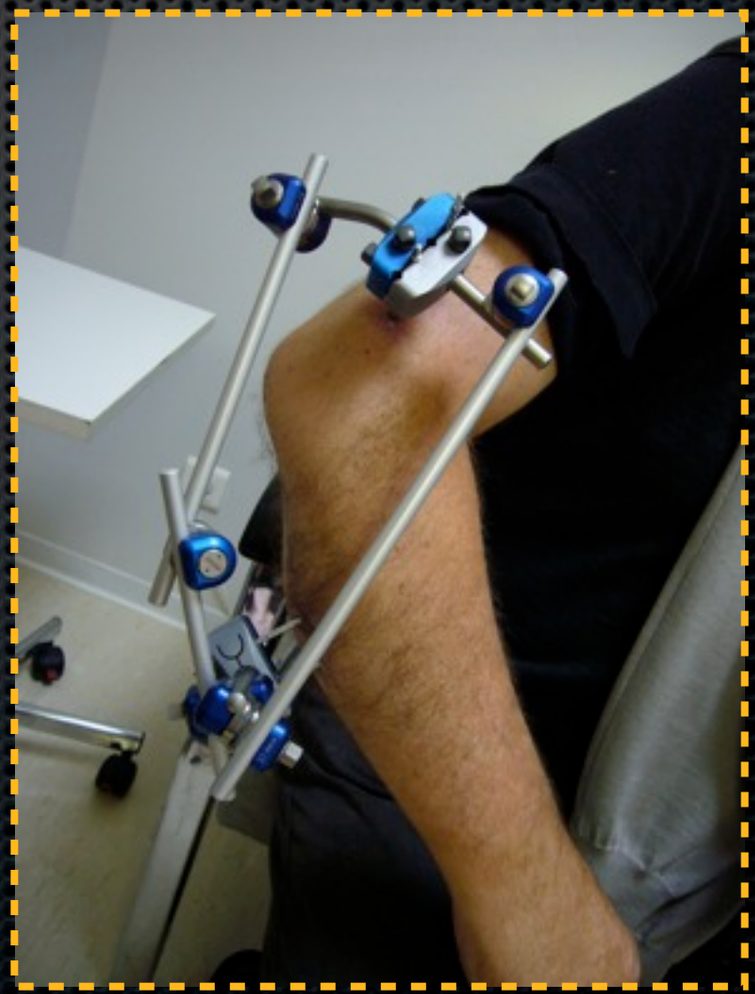
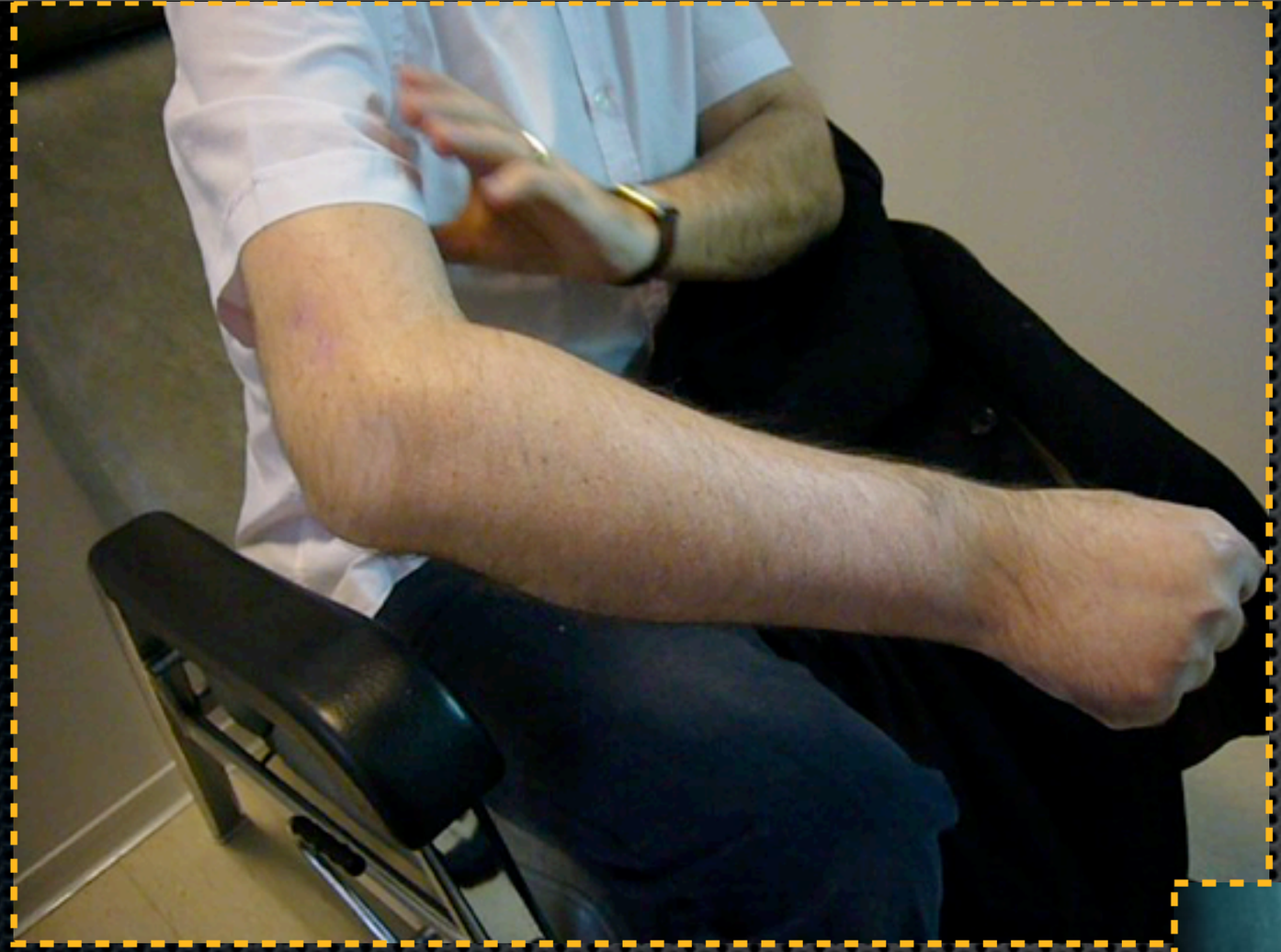
SAGITTAL/CORONAL

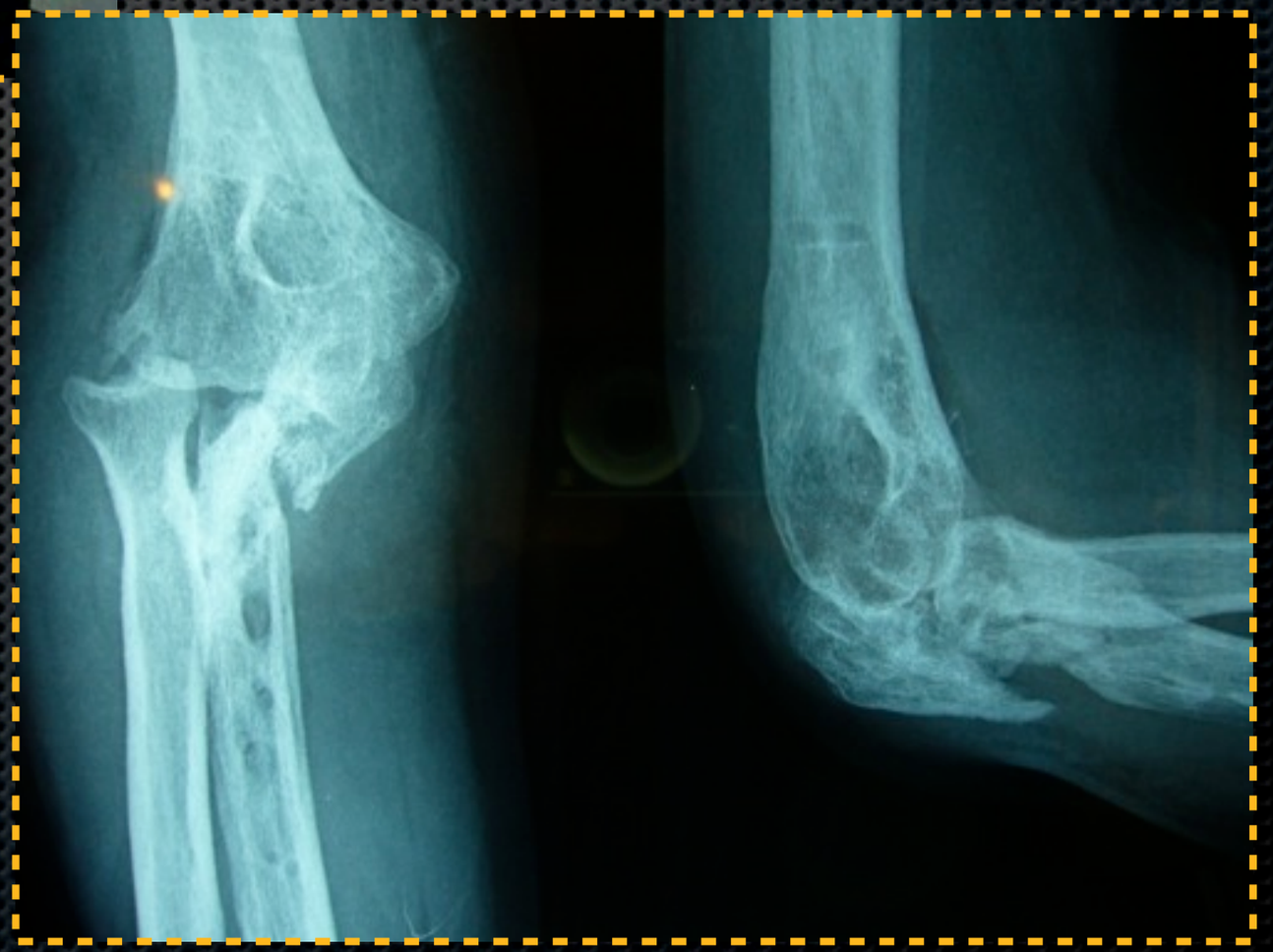




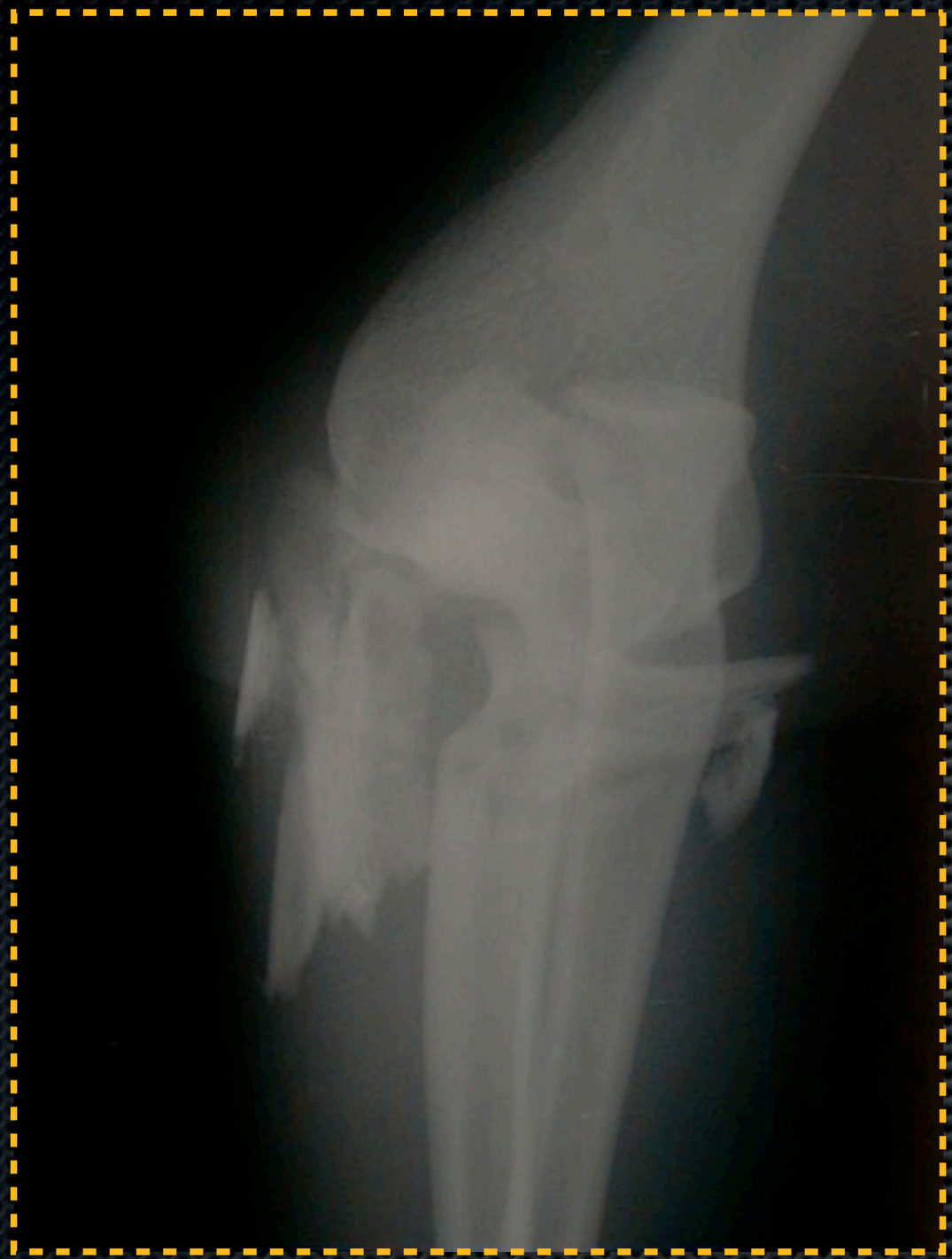


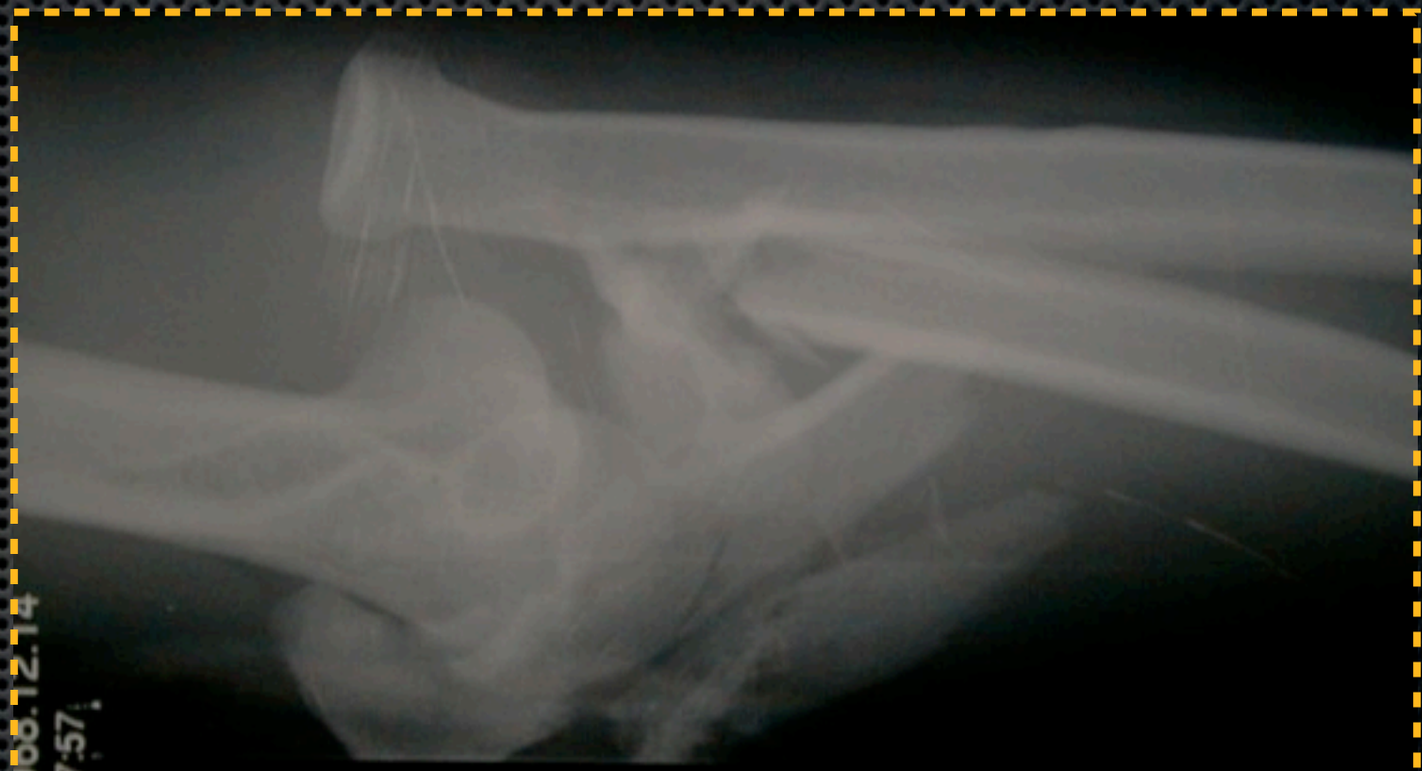


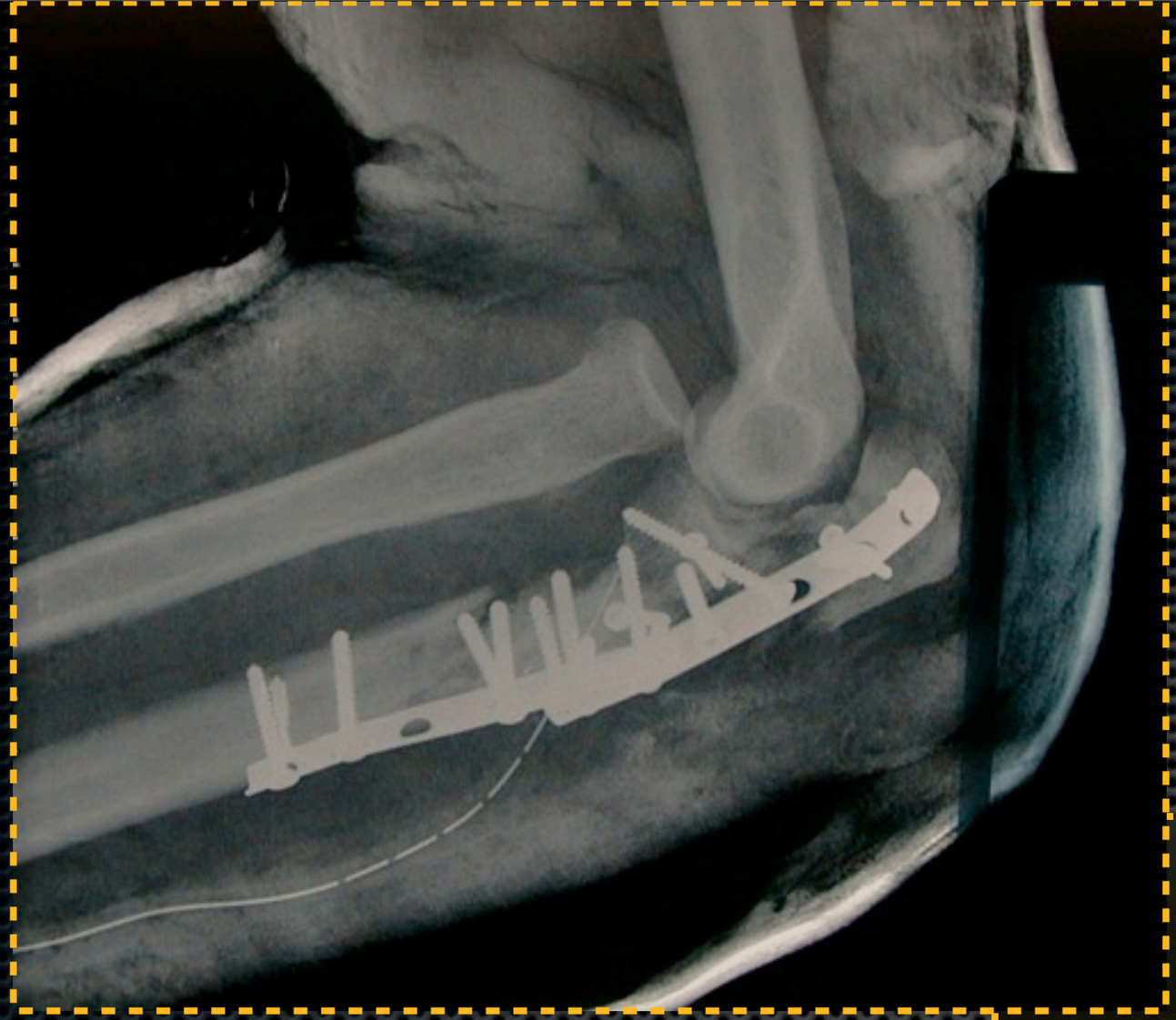


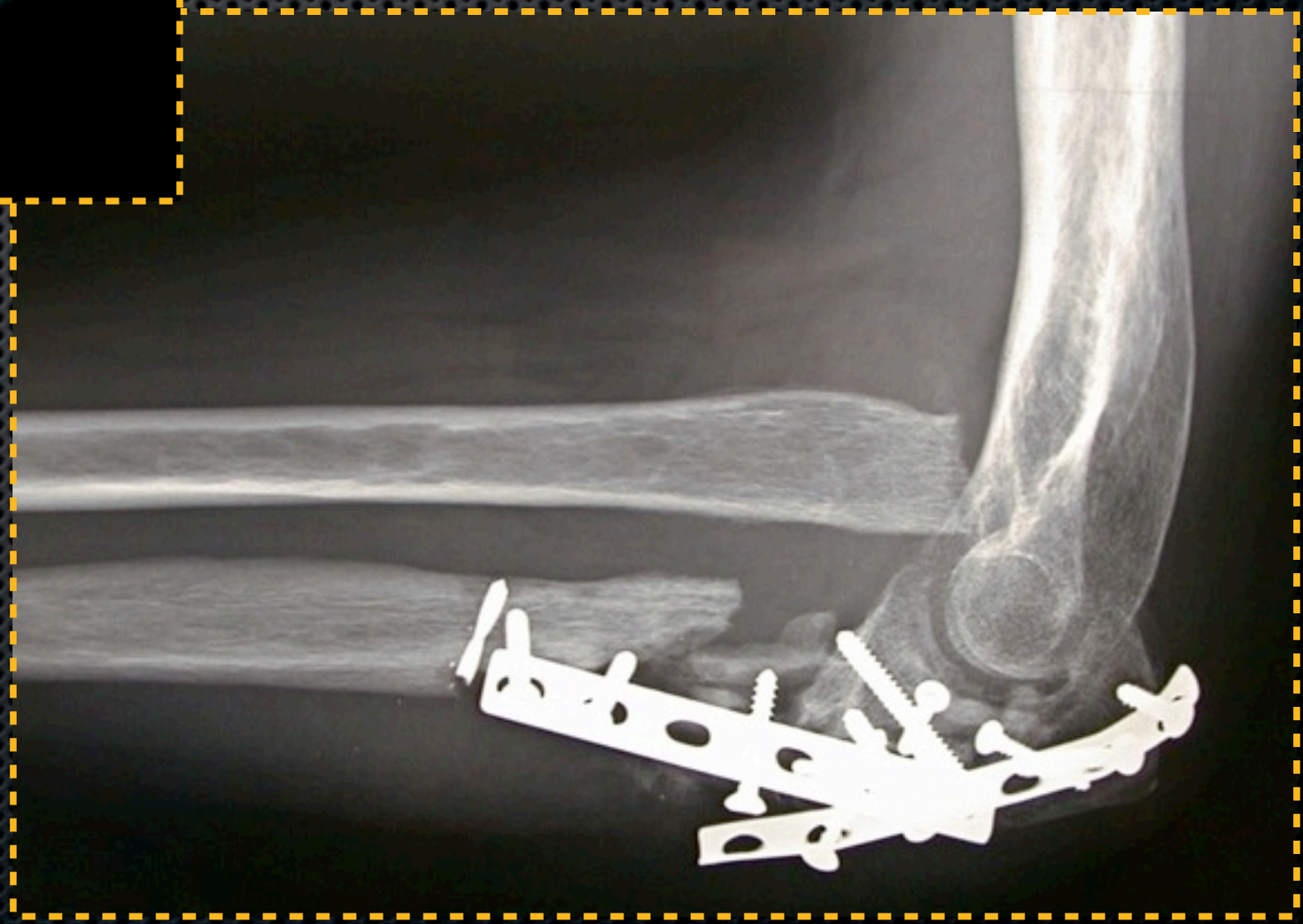


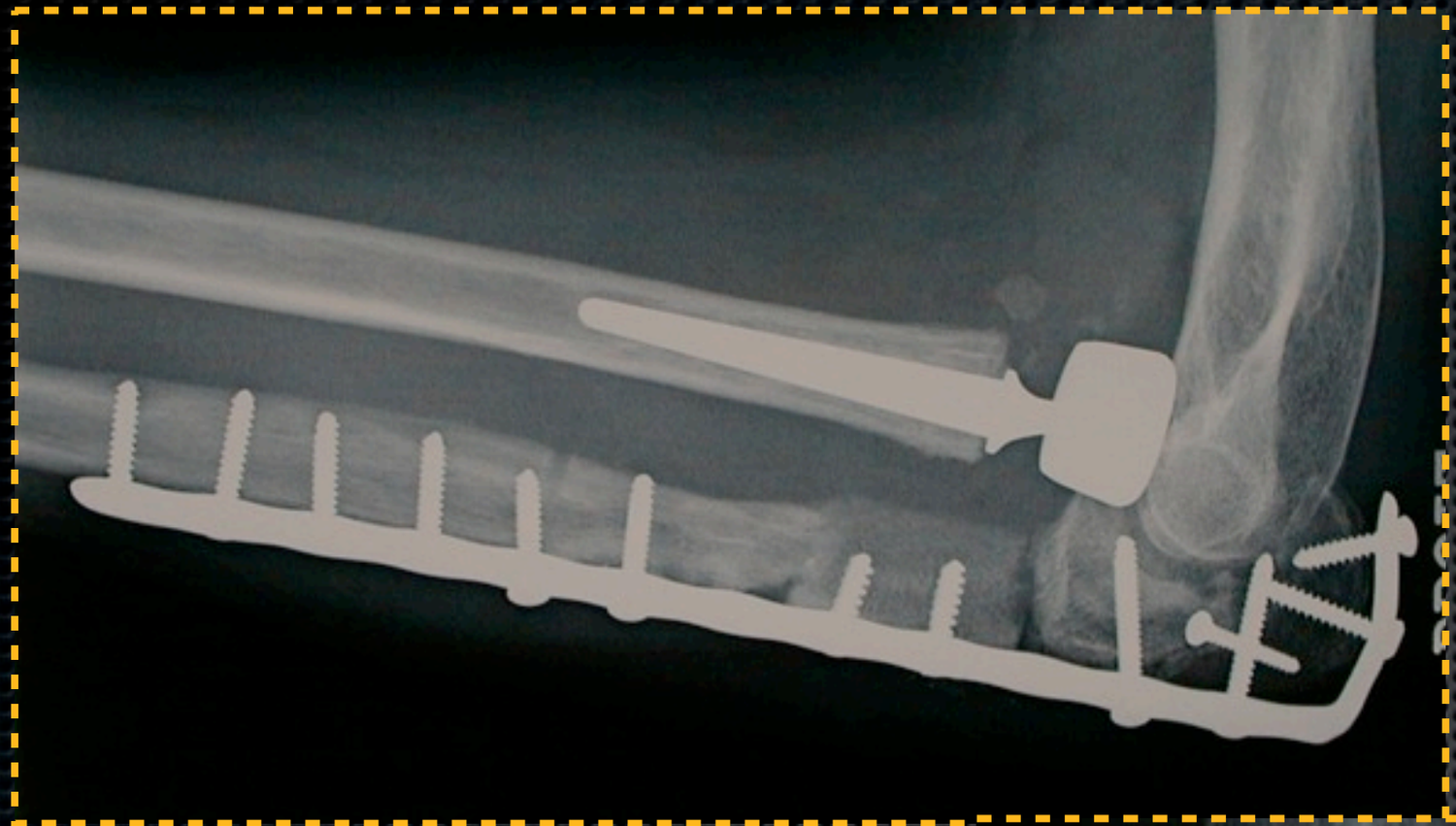
Right elbow, right-handed veterinarian

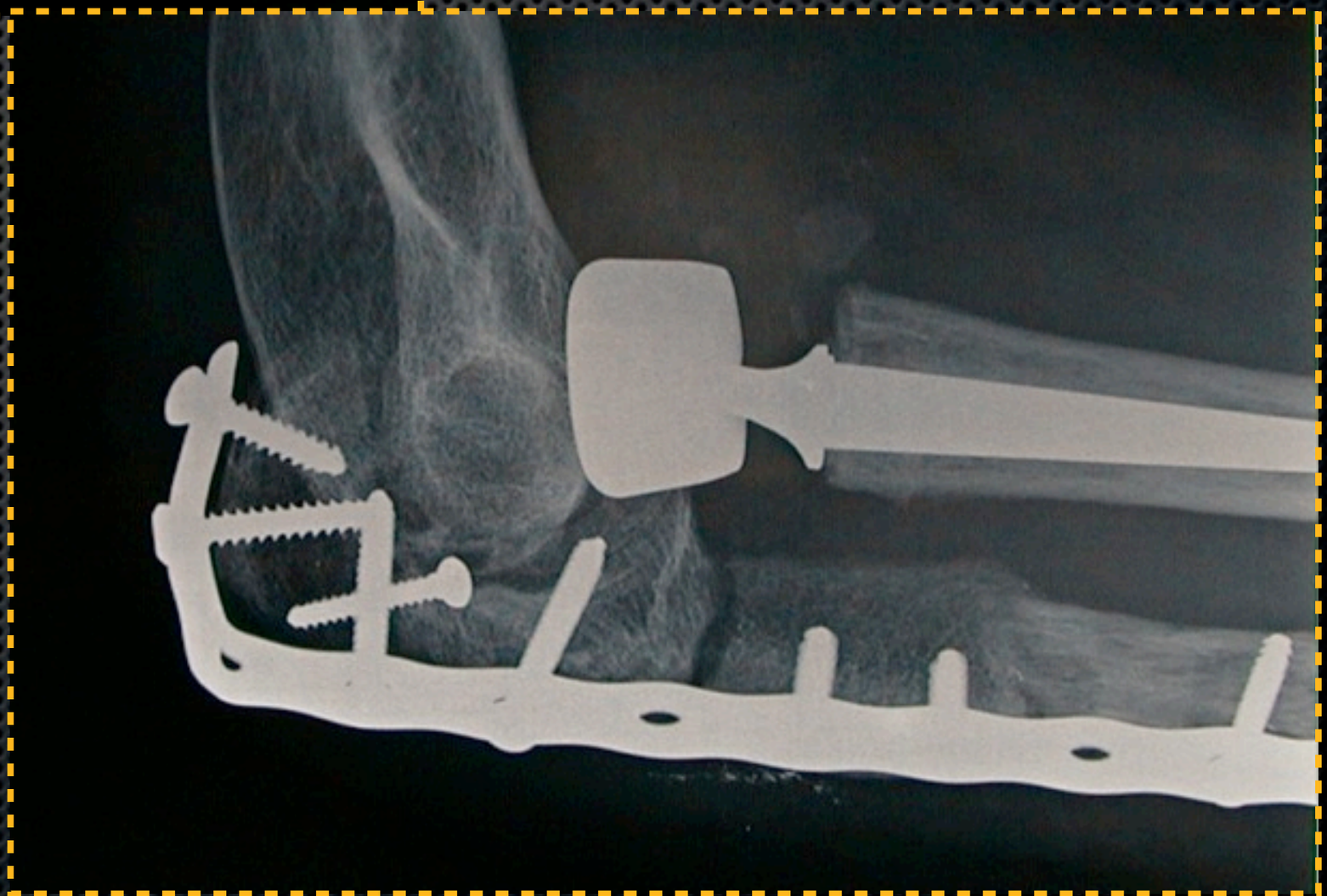


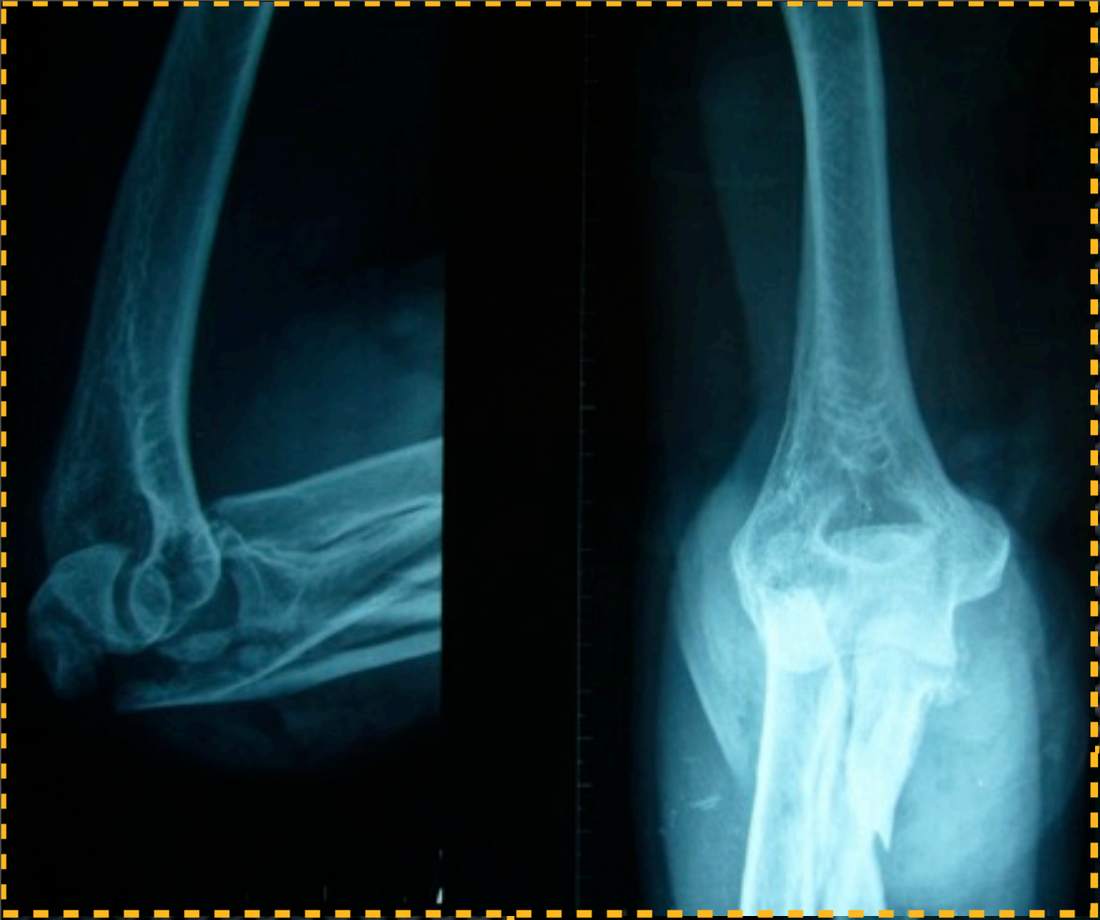


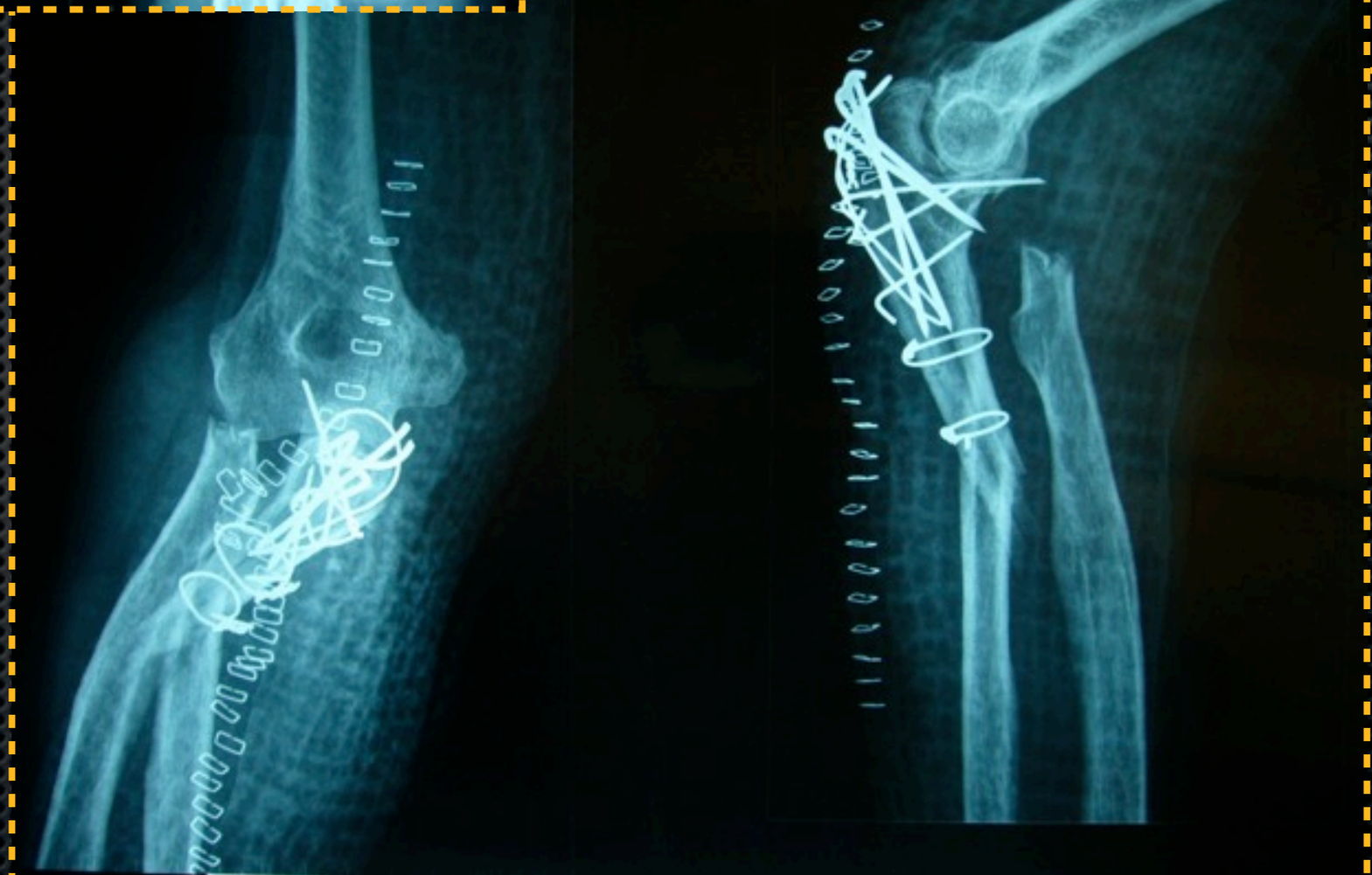


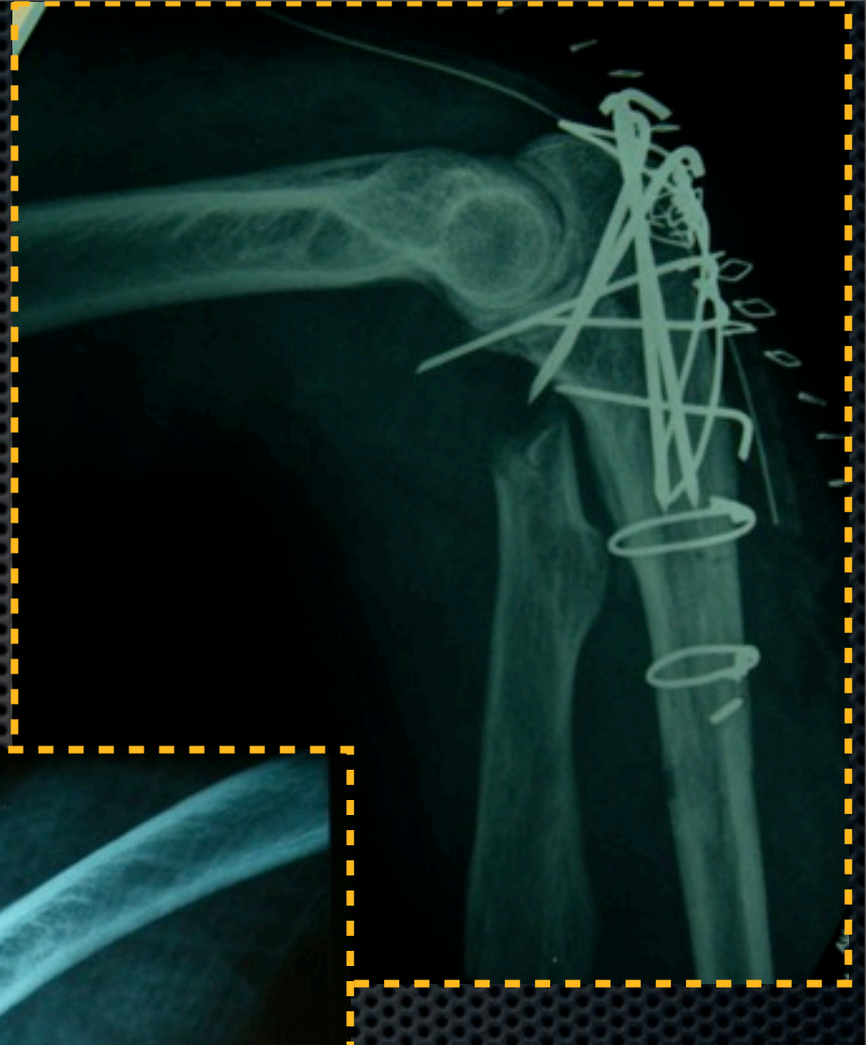












Complications

- Radial motor branch neuropathy (up to 20%) that usually recover (17% pre-op / 14% postop !)
- Radial head re-dislocation
- Ectopic bone formation
- Inadequate ulna healing
- Re-fracture (facture site or screw hole): 2 to 28%

Sequelae of Monteggia's fracture in adults ?

- No personal series, as all cases were different regarding age, sex, type of fixation, failure and end results
- They all shere common features
- That are also found in the literature

Outcome of the treatment of «Monteggia's fracture» ?

- Reckling (1968-1982): 49 cases (25 years period)
- In adults: Bado type I were the best results if open anatomical reduction, internal stabilization of the ulnar fracture, and closed reduction of the radial head was done.
- Factors leading to poor results in Type-I lesions were failure to obtain anatomical reduction of the ulna, heterotopic ossification including synostosis of the proximal parts of the radius and ulna, and persistence or recurrence of dislocation of the radial head.
- In the Type-II, III, and IV lesions, fair results were the rule. 9 / 40 good results

Outcomes

- Reynders (1996): 67 fractures, 54% satisfactory results (1-14 years FU)
- Givon (1997): 41 pts (27 adults) had limited results in type I
- Ring (1998): 43% complications, 46% unsatisfactory results after 67 cases

Table I. Characteristics of Bado-type Monteggia fractures and functional results for 47 patients after treatment

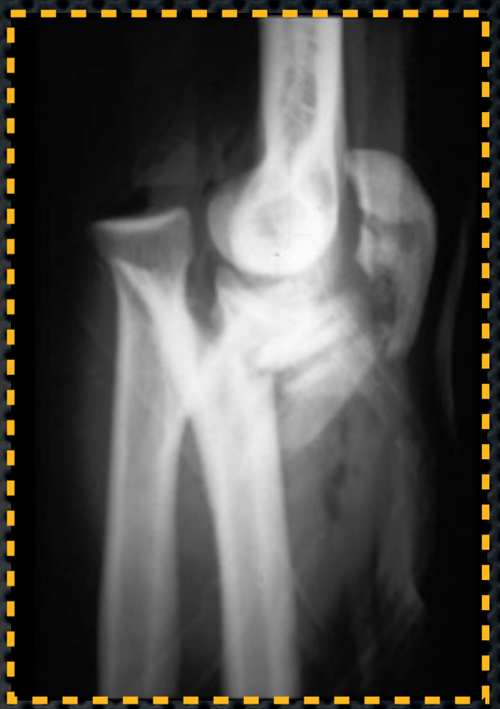
	Bado classification			
	I	II	III	IV
Number of patients	15	27	3	2
Mean age in yrs (range)	40 (22 to 70)	43 (21 to 72)	26 (21 to 32)	35 (25 to 45)
Men:women	9:6	18:9	2:1	1:1
Mean follow-up in yrs (range)	9.8 (6 to 14)	7.9 (5 to11)	7.3 (5 to 9)	7.0 (5 to 9)
Number of open fractures	2	4	0	0
Fracture of radial head	1	11	1	0
Fracture of coronoid process	0	11	0	0
Ulnar nonunion	1	4	0	1
Radial head fracture complications	0	4	0	0
Heterotopic ossification	1	5	1	0
Mean ulnohumeral motion in ° (range)	121 (90 to 130)	103* (50 to 130)	113 (80 to 130)	110 (90 to 130)
Mean forearm rotation in ° (range)	144 (115 to 180)	128* (100 to 180)	140 (110 to 160)	136 (110 to 160)
Mean Broberg and Morrey score (range)	95 (78 to 100)	81* (45 to 100)	89 (67 to 100)	85 (70 to 100)
Mean DASH score (range)	9 (0 to 31)	22* (0 to 70)	17 (0 to 43)	17 (0 to 34)

* $p < 0.05$

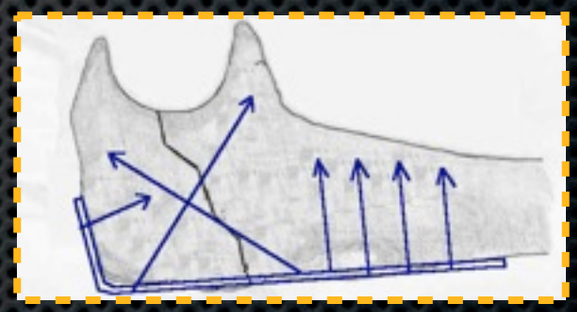
JBJS Br 2007

Surgical technique

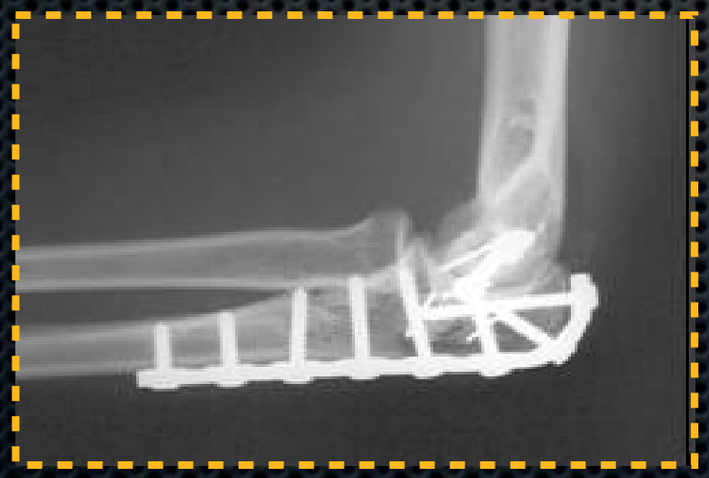
From Judet

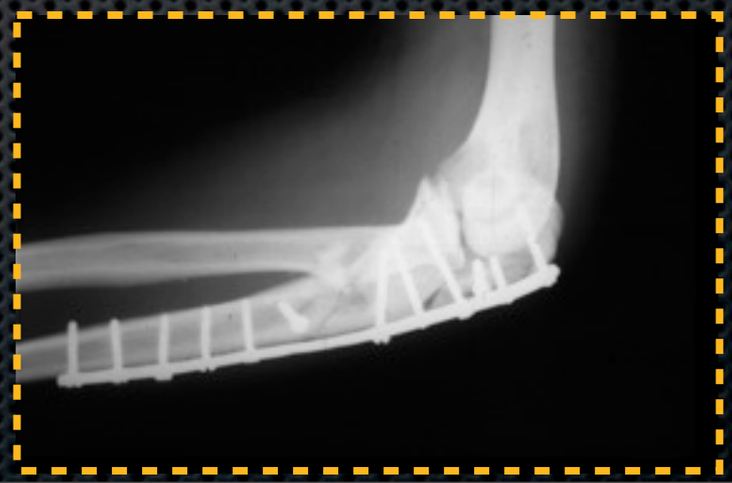


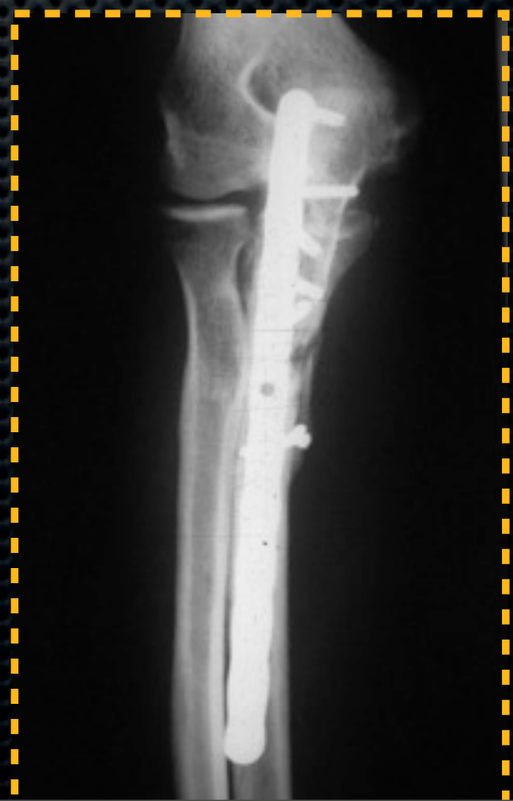
- Posterior approach
- The ulna diaphysis is the landmark for reduction
- Posterior plate, 3,5 mm, up to the tip of the olecranon

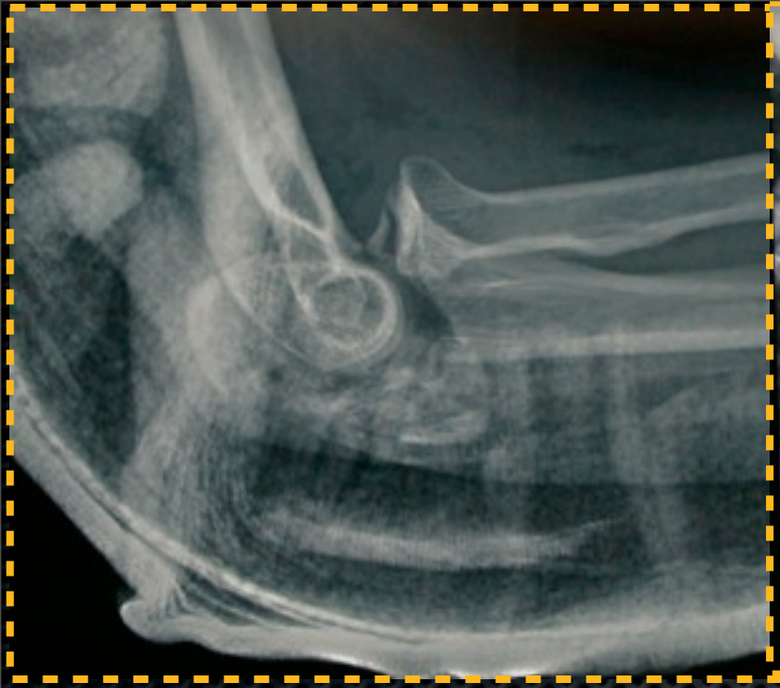


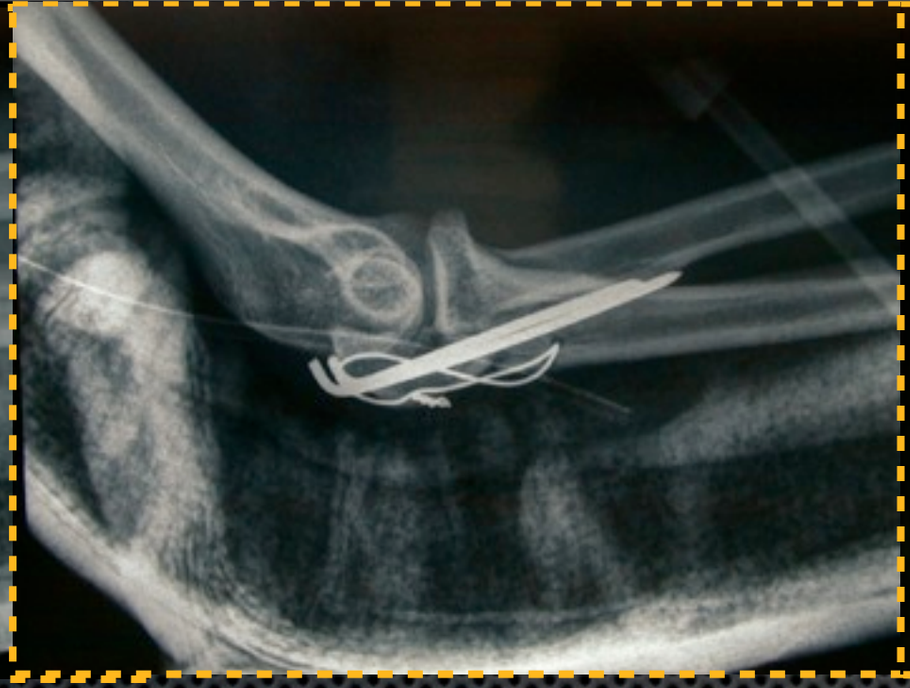
- Respect the ulnar bows: medial in the frontal plane, posterior in the saggital plane

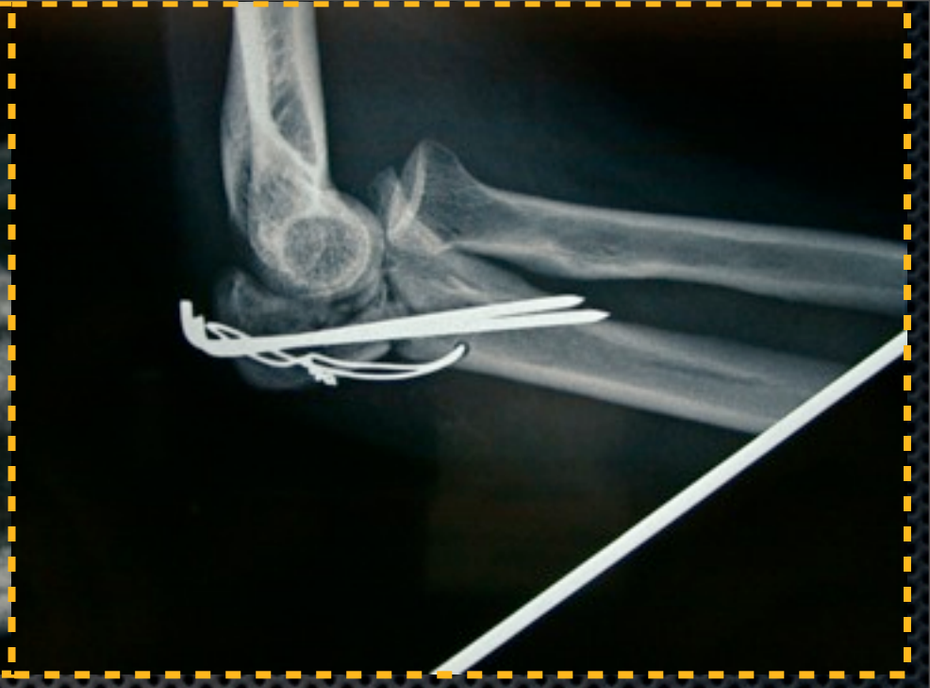


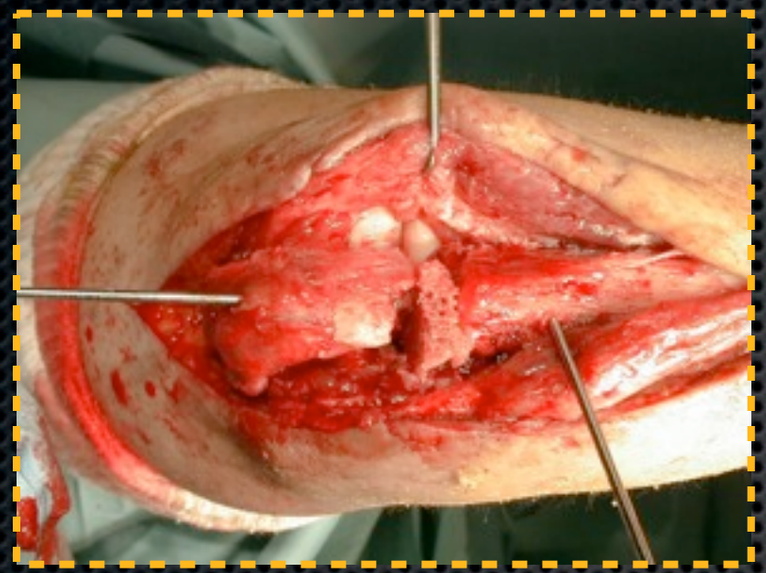


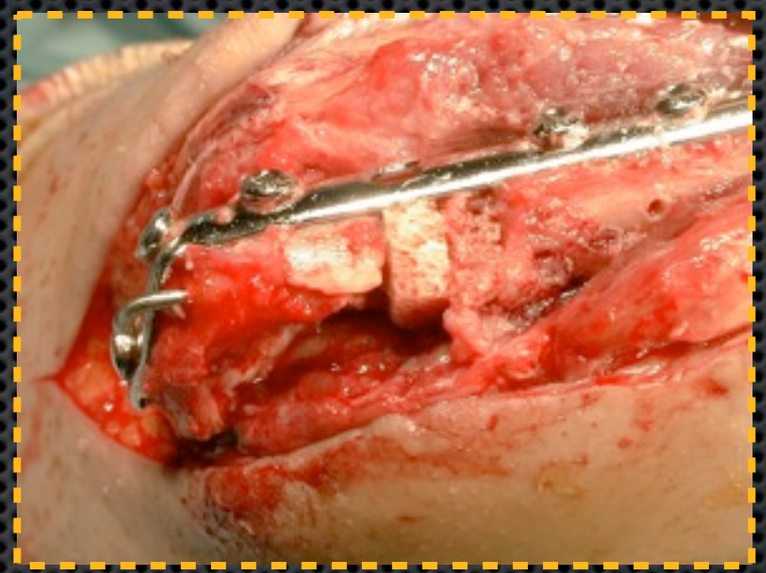


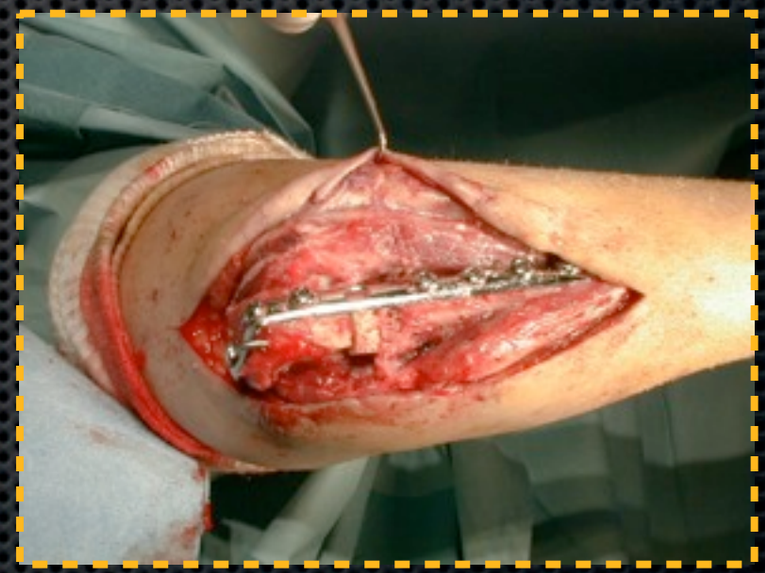


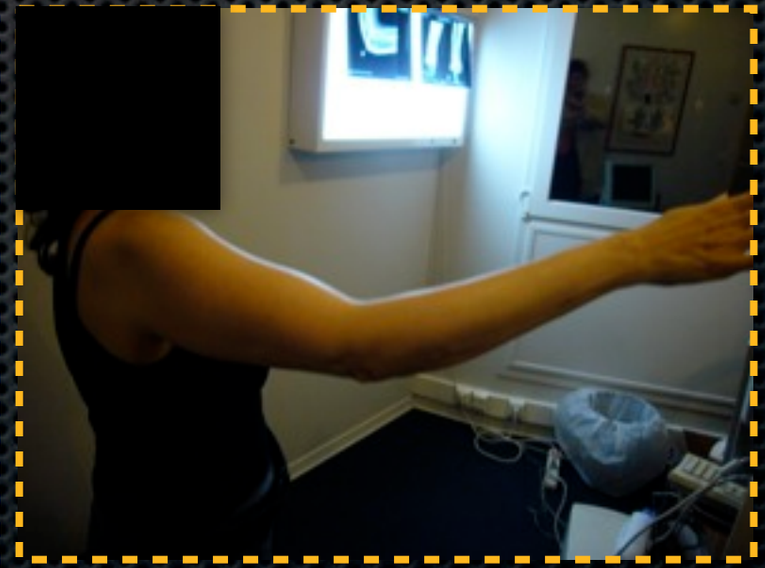




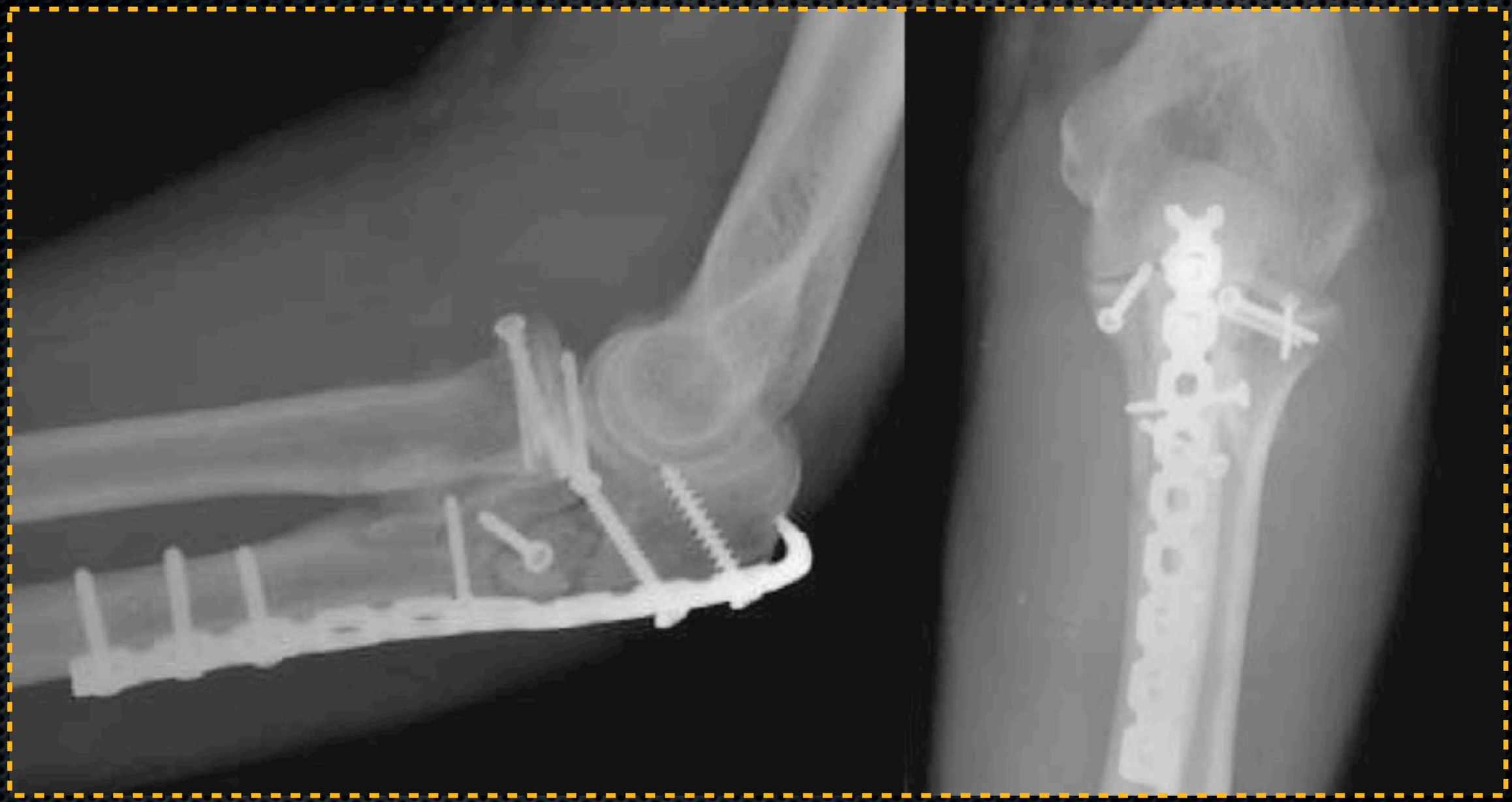






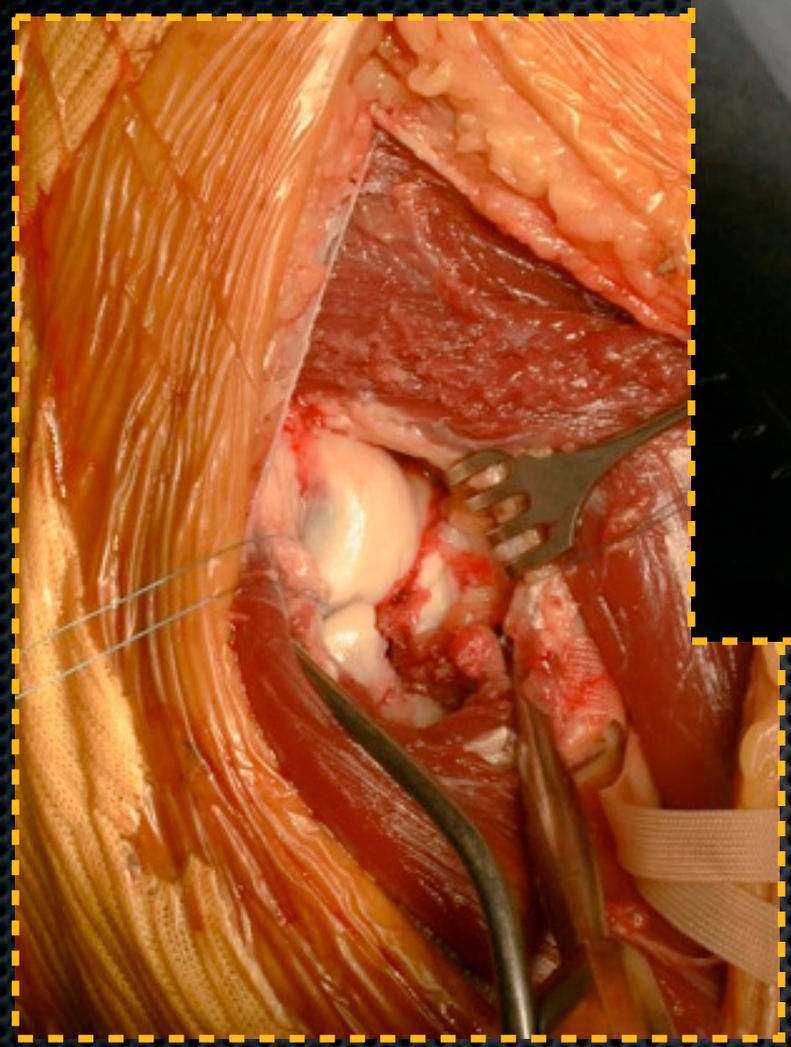


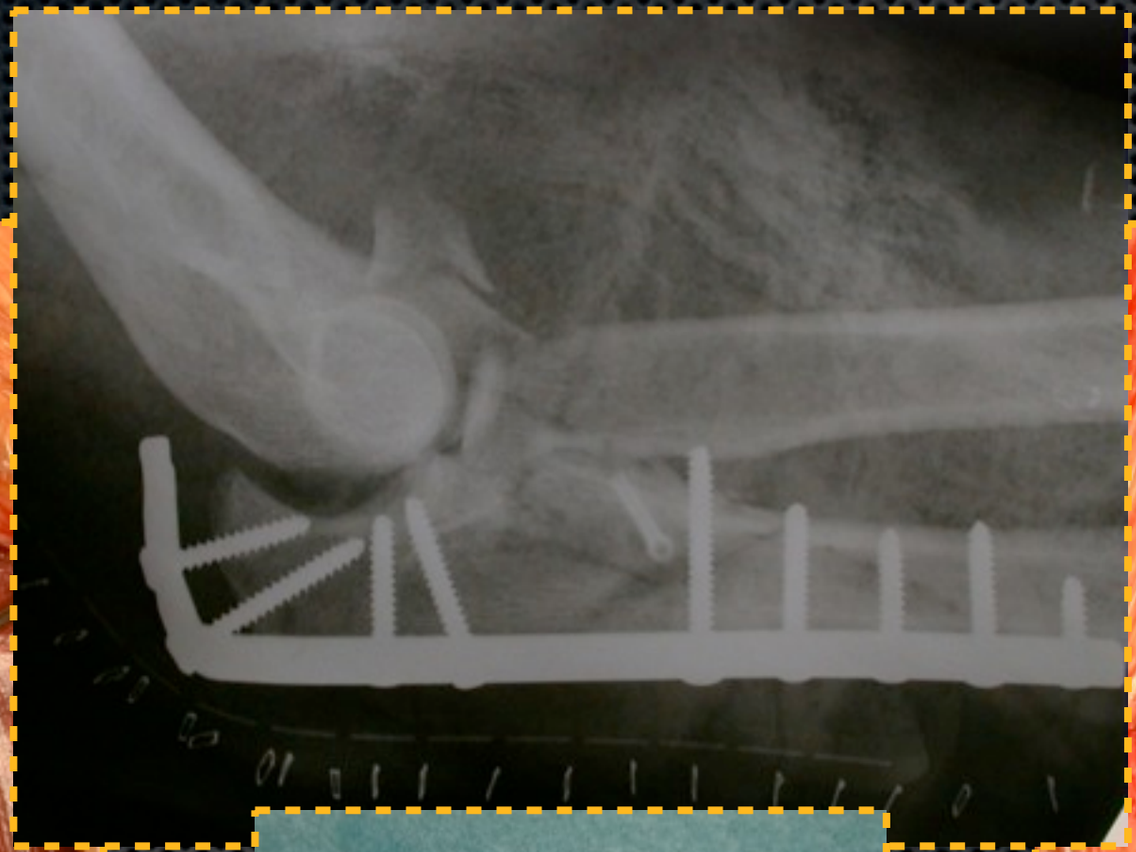
Surgical technique- address all the lesions

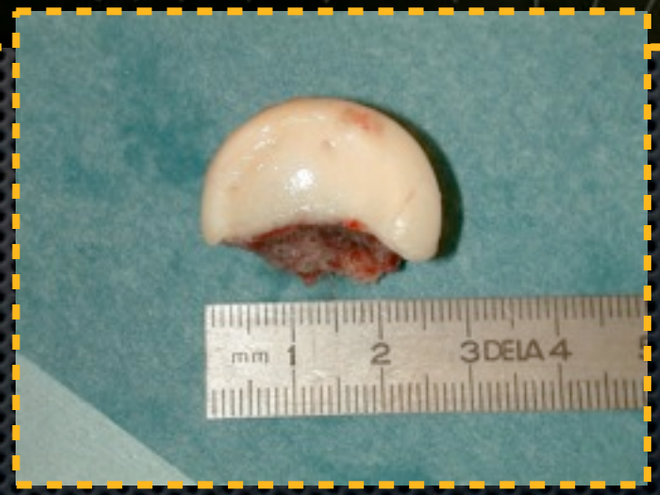


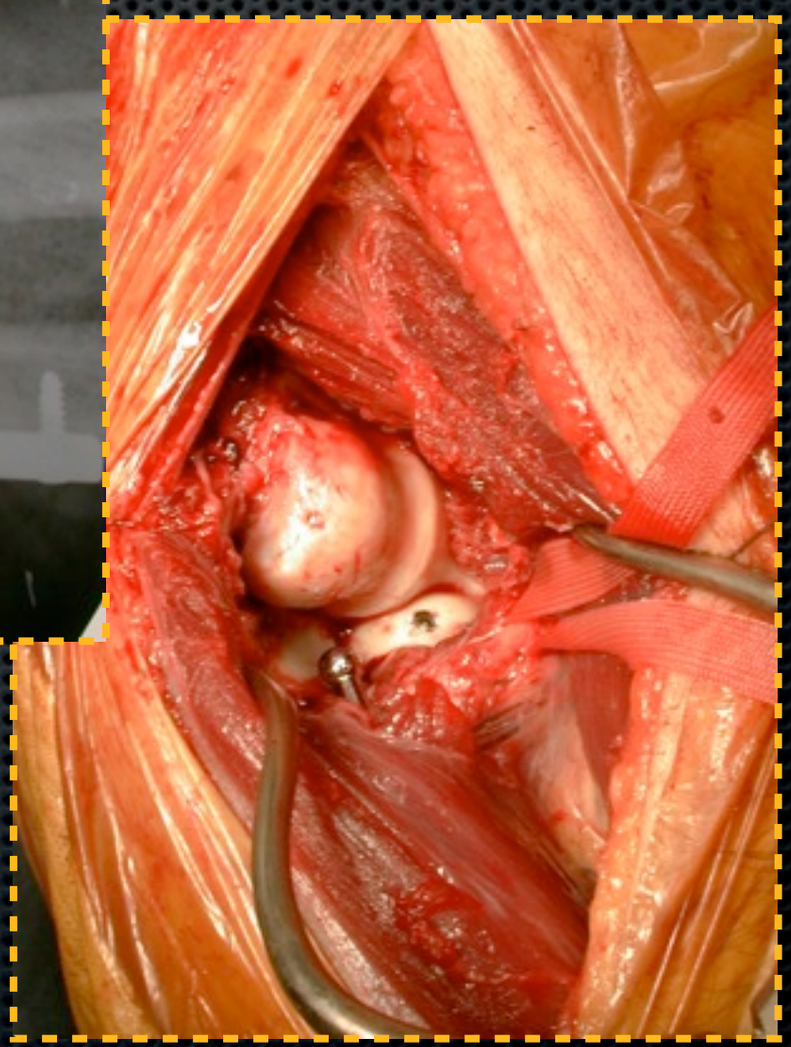
- Radial head (+/- coronoid): repair or replace

Surgical technique- address all the lesions



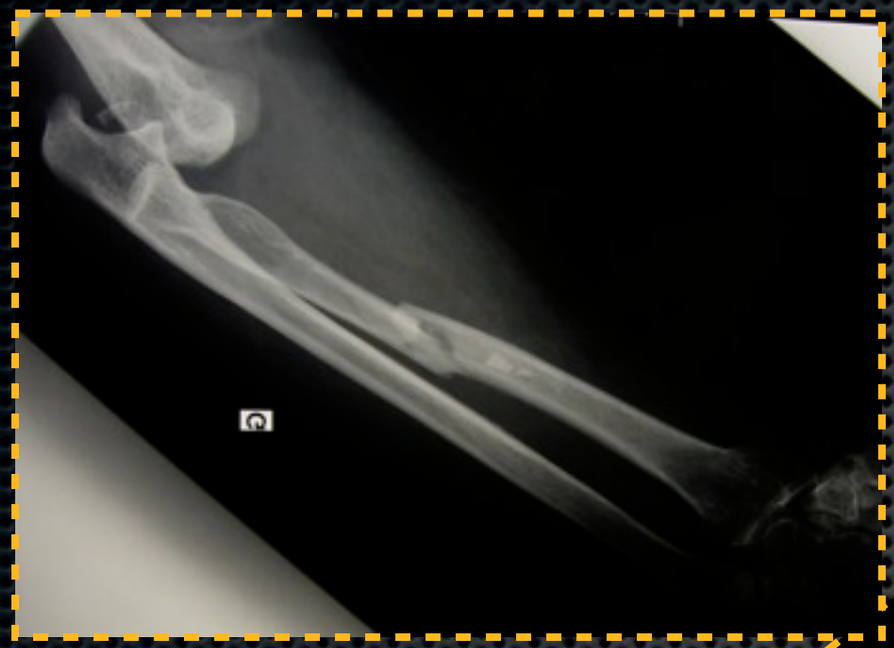


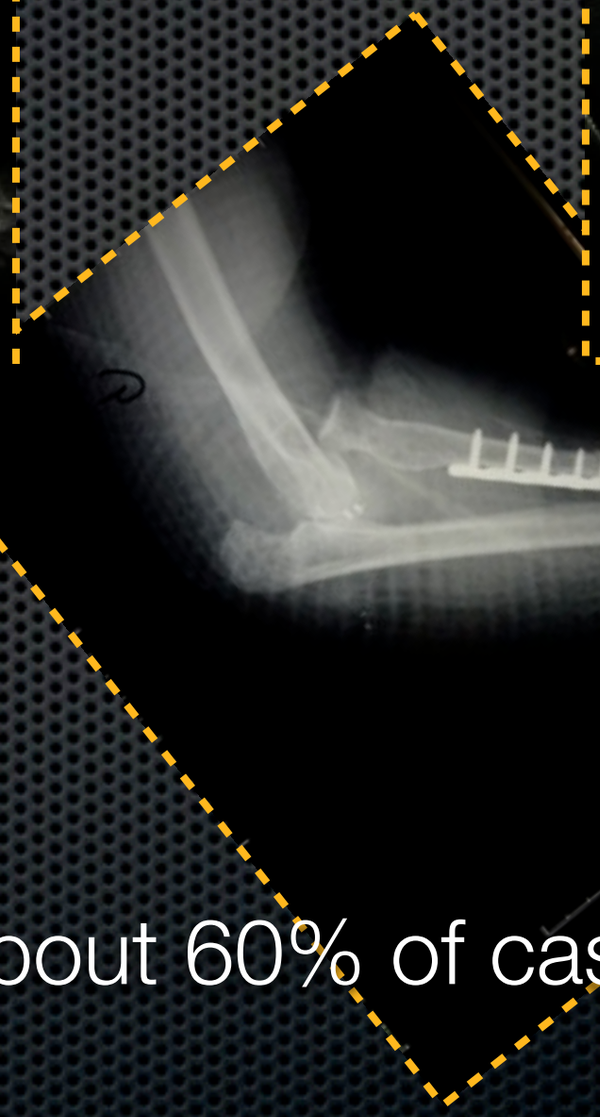


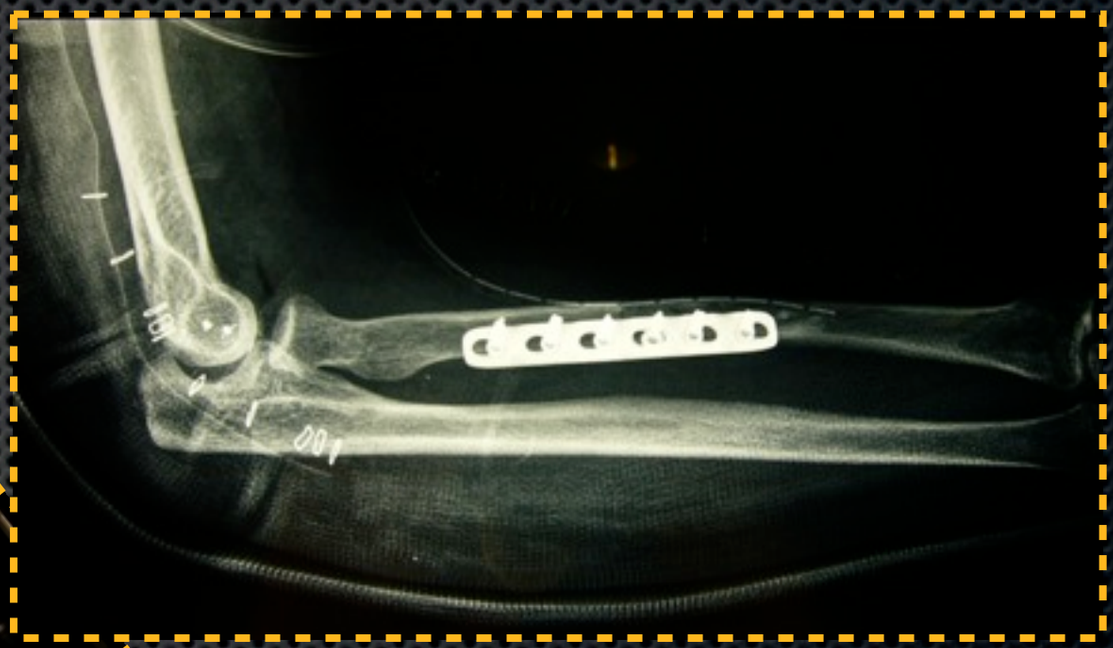


- Radial head (+/- coronoid): repair or replace

Surgical technique- address all the lesions







- LCL is torn in about 60% of cases (King)

Post-op

- Immobilization in:
  - Adequate flexion: > 90° (except type II, 70°)
    - Supination if anterior dislocation, pronation if posterior
  - 4 weeks
- Lateral radiographs at 1 and 2 weeks

Conclusion

- Sequelae/ complications of Monteggia'a and Monteggia's like fracture are frequent (≈ 50%)
- Most are due to the severity of the initial lesion
- But some are secondary to an inadequate treatment with the primary goal is the reconstruction of the ulnar length and shape +++