Fractures of the shoulder girdle, elbow and fractures of the humerus

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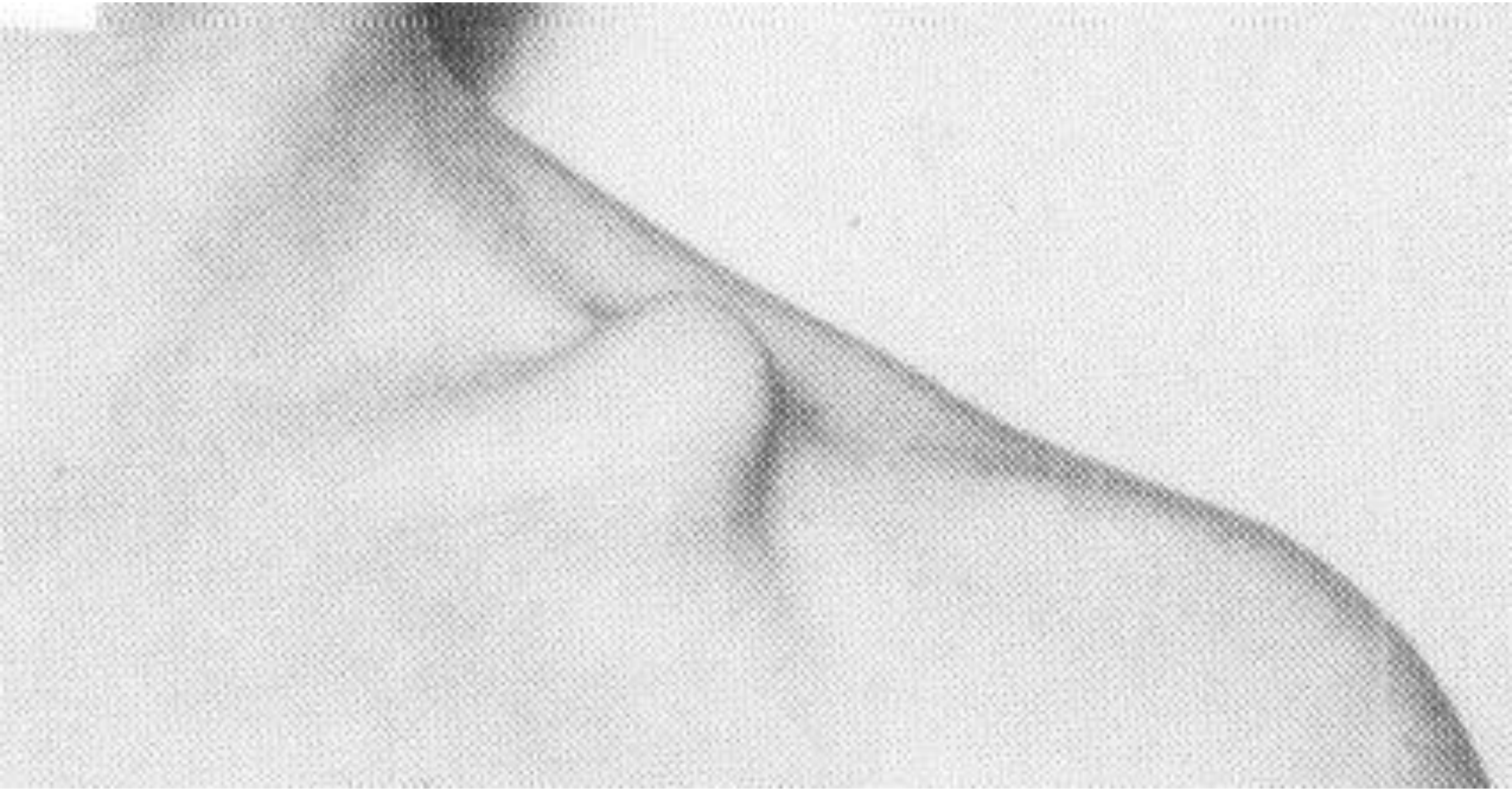
2012

Fractures of the Clavicle (mid-shaft).

Fractures of the clavicle



Fractures of the clavicle

- Treatment- conservative.
  - Sling or collar and cuff.

  - **<u>Surgery.</u>**
  - Open fractures.
  - Neurovascular injuries.
  - 21st Century.

Complications of clavicle #’s

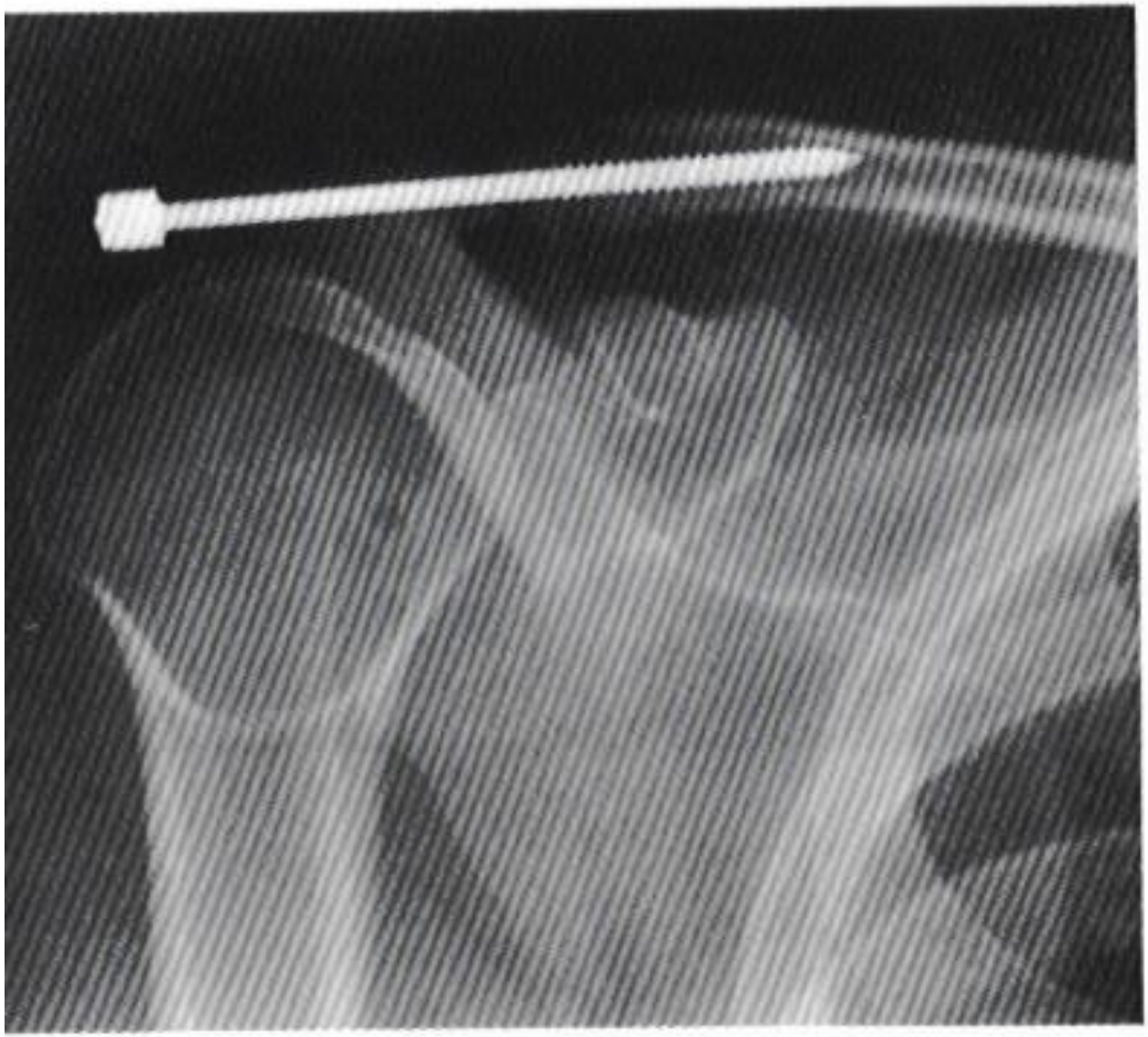
- Neurovascular
- Non-union 1.9%
- Mal-union > 20 mm shortening leads to pain

Distal Clavicle Fractures

- 15 % of all clavicle #’s
- Lateral impaction force on point of shoulder
- 10 % incidence associated head and neck injuries
- Most asymptomatic
- Little effect on function and strength

X-rays

- AP view
- Axillary or true lateral of scapula
- Anterior and posterior 45 degree oblique view
- AP stress view with 2-3kg
- 20 - 45 degree of cephalic tilt



E 17-55. A Knowles pin often is a preferable metho

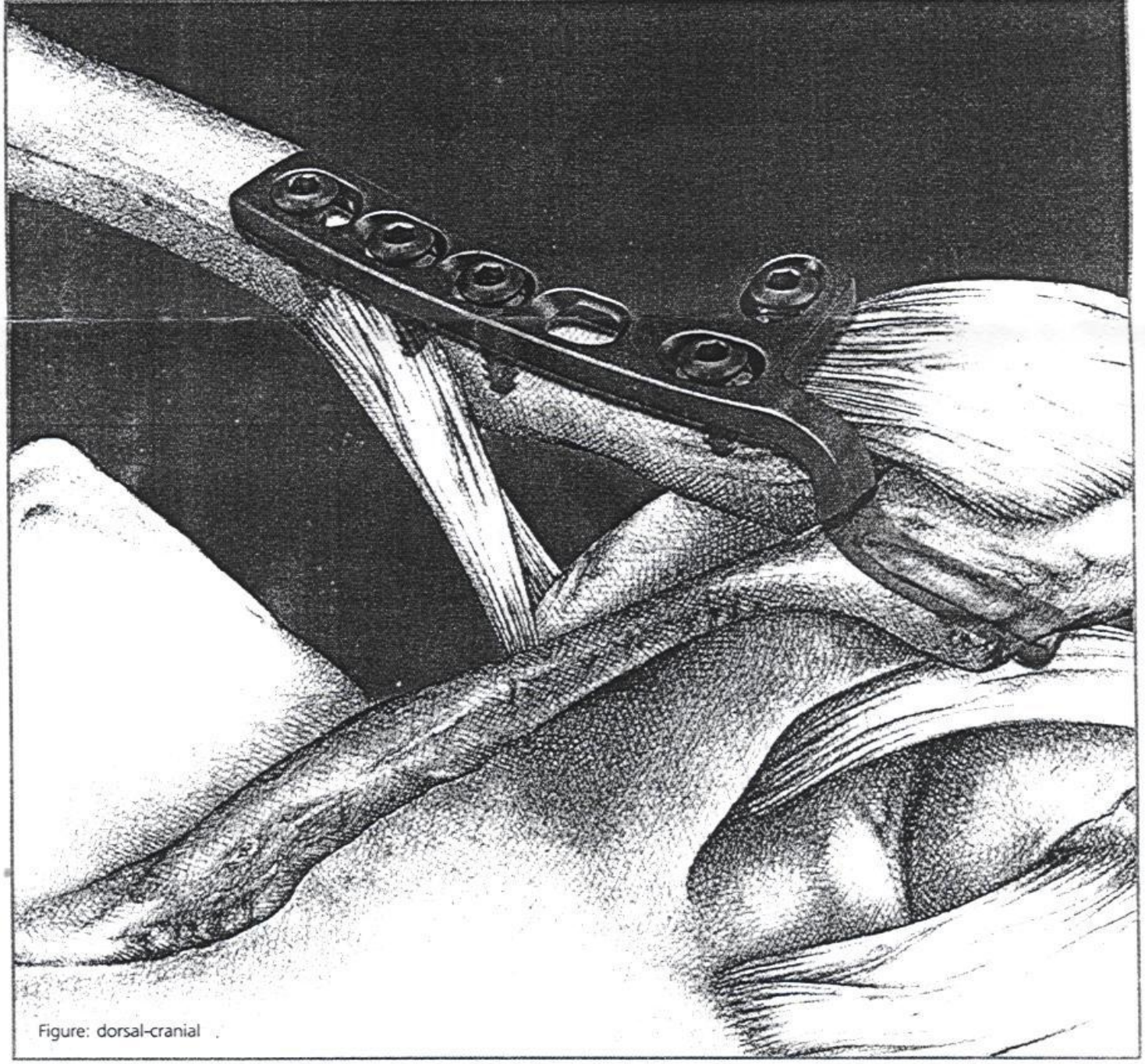
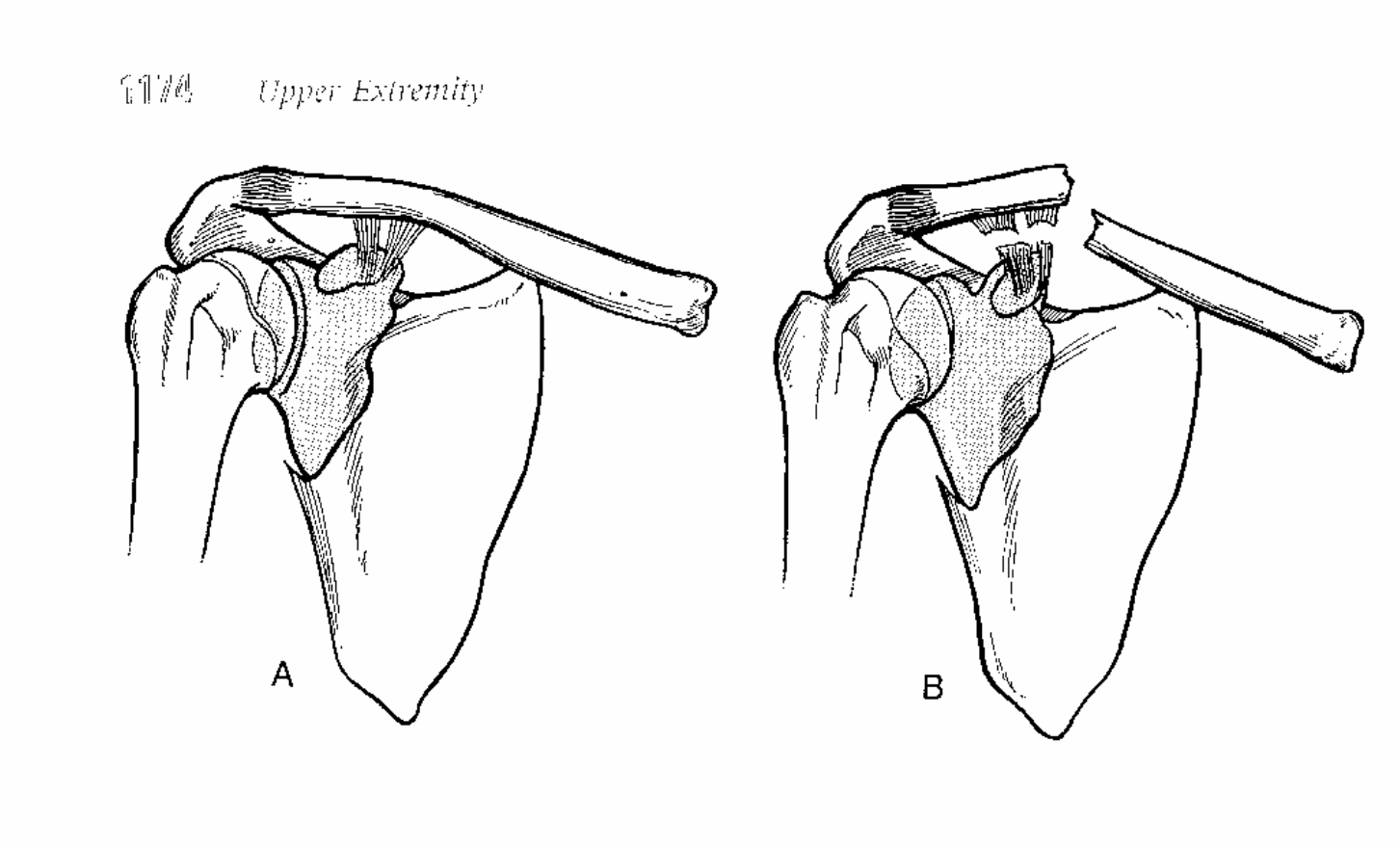


Figure: dorsal-cranial .

Floating Shoulder

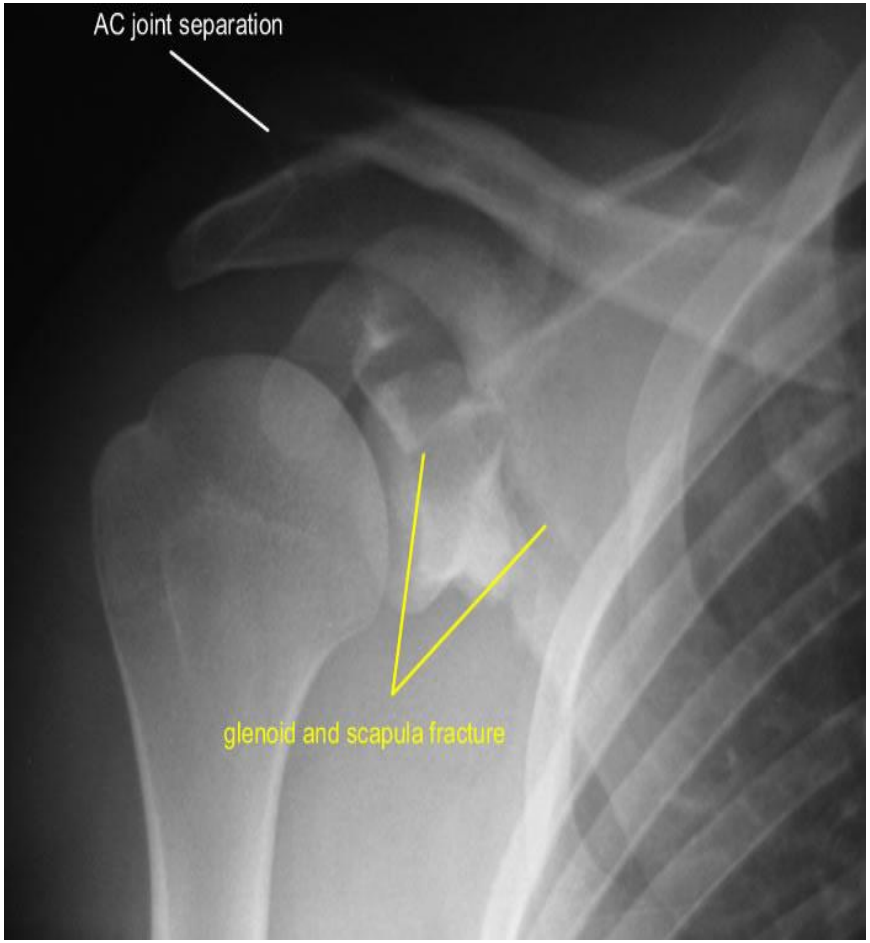
- Ipsilateral fractures of scapula and clavicle
- Non-operative treatment of those with less than 5 mm of fracture displacement (glenoid)
- If surgery is done, fixation only clavicle unless intraarticular glenoid fracture

SCAPULA FRACTURES



SCAPULAR FRACTURES

- ASSOCIATED INJURIES 35-98%
- 10-15% MORTALITY
- SEVERELY INJURED PATIENT
- **C-Spine injury!**
- ARTERIAL INJURY
- BRACHIAL PLEXUS INJURY
- PNEUMOTHORAX
- FRACTURED RIBS
- PULMONARY CONTUSION



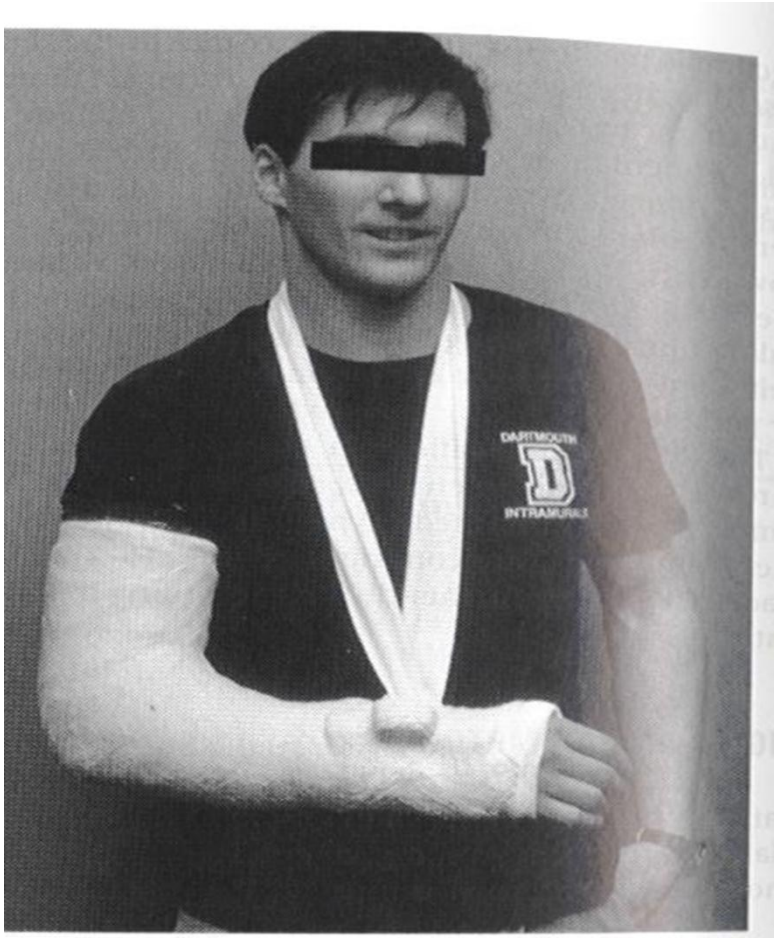
Humeral Shaft Fractures

Non-Operative Treatment

- Modified U slab
- Hanging cast
- Functional bracing (Sarmiento)

Hanging Arm Cast

- Mid-shaft fractures with shortening
- Oblique or spiral pattern
- Should extend 2 cm proximal to fracture
- NOT transverse fractures
- 96% union



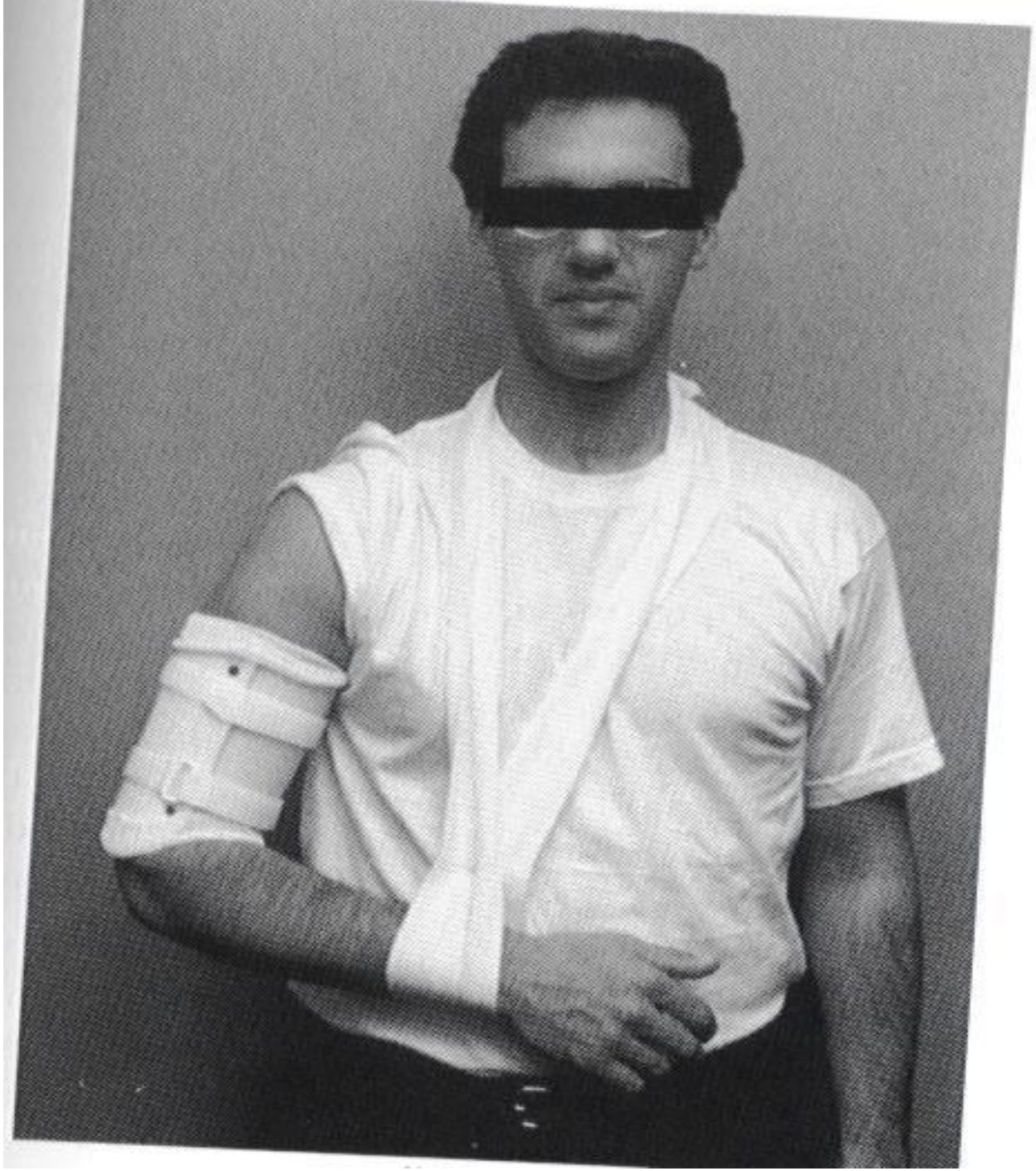
Modified U splint

- Fractures with minimal shortening
- Can be exchanged for functional brace 2 weeks after injury
- Disadvantages: lost shoulder movement, axillary irritation, patient discomfort and bulkiness


A
B

Functional Bracing

- Fracture reduction through soft tissue compression
- Prefabricated anterior shell and posterior shell
- Velcro straps
- Contraindications: massive soft tissue injury or bone loss, unreliable patient, and inability to maintain alignment



Fracture Alignment

- Up to 3 cm shortening
- 20 degrees anterior or posterior angulation
- 30 degree varus
- Mal-rotation well tolerated

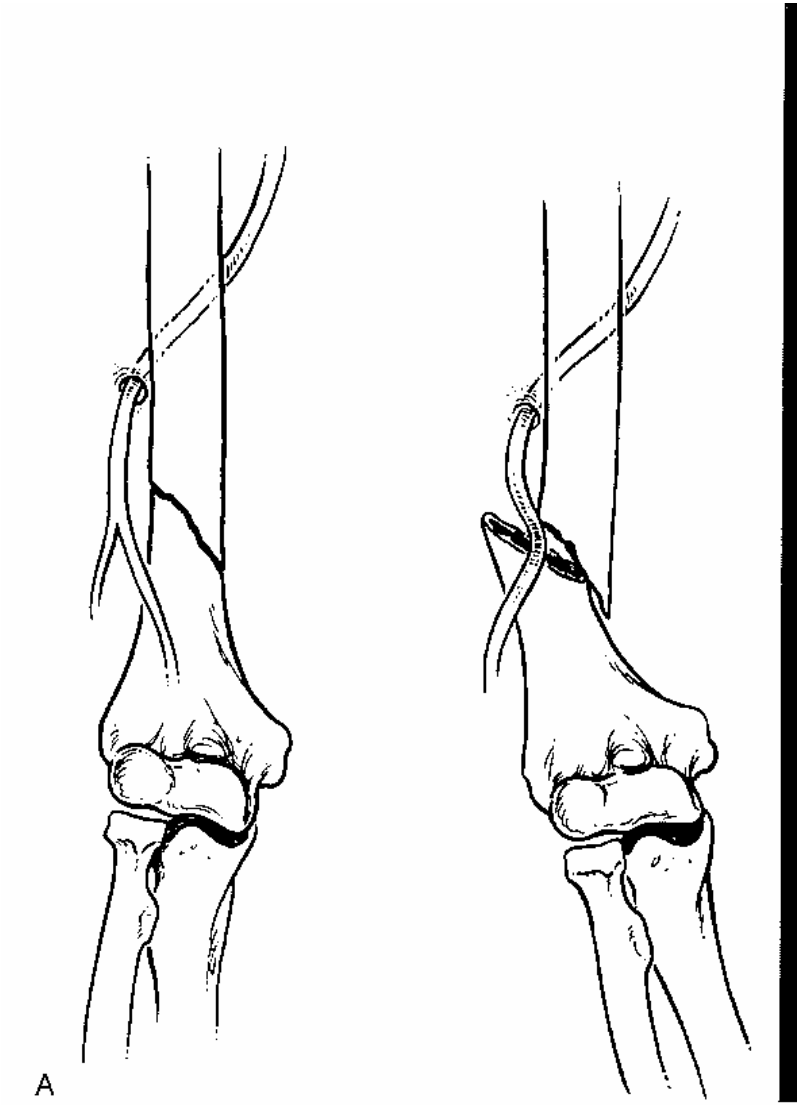
Shaft Fractures and Radial Nerve Palsy

- Transverse fracture of middle third most commonly assoc. with neuropraxia
- Spiral fractures of distal third higher risk laceration or intrapment
- 86% (Morace) or 70% spontaneous recovery
- Surgical exploration only 1/3 of cases needed repair
- Late exploration (4 mos.) only 50% recovery after surgery

Indications – surgery.

- Open fractures
- Holstein-Lewis distal 1/3 fractures
- Secondary palsies developing after closed reduction

HOLSTEIN-LEWIS FRACTURE

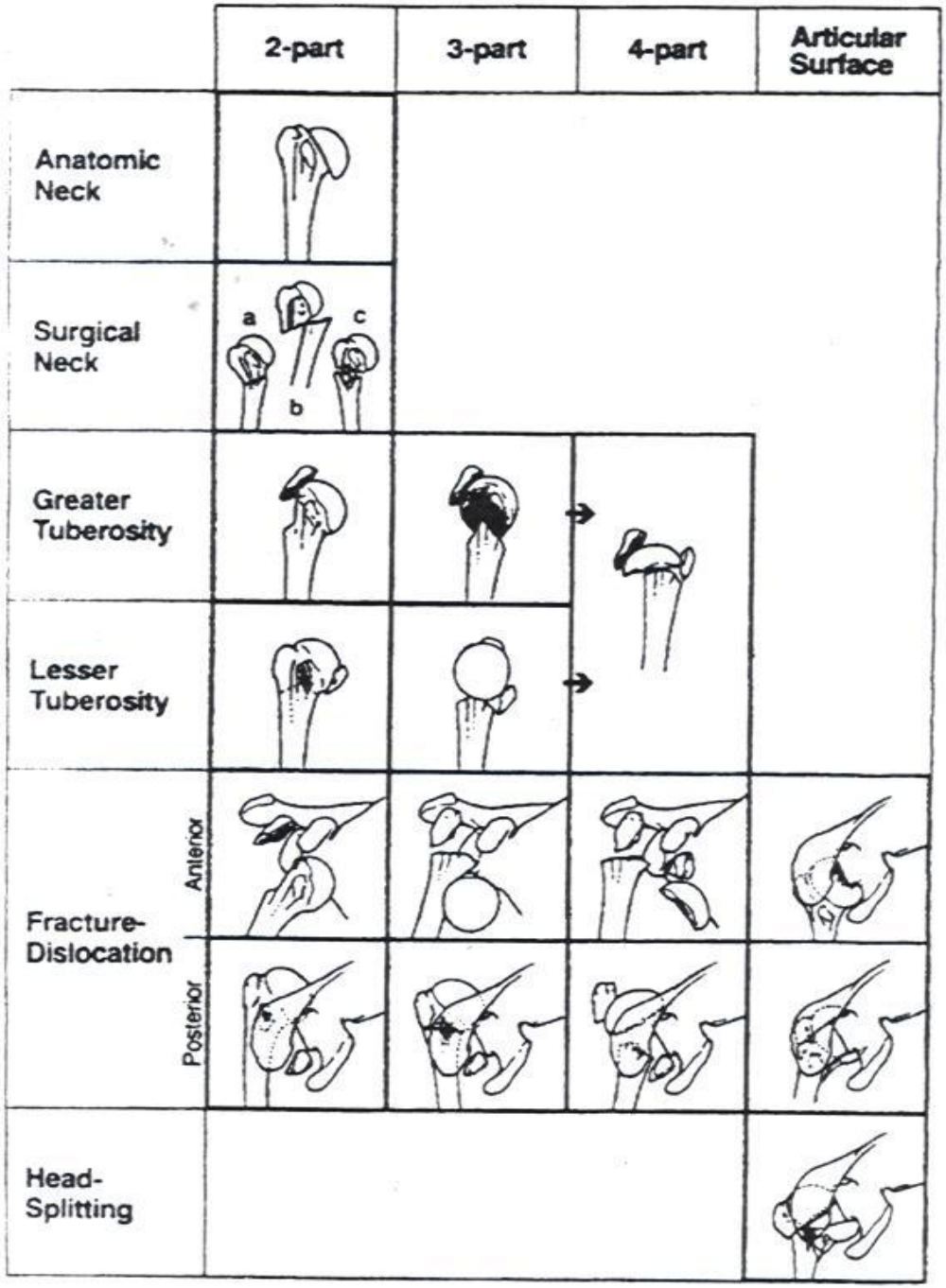


Proximal Humerus Fractures

- 4-5% of all fractures
- 85% are minimally displaced or non-displaced
- 15% displaced = therapeutic challenge

Neer Classification

- Non-displaced # by Neer criteria reveals less 1cm displacement and 45 degrees of angulation of any fragment with respect to all others


2-part
3-part
4-part
Articular Surface
Anatomic Neck
Surgical Neck
a
b
c
Greater Tuberosity
Lesser Tuberosity
Fracture-Dislocation
Anterior
Posterior
Head-Splitting

Diagnosis – Physical Exam.

- Shoulder pain
- Swelling of shoulder and arm
- Ecchymosis
- Ipsilateral hemithorax
- Lung field pathology
- Peripheral neurological exam.
- diagnosis

Radiographic Exam.

- AP shoulder
- Lateral
- Axillary
- Valpeau – noncompliance with positioning of axillary view
- CT – tuberosity displacement, head splitting #’s, associated glenoid #’s

Treatment – Minimally Displaced

- Conservative
- Mobilize early
- Physiotherapy

Treatment – Severely Displaced

- ORIF
- Anatomical reduction
- Stable Fixation
- Gentle mobilization

Humerus neck fractures

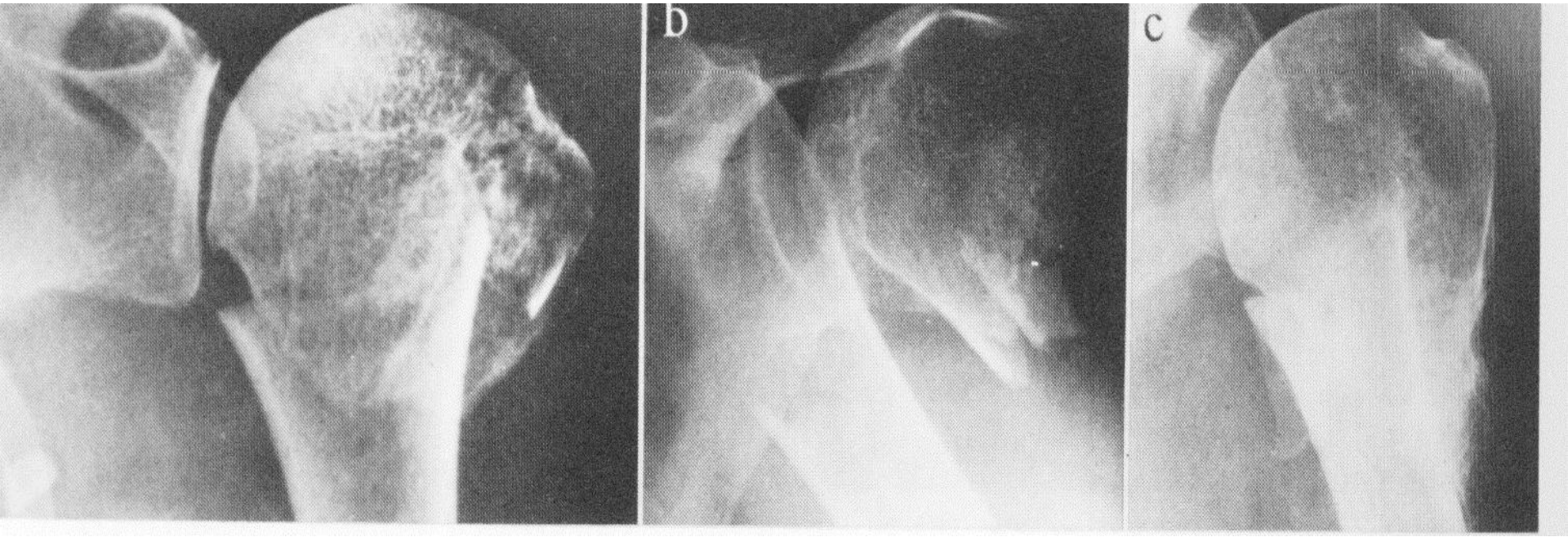


Fig. 1a

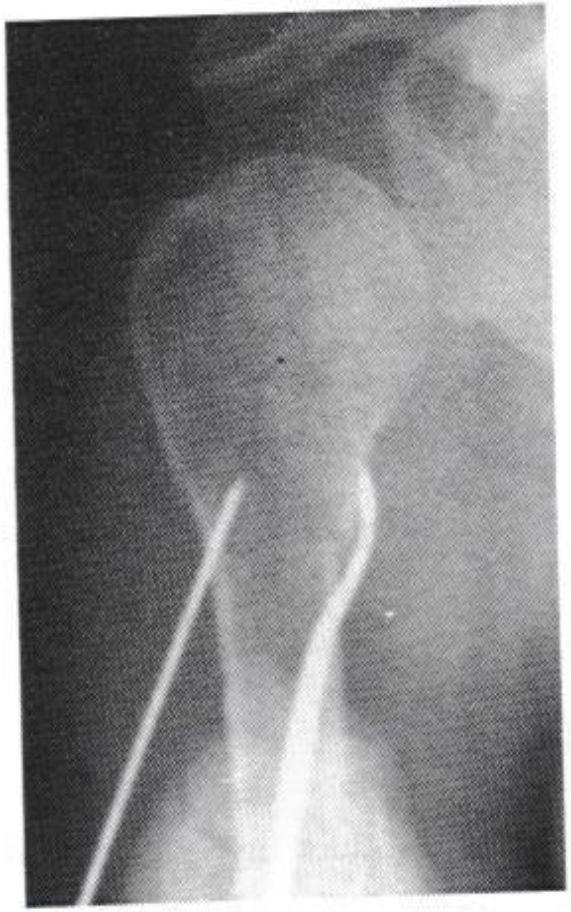


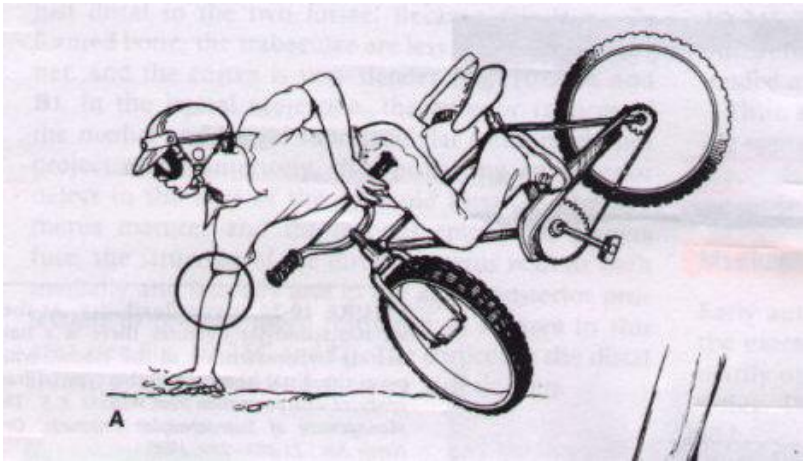
Fig. 1b

Fig. 1c

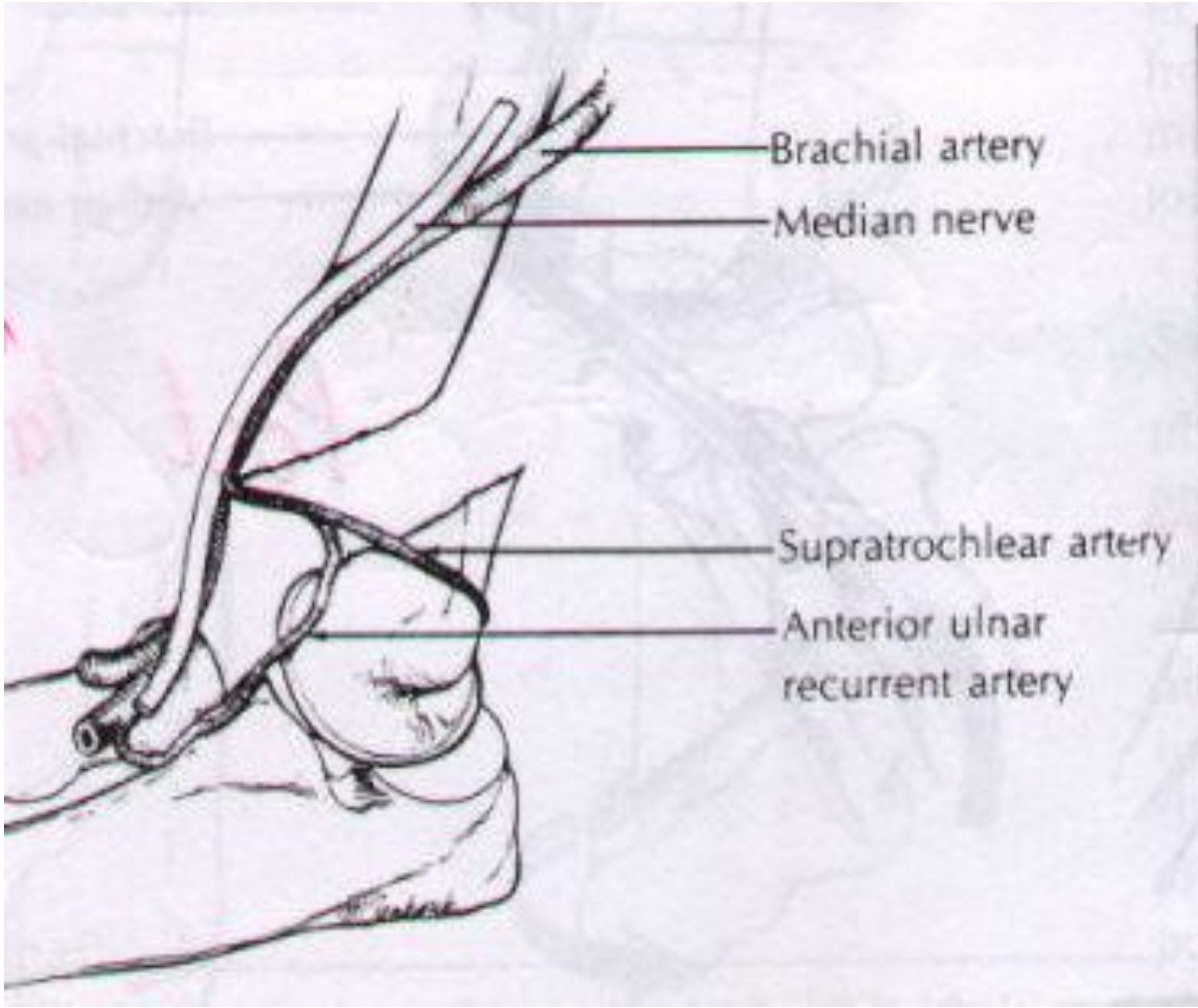
A 3-part fracture of the upper end of the humerus with the head displaced medially and inferiorly (a). The head fragment has been raised with the elevator; the greater tuberosity automatically returns to the anatomical position and a K-wire has been passed through the shaft fragment into the head (b). The completed reconstruction (c).

TYPES SUPRACONDYLAR

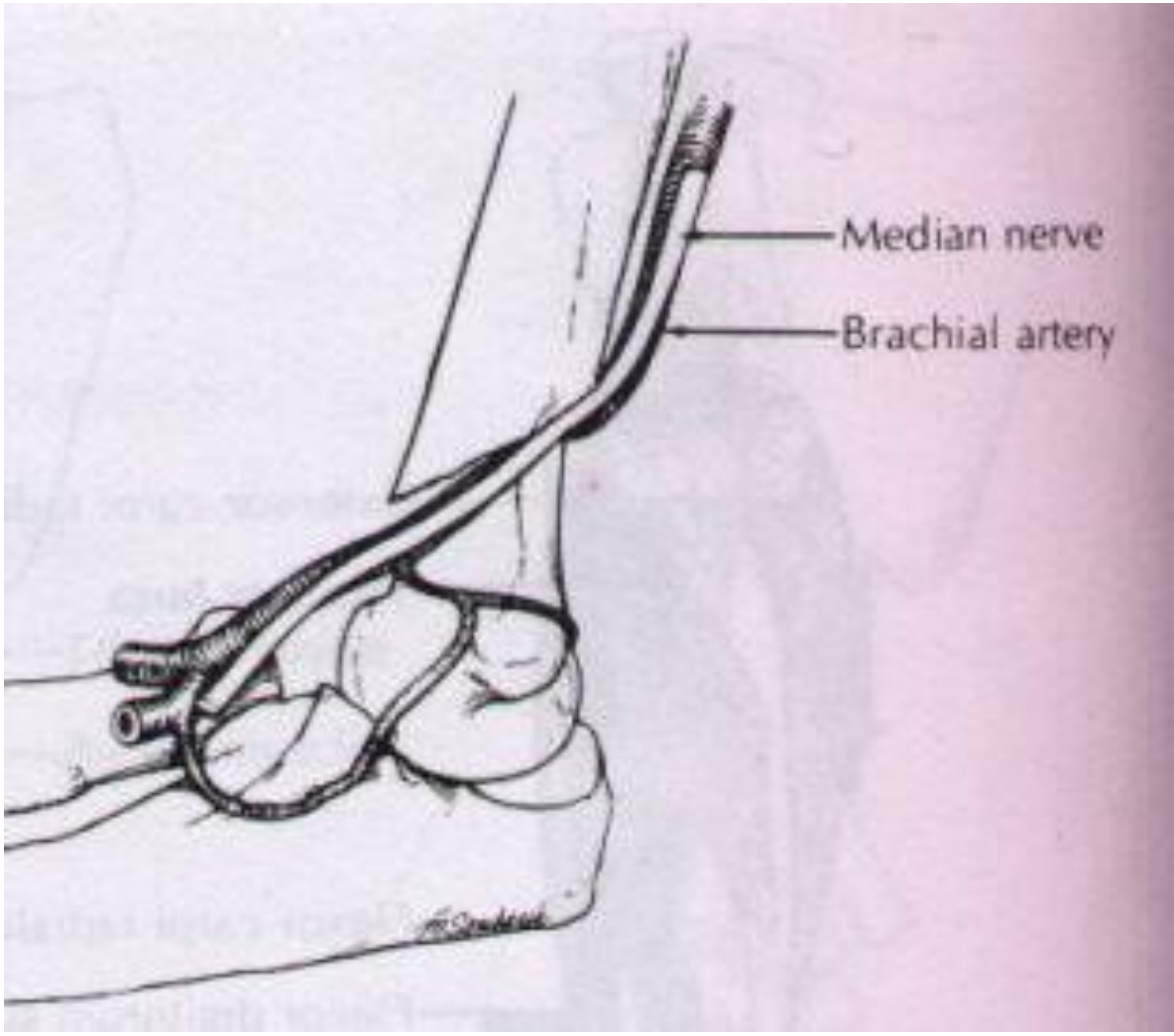
- EXTENSION-TYPE
- MOST COMMON
- INCIDENCE 5-8yrs
- RARE AFTER 15yrs
- MORE DISPLACEMENT OLDER KIDS(10yr)
- M:F 2:1



ANATOMY


Brachial artery
Median nerve
Supratrochlear artery
Anterior ulnar
recurrent artery

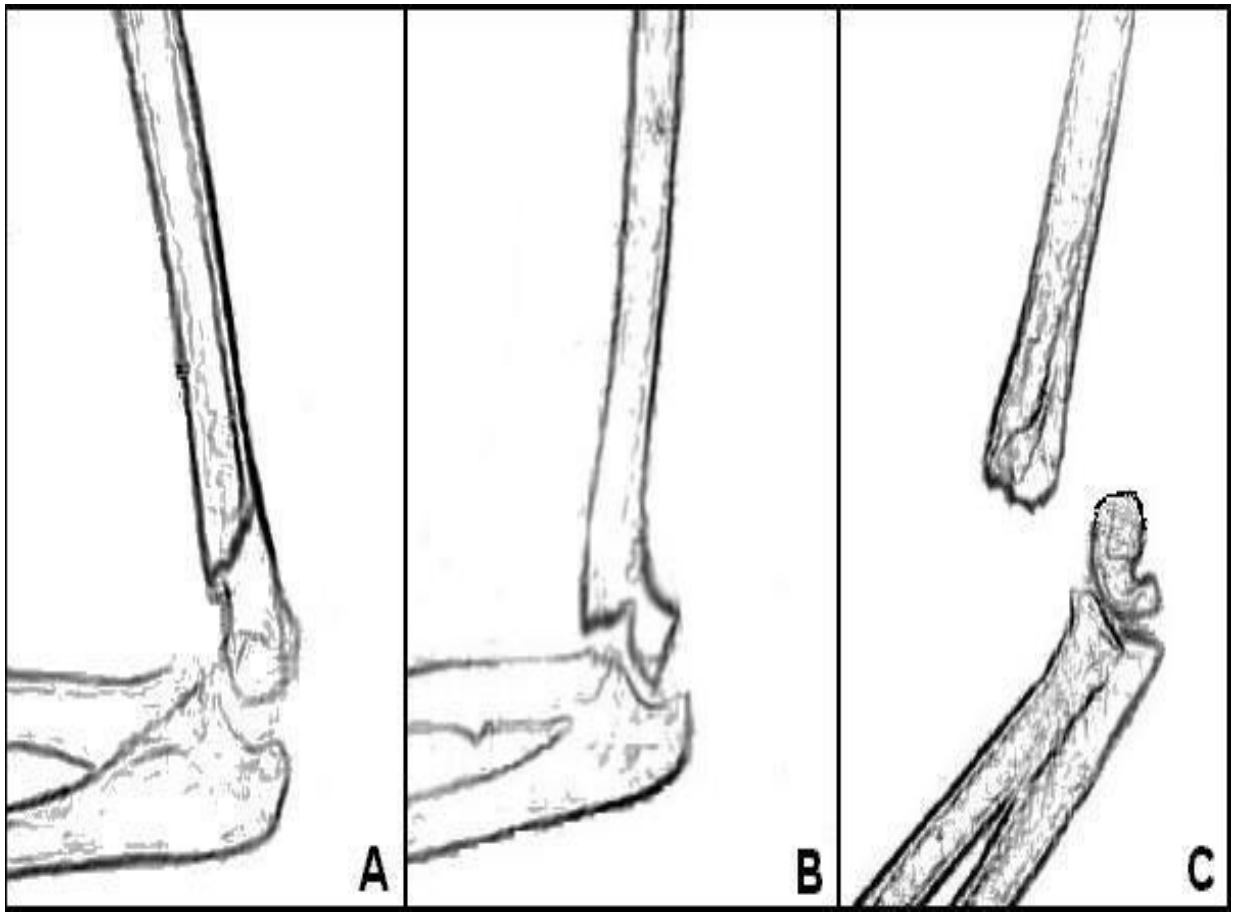
ANATOMY



GARTLAND CLASSIFICATION

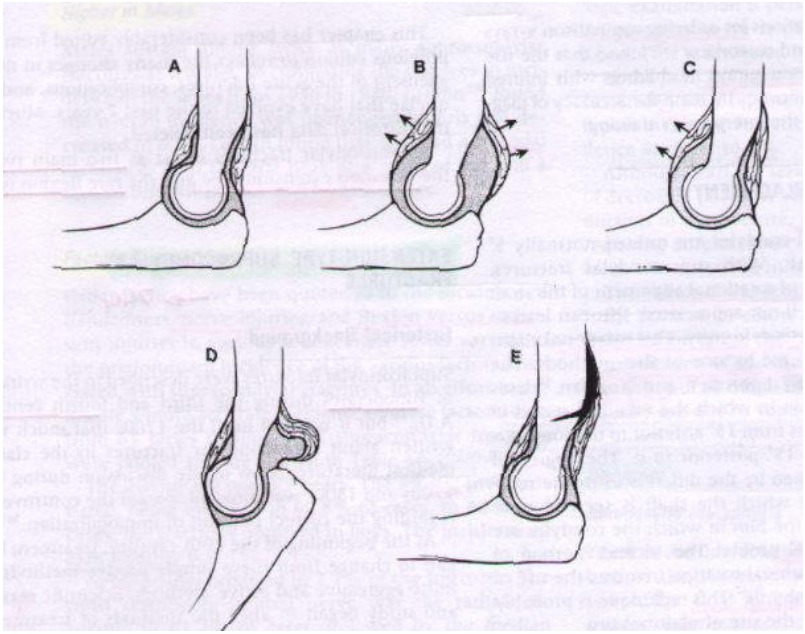
- TYPE 1
- UNDISPLACED
- TYPE 2
- MINIMAL DISPLACED
  intact post cortex
- TYPE 3
- DISPLACED
  Post-med
  Post-lat

Gartland classification.



RADIOLOGY

- LATERAL
- Elbow in 90 flexion
- Flag sign
- Fat pad-post / ant



FLAG SIGN

TREATMENT PROTOCOL EXTENTION TYPE 1

- IMMOBILIZE ABOVE ELBOW-POP SPLINT 90°.
- HOSPITALIZE ELEVATE PAIN RX OBSERVATION q1-2h.
- NOTES.
- 3 WEEKS F/U
- EVALUATE # +ROM
- MOBILIZE

TREATMENT PROTOCOL EXTENTION TYPE 2

- EVALUATE DISPLACEMENT/ ANGULATION/ ROT.
- STABLE
- CLOSE REDUCTION G/A

- ***Stable #***

I. Back-Slab
II. FORE ARM PRONATION
III. HOSPITALIZATION
IV. 3 WEEKS F/U
V. MOBILIZE

TREATMENT PROTOCOL EXTENTION TYPE 2

- **<u>UNSTABLE#</u>**

- CLOSE REDUCTION
- 2 X PERCUTANEOUS K-WIRES

- POST OP SPLINT 30-45 FLEXION
- HOSPITALIZATION
- 3 WEEKS F/UK – REMOVE WIRES
- MOBILIZE
- 4 WEEKS F/U

TREATMENT PROTOCOL EXTENTION TYPE 3

- MORE TRAUMA
- MORE DISPLACEMENT
- MORE SWELLING
- MORE COMPLICATIONS

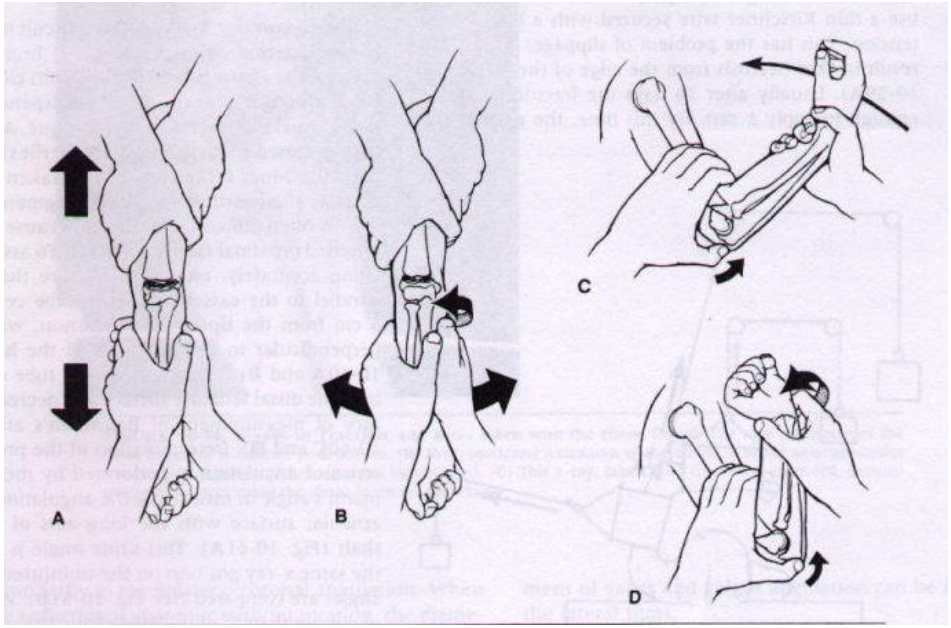
- **3 STEPS**
- REDUCTION #
- EVALUATE REDUCTION
- MAINTAIN REDUCTION

TREATMENT PROTOCOL EXTENTION TYPE 3

- METHODS
- DUNLOP TRACTION
- CLOSE/ORIF 2 X K-WIRES

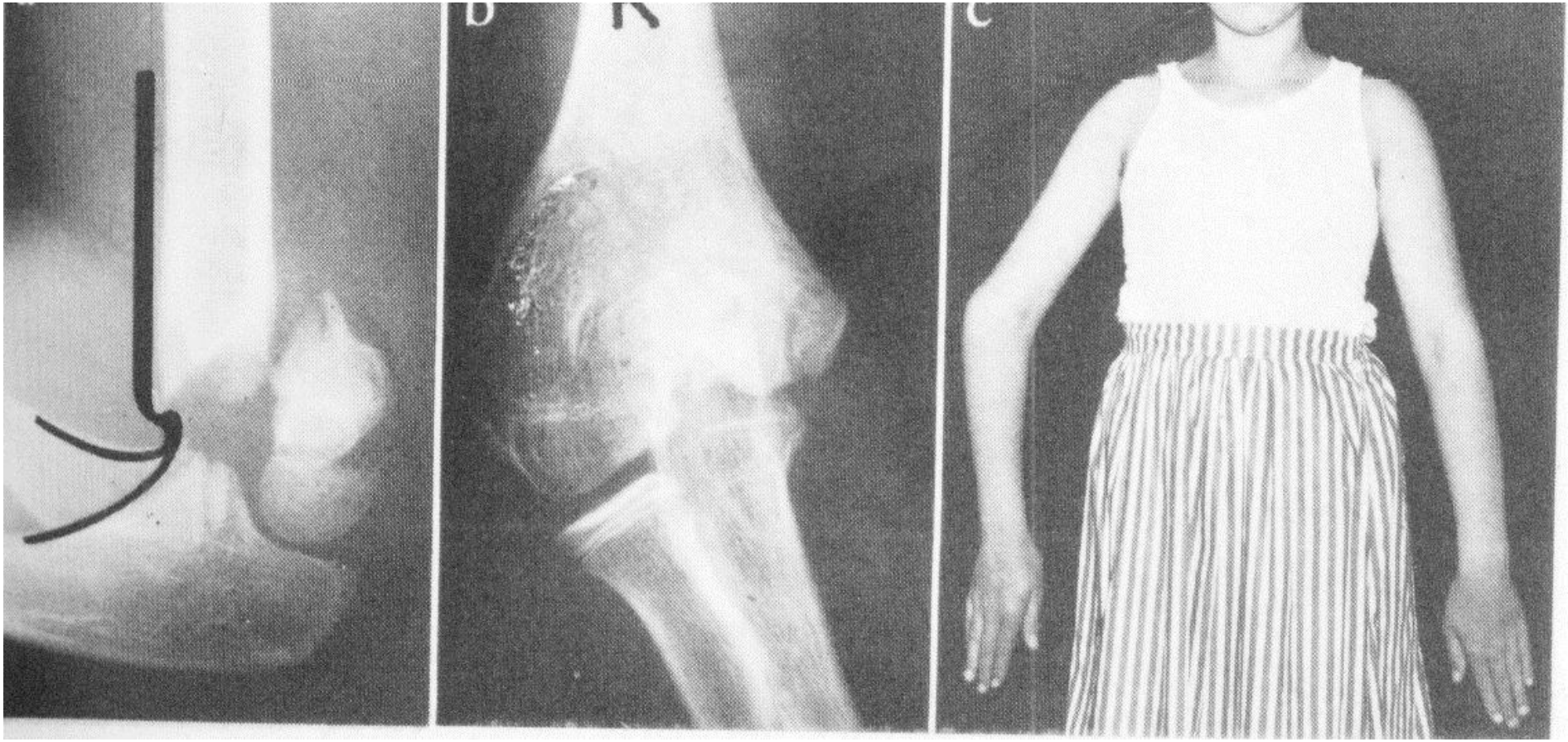
CLOSED REDUCTION WITH K -WIRES

- TRACTION
- ELBOW Ext.
- FOREARM IN SUP.
- LENGTH-
- VARUS / VALGUS
- ROTATION
- FLEXION ELBOW PRESSURE OLECRANON.
- PRON. FOREARM



CLOSED REDUCTION WITH K-WIRES

Supracondylar fractures
Complications



COMPLICATIONS

- NERVE

  ANT INT OSS.

  RADIAL

  MEDIAN

  ULNAR
- VASCULAR
- **COMPARTMENT SYNDROME (MOST NB!!!)**
- CUBITUS VARUS
- STIFFNESS
- PINTRACT INFECTION
- REMANIPULATION
- HETEROTOPIC OSSIFICATION

THE END

THANK YOU