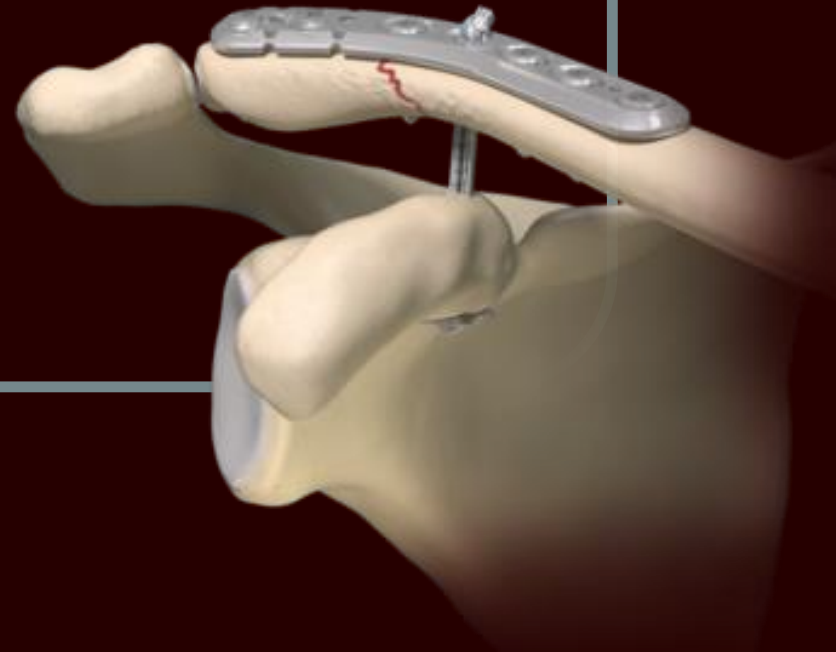
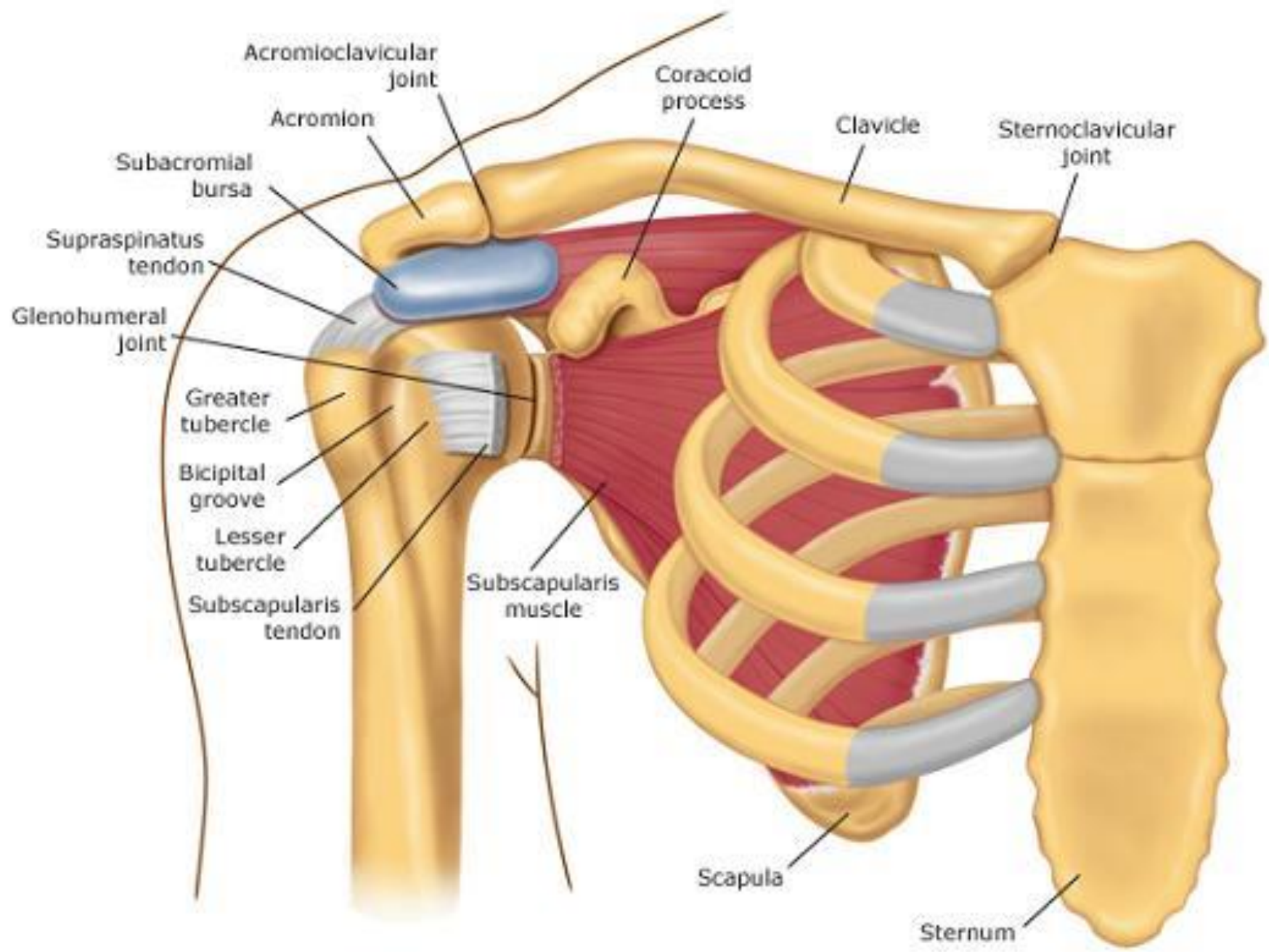


FRACTURES OF THE CLAVICLE



FRACTURES OF THE CLAVICLE

- The shoulder – the body's most mobile joint
- Clavicle – long, paired bone
- Located in the anterior and superior part of the torso
- Part of the *pectoral or shoulder girdle*



FRACTURES OF THE CLAVICLE

Functions of clavicle:

- Supports the shoulder, permitting free movement of upper limb
- Transmits part of the upper limb weight to the axial skeleton

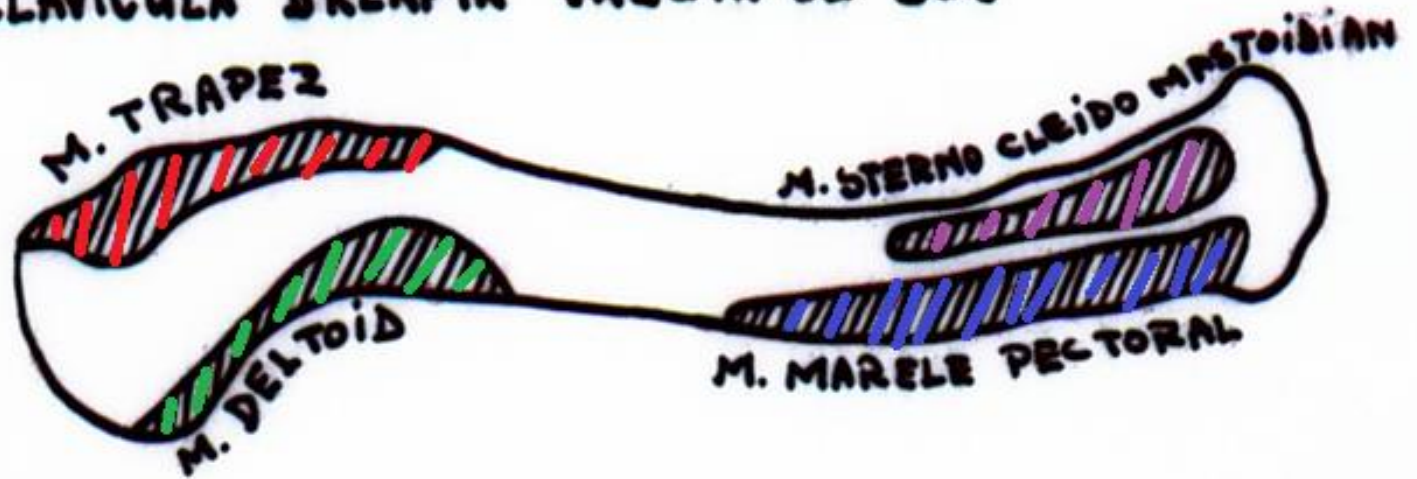
Has two articulations:

- Sterno-clavicular joint
- Acromio-clavicular joint

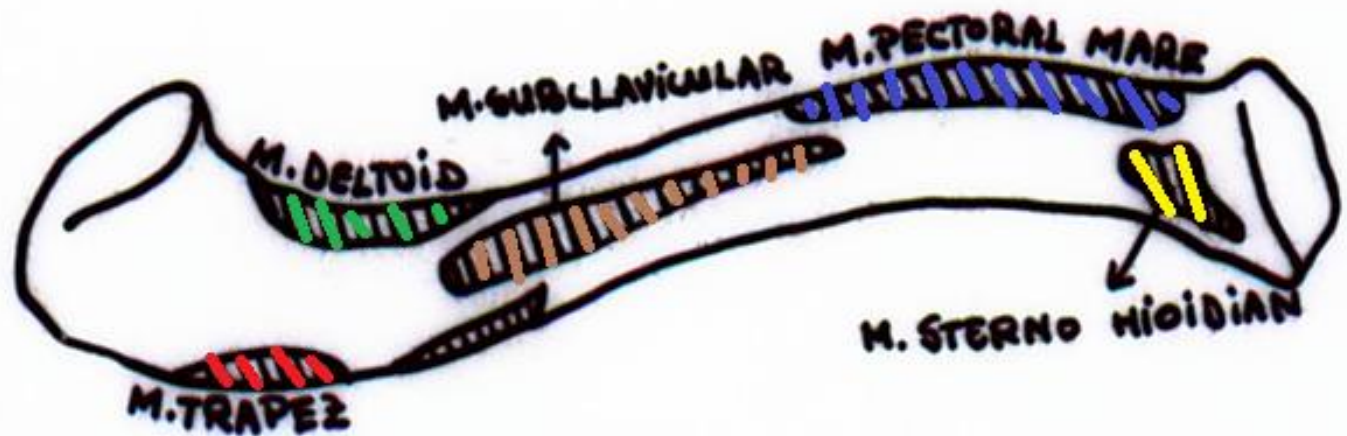
Attached to the coracoid process by the coraco-clavicular ligaments

CLAVICULA DREAPTĂ VĂZUTĂ DE SUS

EXTREMITATE



ACROMIALĂ



CLAVICULA DREAPTĂ VĂZUTĂ DE JOS

FRACTURES OF THE CLAVICLE

- Approx. 10-15% of all fractures
- 40% of all shoulder injuries, followed by scapulo-humeral luxations and fractures of the upper extremity of the humerus

FRACTURES OF THE CLAVICLE

Anatomical, embryological and functional particularities:

- Located beneath the tegument, without protective muscle brace
- S-shaped => point of minimal resistance at the joining of the external and middle third – most frequent site of fracture
- Early ossification – loses its elasticity quickly

FRACTURES OF THE CLAVICLE

MECHANISM OF INJURY

- Sporting accidents
 1. Direct – rare
 2. Indirect – most frequent
 1. Over-bending the curvatures by falling onto the bony part of the shoulder, more rarely onto the elbow or hand
 2. Straightening the curvatures by elongating the arm in abduction (Lanzillox) – rare
 3. Exceptional – brutal, simultaneous contraction of the sternocleidomastoid and pectoralis major muscles

FRACTURES OF THE CLAVICLE

ANATOMO-CLINICAL FORMS

1. Fractures of the middle 1/3rd
2. Fractures of the external 1/3rd
3. Fractures of the internal 1/3rd
4. Complex fractures
5. Fractures of the clavicle in children
6. Fractures of the clavicle with associated injuries

FRACTURES OF THE CLAVICLE

Fractures of the middle 1/3rd

The most frequent (75% of total collarbone fractures)

At the union of the external and middle thirds, outside the conoid ligament and inside the crossing of the bone with the first rib

Fracture trajectory:

- Frequently oblique: downwards, backwards and towards the outside
- Rarely transversal
- Exceptionally – spiral trajectory

Fracture may be unique or comminuted

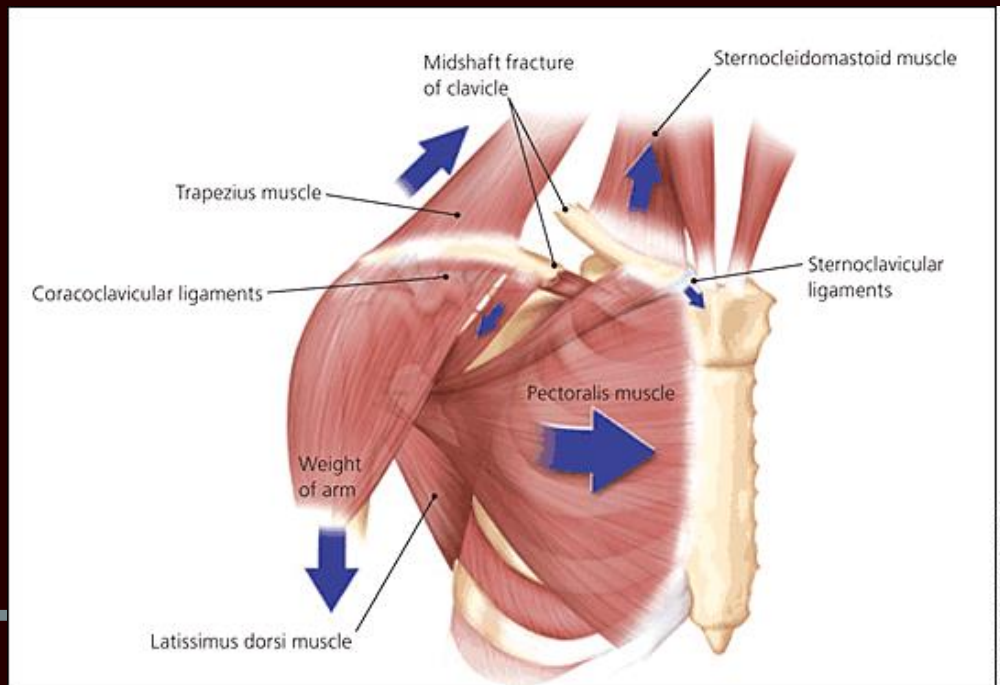


FRACTURĂ A CLAVICULEI ÎN 1/3 MEDIE

FRACTURES OF THE CLAVICLE

Displacement of the fragments is actioned by muscles and gravitational force:

- External fragment – **downwards and in front** of the **deltoid**, **pectoralis major**, **root of the upper limb** => deformation – fallen shoulder
- Internal fragment – **upwards and behind** the **sternocleidomastoid** => angling and shortening of the acromio-clavicular distance



FRACTURES OF THE CLAVICLE

- Sometimes, fracture is complicated by bone splinters
 - Splinters appear by direct mechanism, can injure:
 - Tegument,
 - Subclavicular vessels
 - Nerves of the brachial plexus
 - Pleura or pleural dome

FRACTURES OF THE CLAVICLE

Fractures of the external (acromial) third

20% of total clavicle fractures

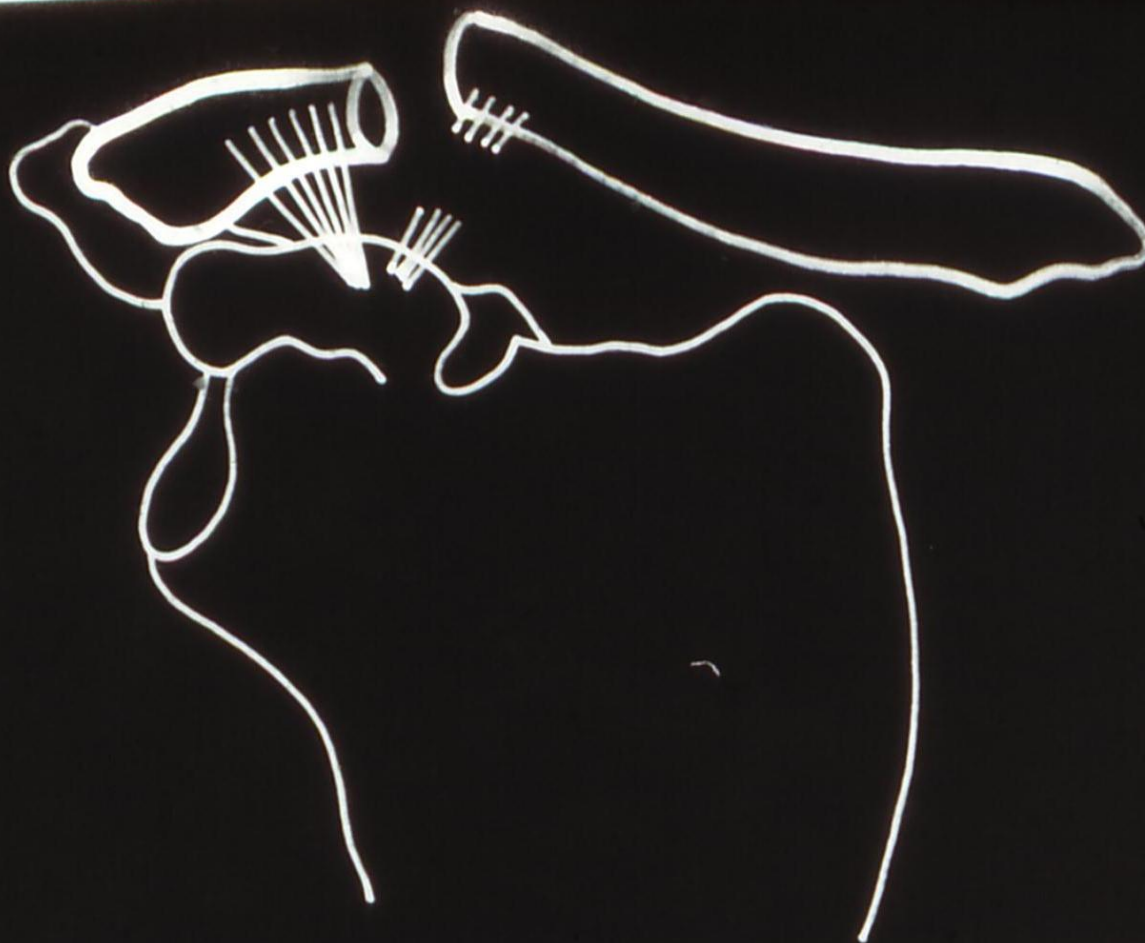
Clasification by NEER:

Type I – trajectory outside coraco-clavicular ligaments

Type II – trajectory between coracoid hypophysis and acromion, with/without rupture of coraco-clavicular ligaments

LATARJET – type III – trajectory close to acromioclavicular joint, external fragment moves downwards and forwards

Fractura tip Neer II

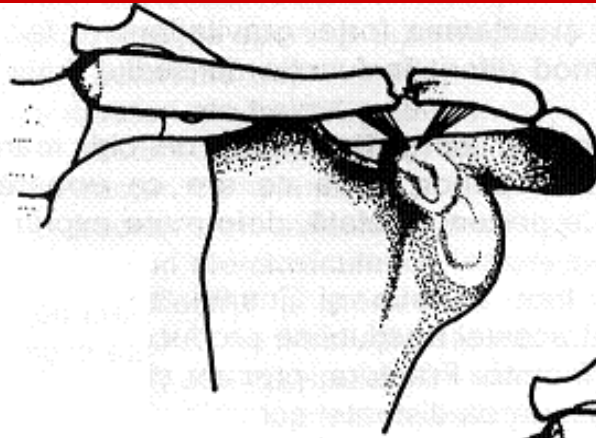


FRACTURĂ A CLAVICULEI ÎN 1/3 EXTERNĂ
TIP II NEER

Fractura tip Latarjet

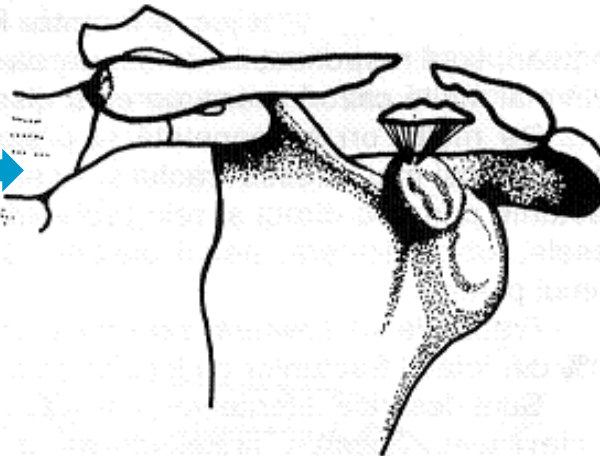


FRACTURĂ A CLAVICULEI ÎN 1/3 EXTERNĂ
(LATARGET)

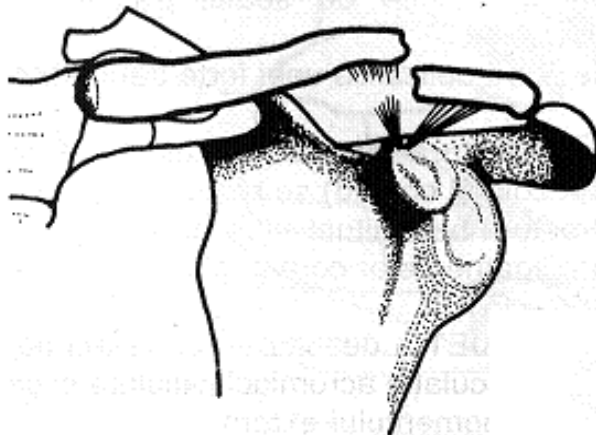


Neer I

Latarjet



Neer II

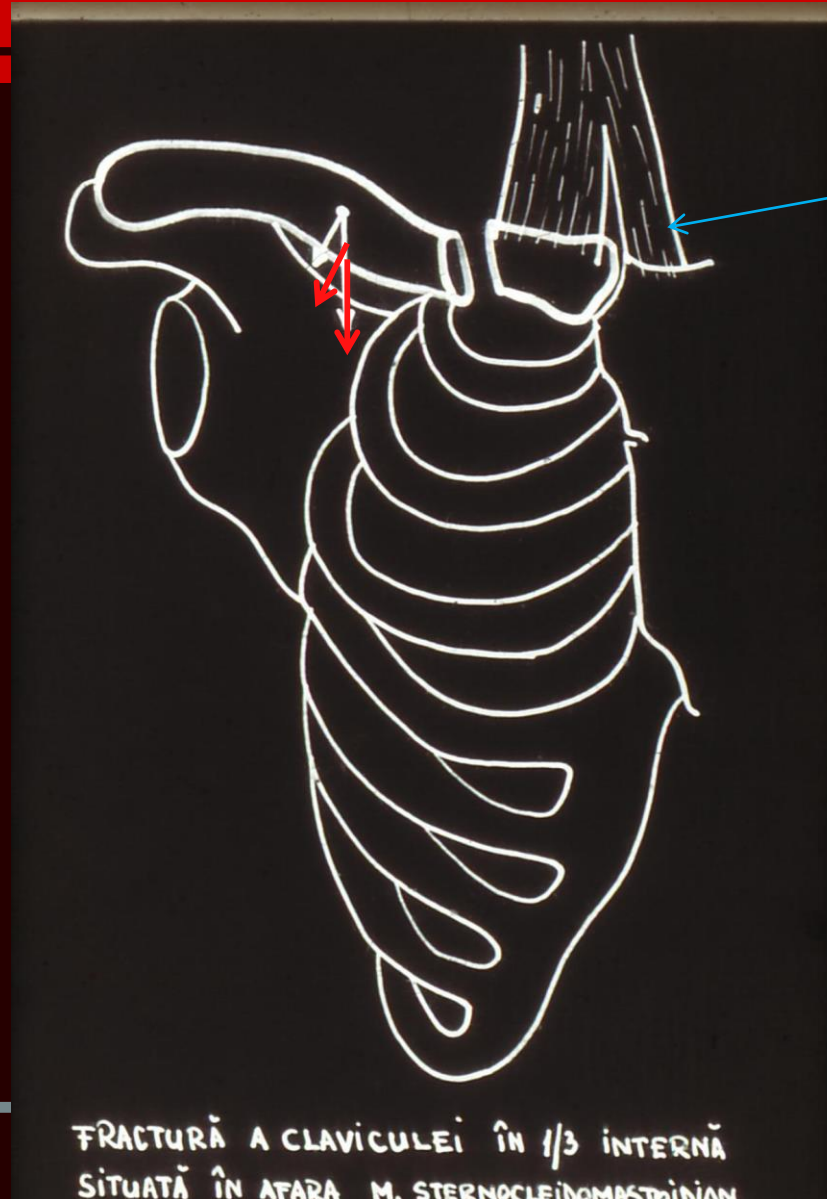


FRACTURES OF THE CLAVICLE

Fractures of the internal (sternal) extremity

- Rare (1-5%)
- The most solid part of the collarbone due to its particular structure and position
- Fracture trajectory can be transversal or oblique inferior and medial
- Minimal displacement due to muscle and ligament insertions

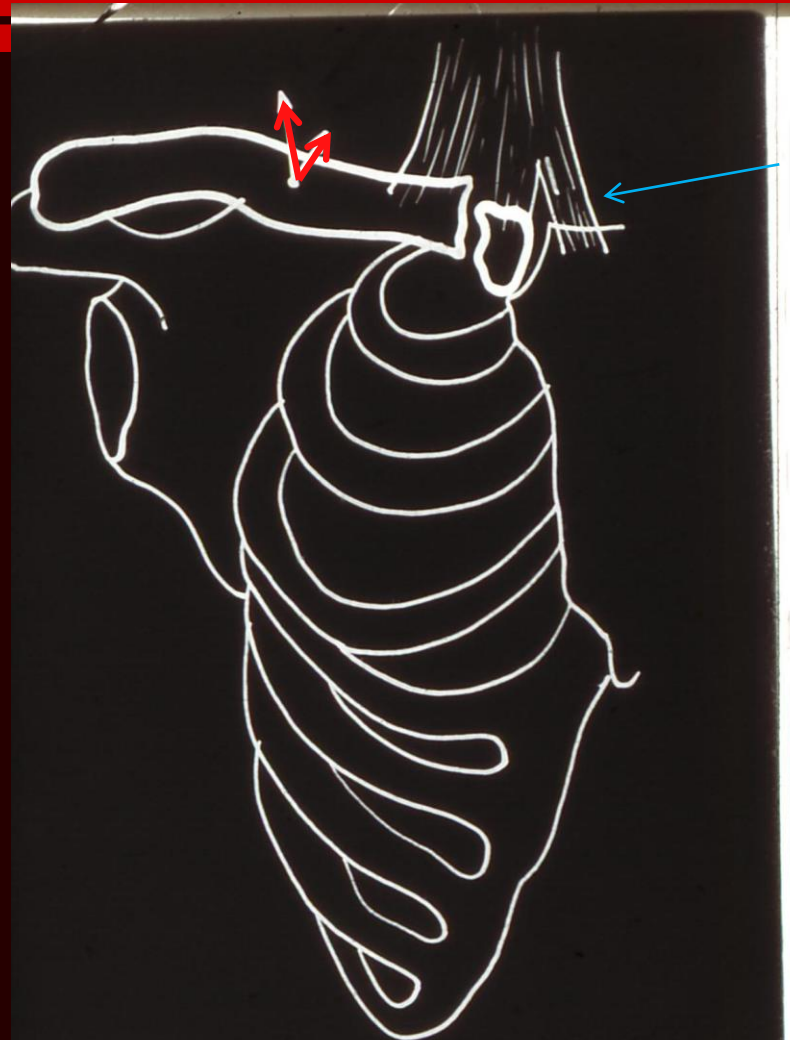
If fracture occurred outside the sternocleidomastoid muscle, the fragment is pulled down and forwards by the pectoralis major



m.
sternocleidomastoidian

FRACTURĂ A CLAVICULEI ÎN 1/3 INTERNĂ
SITUATĂ ÎN AFARA M. STERNOCLEIDOMASTOIDIAN

If the fracture has occurred within the sternocleidomastoid muscle, displacement upwards and inwards



m.
sternocleidomastoidian

FRACȚURĂ A CLAVICULEI ÎN 1/3 INTERNĂ
SITUATĂ ÎNĂUNTRUL M. STERNOCLEIDOMASTOIDIAN.

FRACTURES OF THE CLAVICLE

Complex fractures of the clavicle

1. Multiple fractures of one clavicle:
 - Bipolar
 - Fractures with 3 fragments
 - Comminuted fractures
2. Simultaneous fractures of both collarbones
3. Clavicle fractures associated with fracture of the acromion or scapular spine

FRACTURES OF THE CLAVICLE

Clavicle fractures in children

- **Higher frequency – 30% of children's fractures**

Clavicle fractures with associated injuries

- **Rarely encountered**

FRACTURES OF THE CLAVICLE

Clinical examination

Straightforward in displaced fractures of the middle 1/3rd, more difficult in those without displacement and fractures of the extremities

Clinical probability signs:

- Pain in a fixed point
- Loss of function
- Deformed region
- Local swelling and bruising

FRACTURES OF THE CLAVICLE

Clinical certitude signs

- Shortening of the acromio-clavicular distance
- Abnormal mobility
- Bone crepitus
- Interruption of bone continuity
- **Dessault position – characteristic!**

Clinical exam is done upon the naked torso,
comparatively

FRACTURES OF THE CLAVICLE

Inspection:

- Dessault position
- “Stair step” – medial fragment is prominent
- Scapular displacement
- Foreshortening of clavicular region

Palpation:

- Pain in a fixed point
- Interruption of bone continuity
- Abnormal mobility
- Crepitus

FRACTURES OF THE CLAVICLE

Fractures of internal 1/3rd

- Minimal displacement in most cases; if present, it's due to traction by sternocleidomastoid muscle
- Torticollis and swelling of the sternocleidomastoid sheath with ecchymosis (**sign of Morestin**)
- Important to differentiate from sterno-clavicular luxation!

FRACTURES OF CLAVICLE

Fractures of external 1/3rd – depending on coracoclavicular ligaments:

- If torn – displacement in “stair-step”, then swelling
- If undamaged – minimal deformity, pain in the acromioclavicular joint, swelling, bruising
- Piano key = association of acromio-clavicular disjunction

FRACTURES OF THE CLAVICLE

In children – few symptoms

“Greenstick” subperiosteal fracture:

Discrete swelling, ecchymosis at the lesion site, fixed-point pain

Loss of function is partial – passive movements possible



FRACTURES OF THE CLAVICLE

RADIOLOGICAL EXAM

- Fracture site
- Trajectory
- Direction of fragment displacement
- Existence of a third fragment
- Existence of comminution
- Existence of another associated fracture

FRACTURES OF THE CLAVICLE

IMMEDIATE COMPLICATIONS

A. **General**: elements within a polytrauma

B. **Local**:

1. Open fracture – rare
2. Interposition of soft tissue
3. Opening of the pleura/pleural dome – rare
4. Association with fracture of the first rib
5. Acute respiratory failure – association of clavicle fracture with flail chest, or bilateral clavicle fracture
6. Vasculе-nervous complications:
 - Brachial plexus lesions
 - Subclavicular vein lesion
 - Axillary artery lesion

FRACTURES OF THE CLAVICLE

LATE COMPLICATIONS:

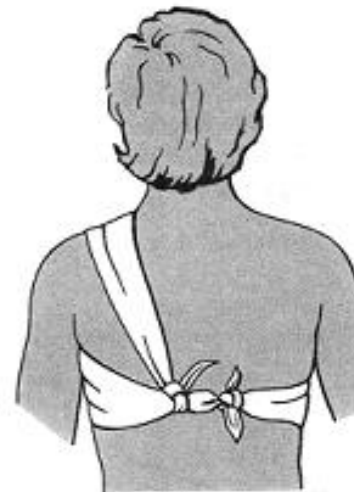
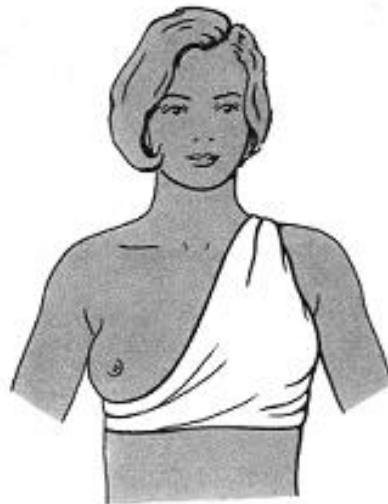
1. Osteitis
2. Pseudarthrosis
3. Vicious callus:
 - Unsightly, lowered function, can give rise to pain or paralysis complications by encompassing nervous fillets
 - Children and youths – secondary remodeling
4. Functional distress in shortening greater than 2 cm
=> limited raising, abduction and retropulsion
5. Fracture of external extremity – scapulo-humeral periarthrosis
4. Fracture of internal 1/3rd – sterno-clavicular arthroses

FRACTURES OF THE CLAVICLE

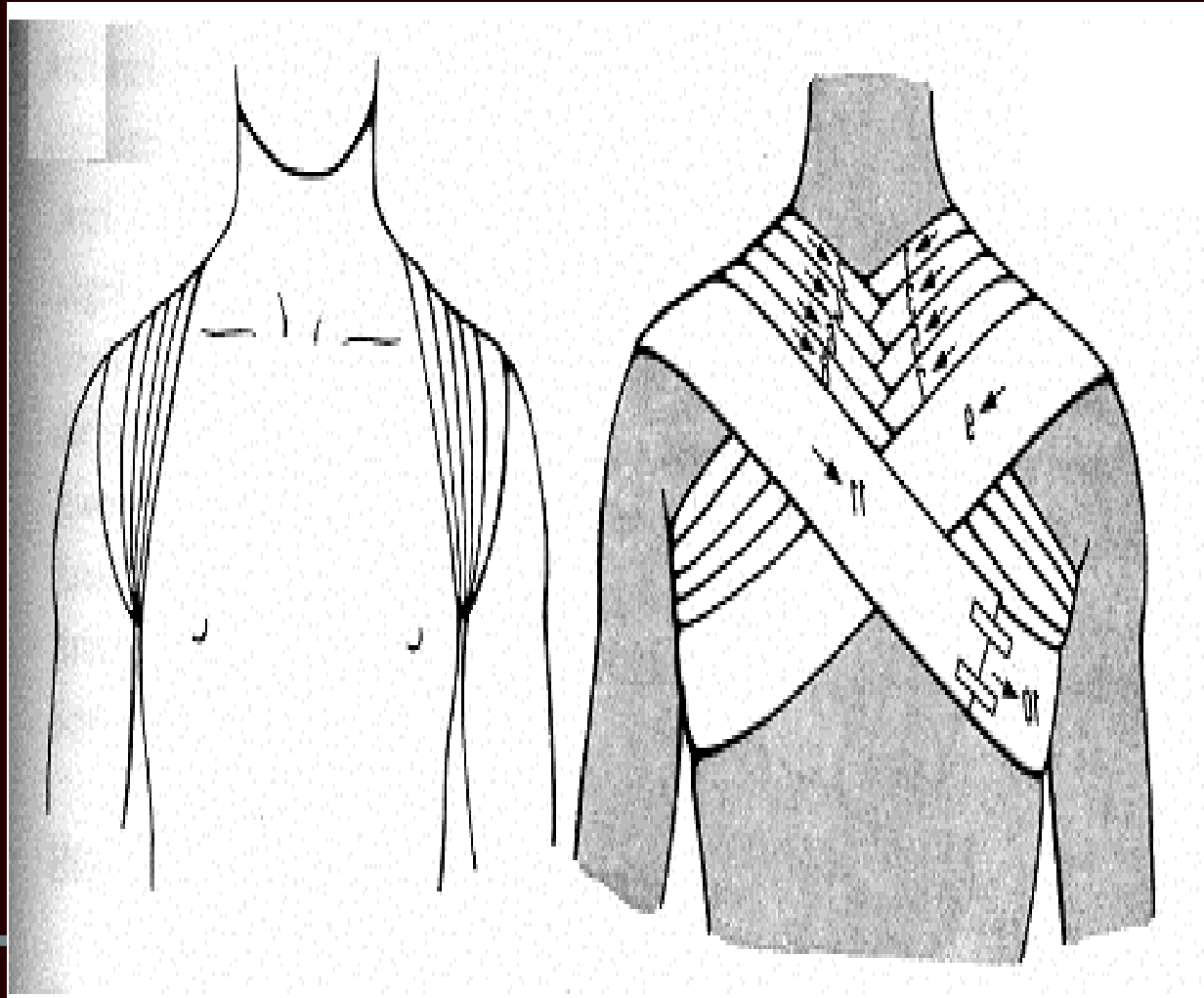
TRAUMATOLOGICAL FIRST AID

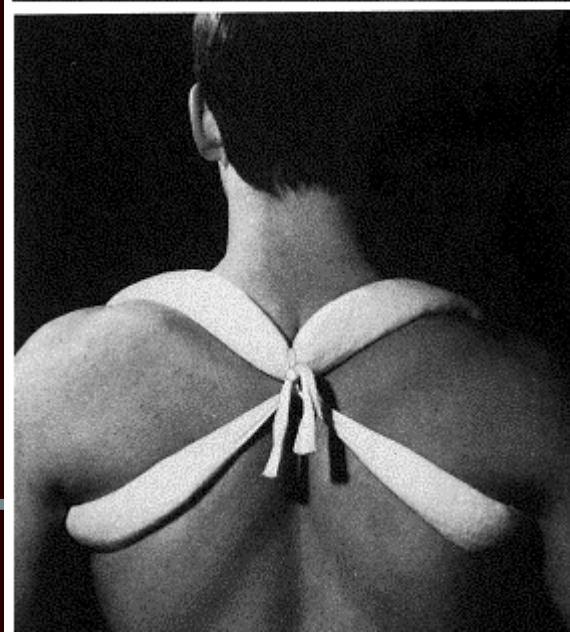
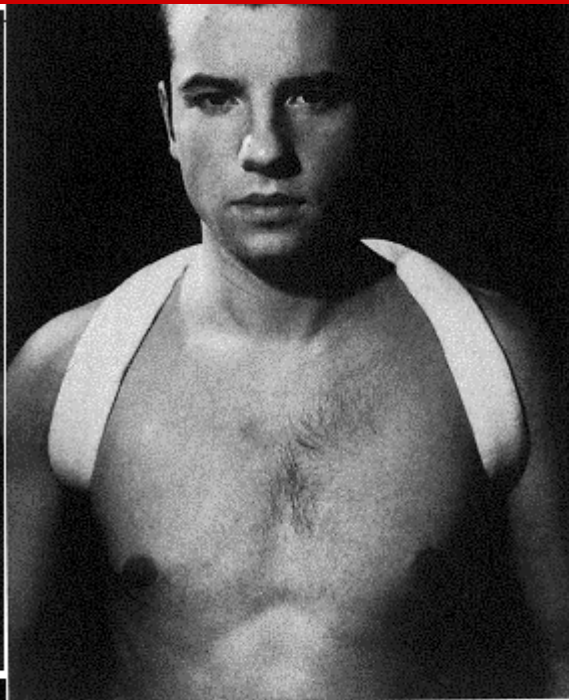
- Combatting pain
- General analgesics and sedatives
- Temporary immobilization:
 - Simple Dessault bandage
 - Rectangular sheet
 - “Figure of eight” bandage
 - “Bicycle innertube” (Destot)
 - Non-extensible Delbet rings – can be used as a method of orthopedic treatment

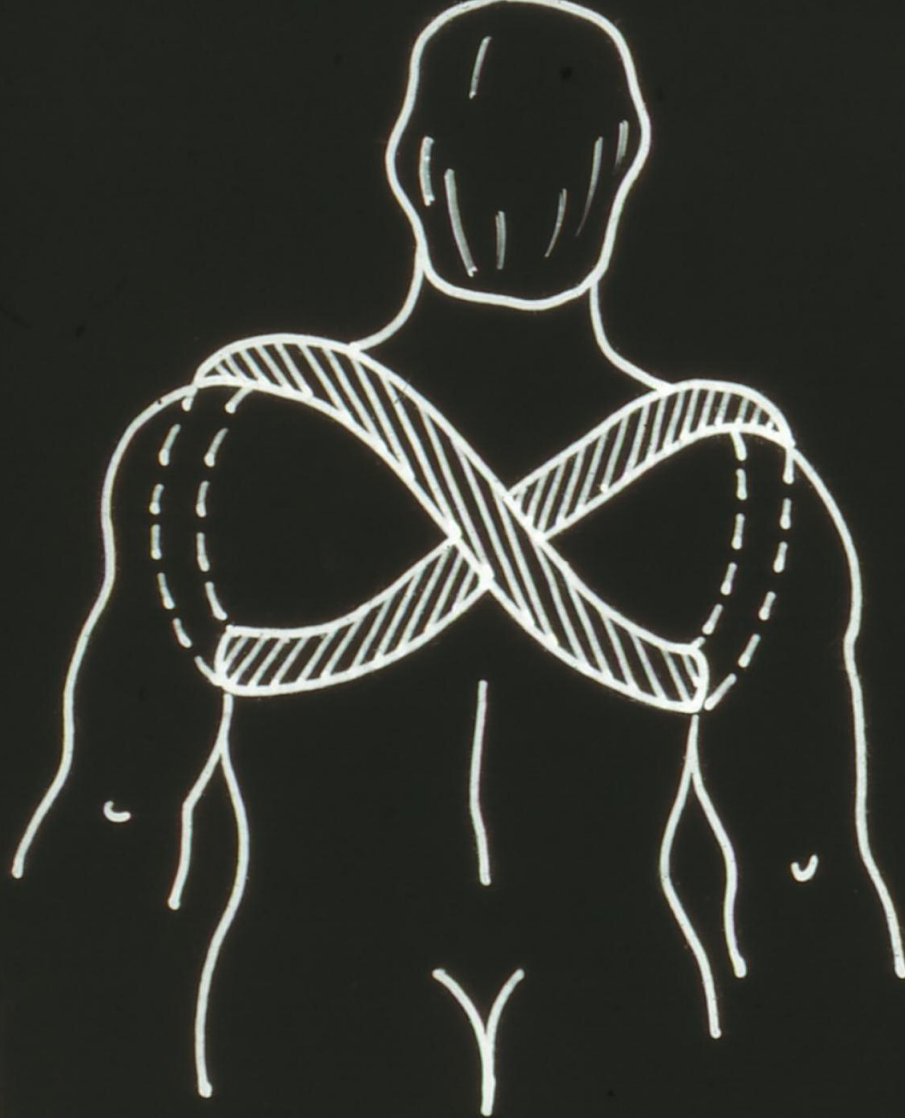
Examples



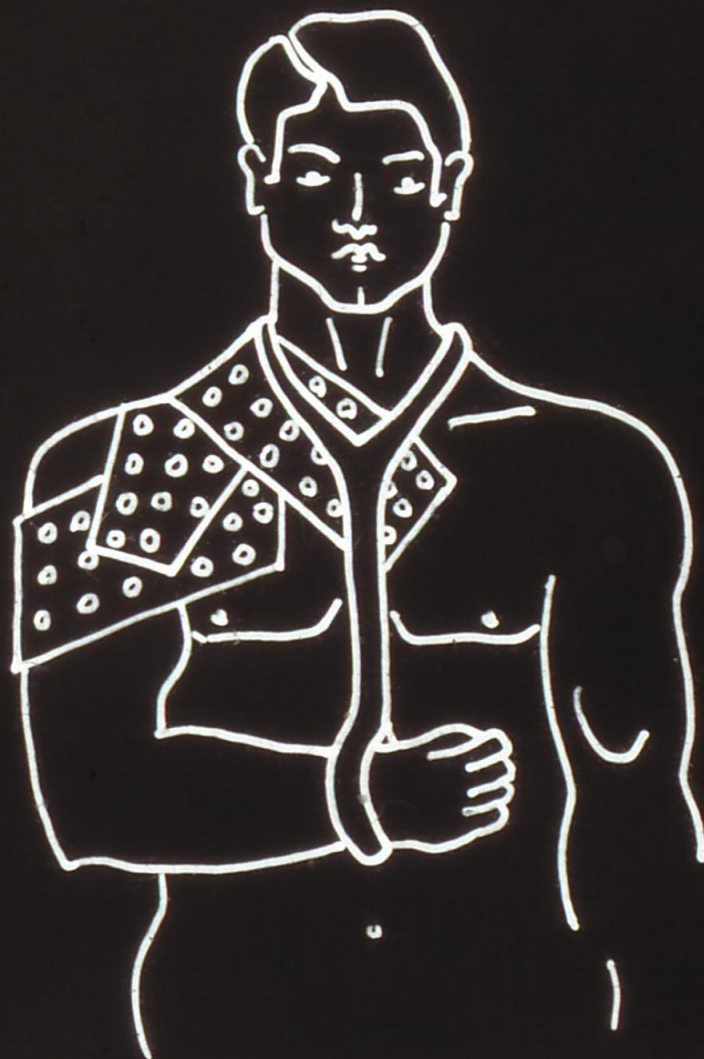








IMOBILIZARE CU AJUTORUL CAMEREI
DE BICICLETĂ ÎN CIPRA „8”



ÊŞARFĂ ELASTOPLAST



FRACTURES OF THE CLAVICLE

TREATMENT

- Spontaneous evolution, usually favorable
- Orthopedic treatment – consolidation in adults is usually 30 days
- Functional distress – low or none
- If not corrected, overlapping fragments = hypertrophic, unsightly callus
- Shortening greater than 2cm = partial loss of function
- In children, subperiosteal fractures evolve favorably
- In children, if overlapping cannot be reduced orthopedically, it is done surgically

FRACTURES OF THE CLAVICLE

ORTHOPEDIC TREATMENT

- Malgaigne, 1847 – bases of orthopedic treatment
 - Reduction by:
 - Traction upwards, back and outwards of the external fragment
 - Lowering of internal fragment
- Watson – Jones

FRACTURES OF THE CLAVICLE

Materials used

1. Bandages and scarves
2. Plaster cast
3. Contention splints
4. Devices for elastic traction
5. Methods for continuous extension

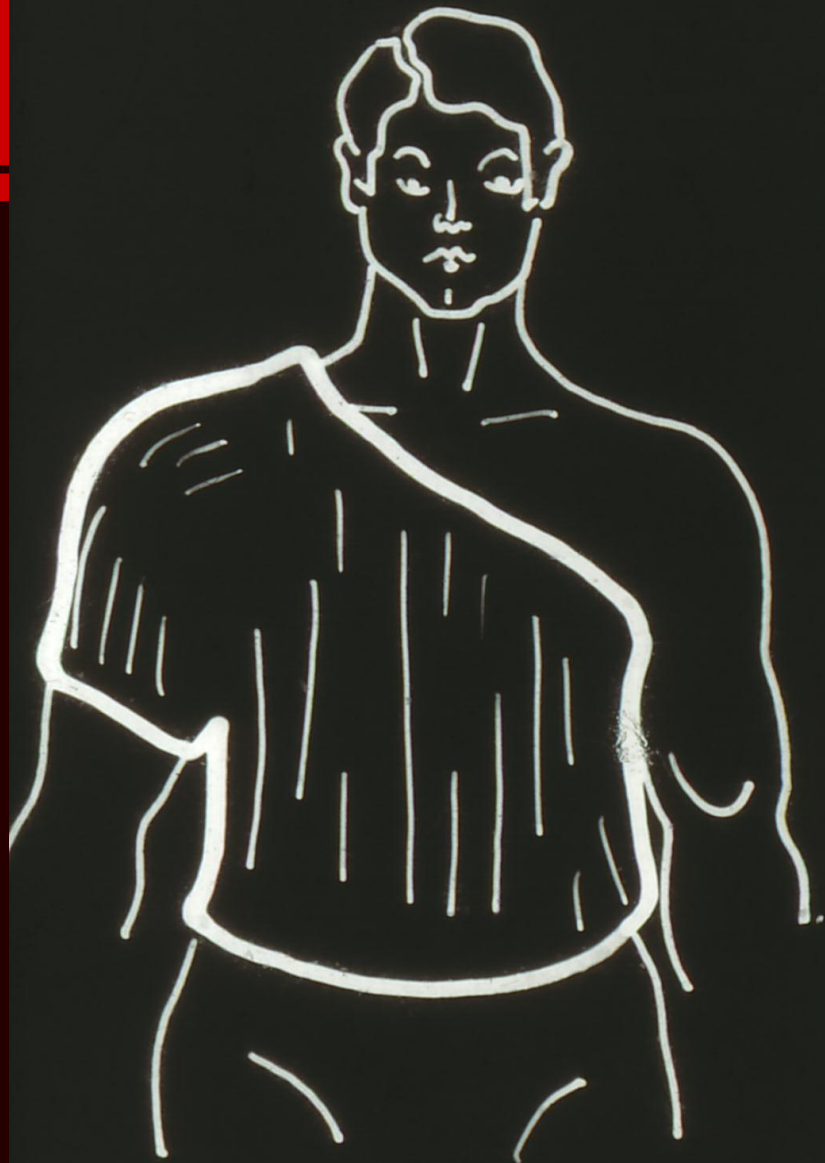
FRACTURES OF THE CLAVICLE

Fractures without displacement, or moderate displacement in adults: Desault-Gerdy type immobilization or Delbet rings: 21 days

Fractures in children:

- Dessault-Gerdy immobilization or Delbet rings: 7-14 days
- May also used Ombredane bandage

Fractures of external 1/3rd: compressive bandage



SPICA GIPSATĂ



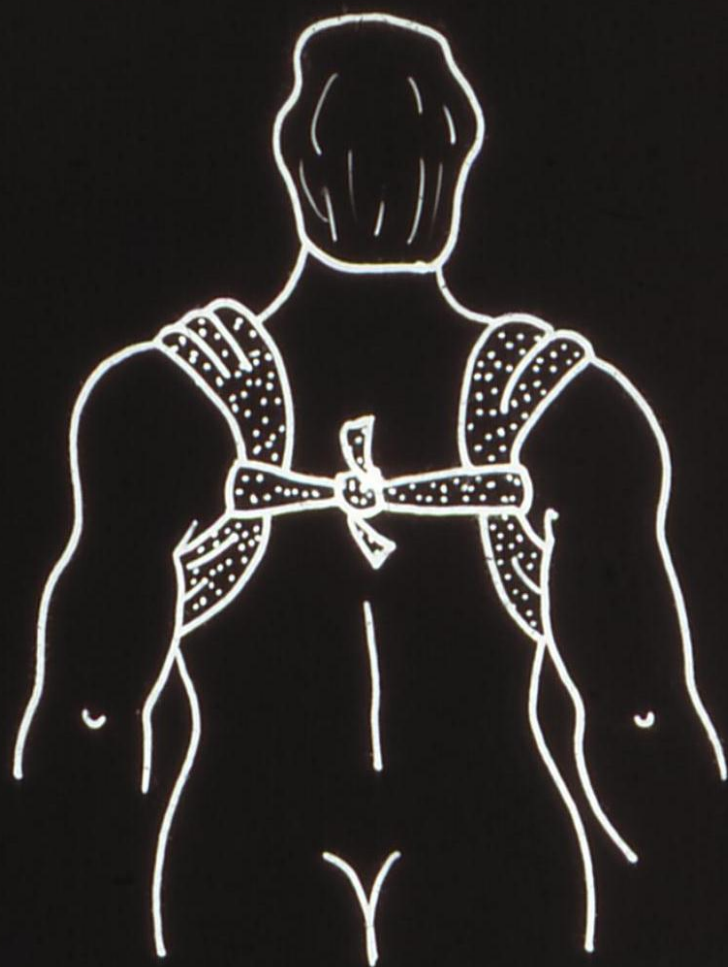
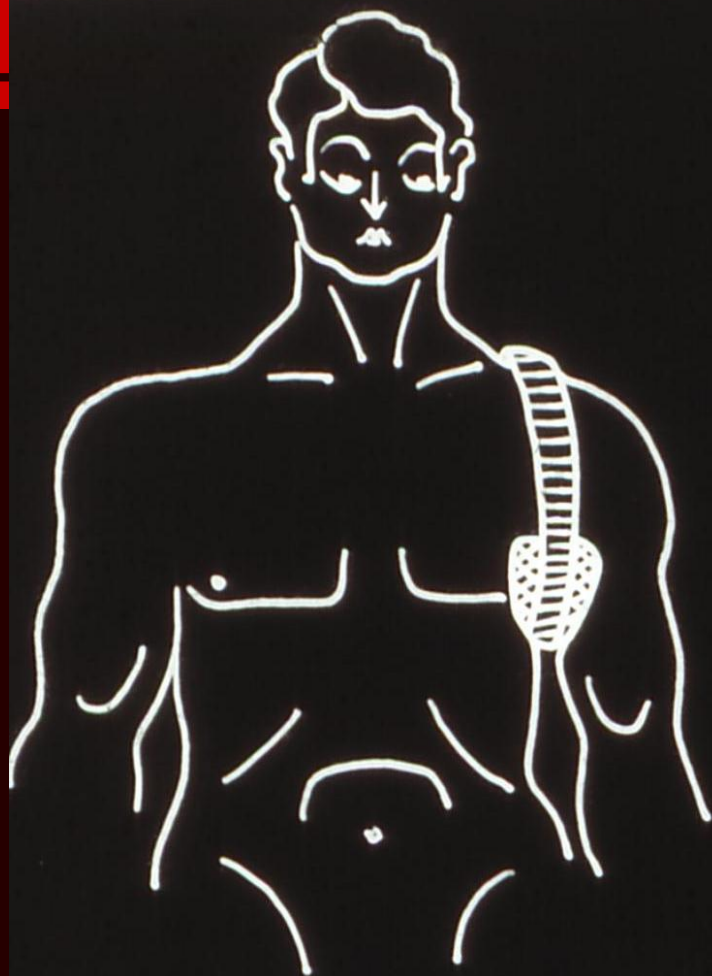
CORSET GIPSAT



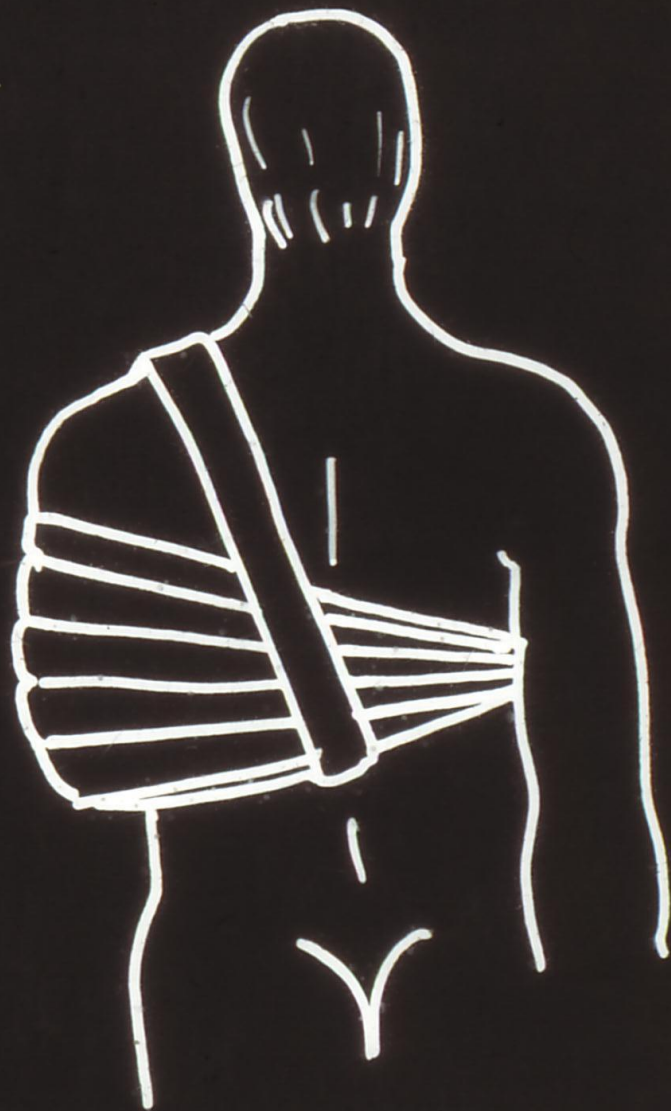
BOLEROUŁ GIPSAT (FATĂ)



BANDAȚUL WATSON-JONES ÎN CIFRA "8"



IMOBILIZAREA UNEI FRACTURI DE CLAVICULĂ PRIN ÎNELE DE TIP DELBET



TEHNICA OMBREDANNE
(LA COPIL)

FRACTURES OF THE CLAVICLE

SURGICAL TREATMENT



Absolute indications:

1. Open fracture
2. Open fracture complicated by vascular lesions
3. Fracture which determines compression of nerve plexi
4. Comminuted fracture with perpendicular fragments, with risk of injury to nerves, vessels, pleural dome
5. Fractura complicated by pleuro-pulmonary injury
6. Soft tissue interposition
7. Bifocal fracture
8. Sometimes bilateral fracture

FRACTURES OF THE CLAVICLE



Relative indications:

Inability to maintain orthopedic reduction

Surgical treatment is also required in the case of arisen complications



Materiale de osteosinteza:

- brosa Kirschner centromedulara,
- cerclajul de sârma,
- placa metalica Shermann,
- placa profilata insurubata

Broșă Kirschner- fracturi transversale sau oblice scurte

Cerclajul de sârma- fracturi oblice lungi

FRACTURES OF THE CLAVICLE



Transverse, short oblique or comminuted –
metallic plate osteosynthesis

Fractures of the external 1/3rd with rupture of
coraco-clavicular ligaments: Osteosynthesis +
ligamentoplasty

Al. Radulescu – bone suture with metallic wire
“in a loop”

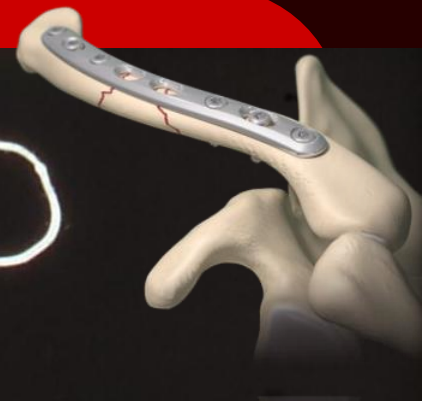


BROSAGUL CLAVICULAR RETROGRAD.

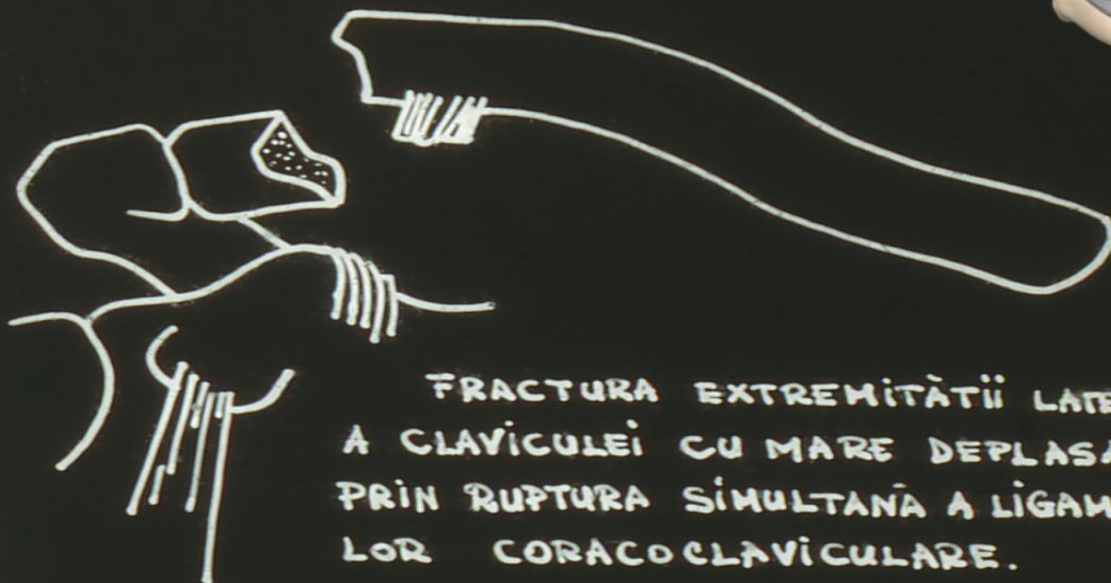




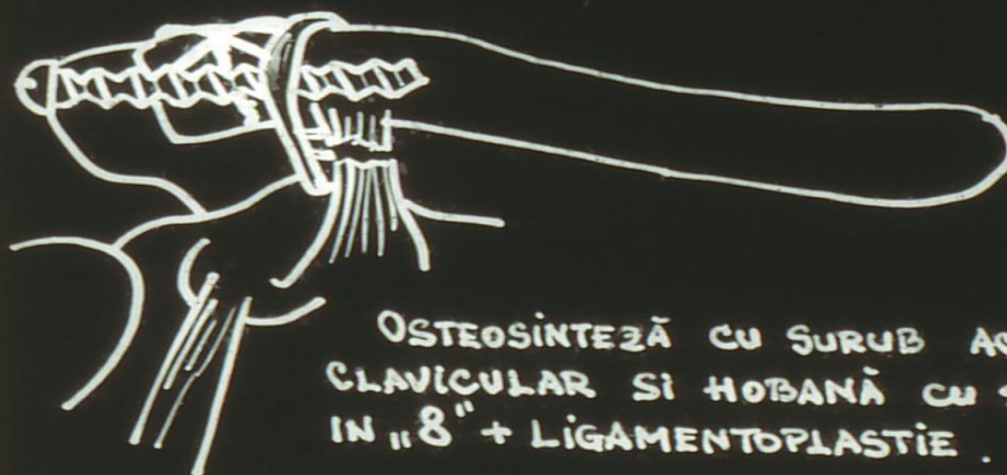
FRACTURA 1/3 MEDII A CLAVICULEI. OSTEOSINTEZĂ
CU BROȘĂ INTRAMEDULARĂ, ÎNDOITĂ LA CELE DOUĂ
CAPETE, PENTRU A ÎMPIEDECA MIGRAREA EI.



FRACTURA 1/3 MEDII A CLAVICULEI CU DEPLASARE
MARE SI FRAGMENT INTERMEDIAR. OSTEOSINTEZĂ
CU PLACĂ SEMITUBULARĂ.



FRACTURA EXTREMITĂȚII LATERALE
A CLAVICULEI CU MARE DEPLASARE
PRIN RUPTURA SIMULTANĂ A LIGAMENTELOR
CORACOCALVICULARE.



OSTEOSINTEZĂ CU SURUB ACROMIO-
CLAVICULAR ȘI HOBANĂ CU ȘİRMĂ
ÎN "8" + LIGAMENTOPLASTIE.



FRACTURES OF THE CLAVICLE



Physical rehabilitation

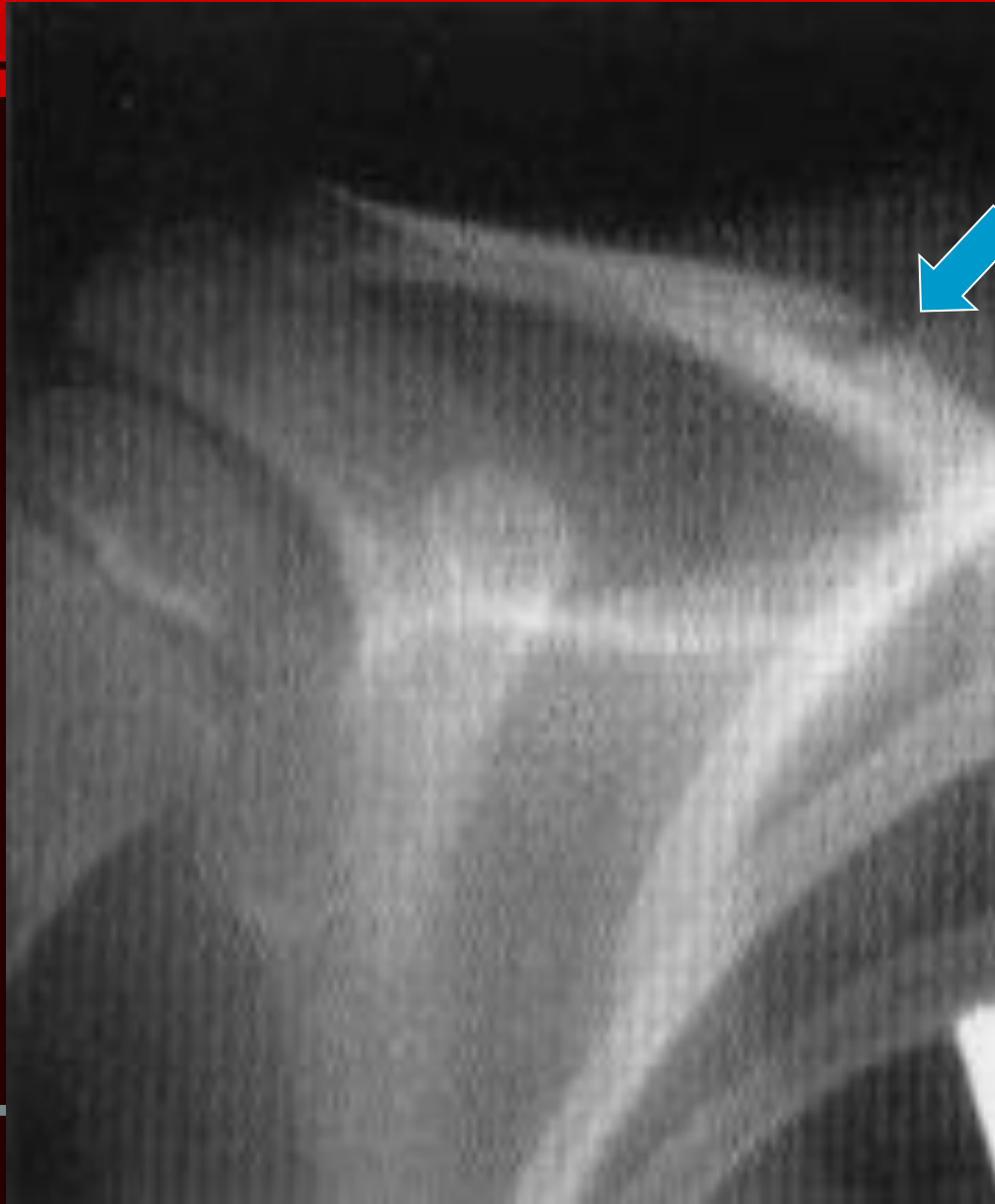
In athletes:

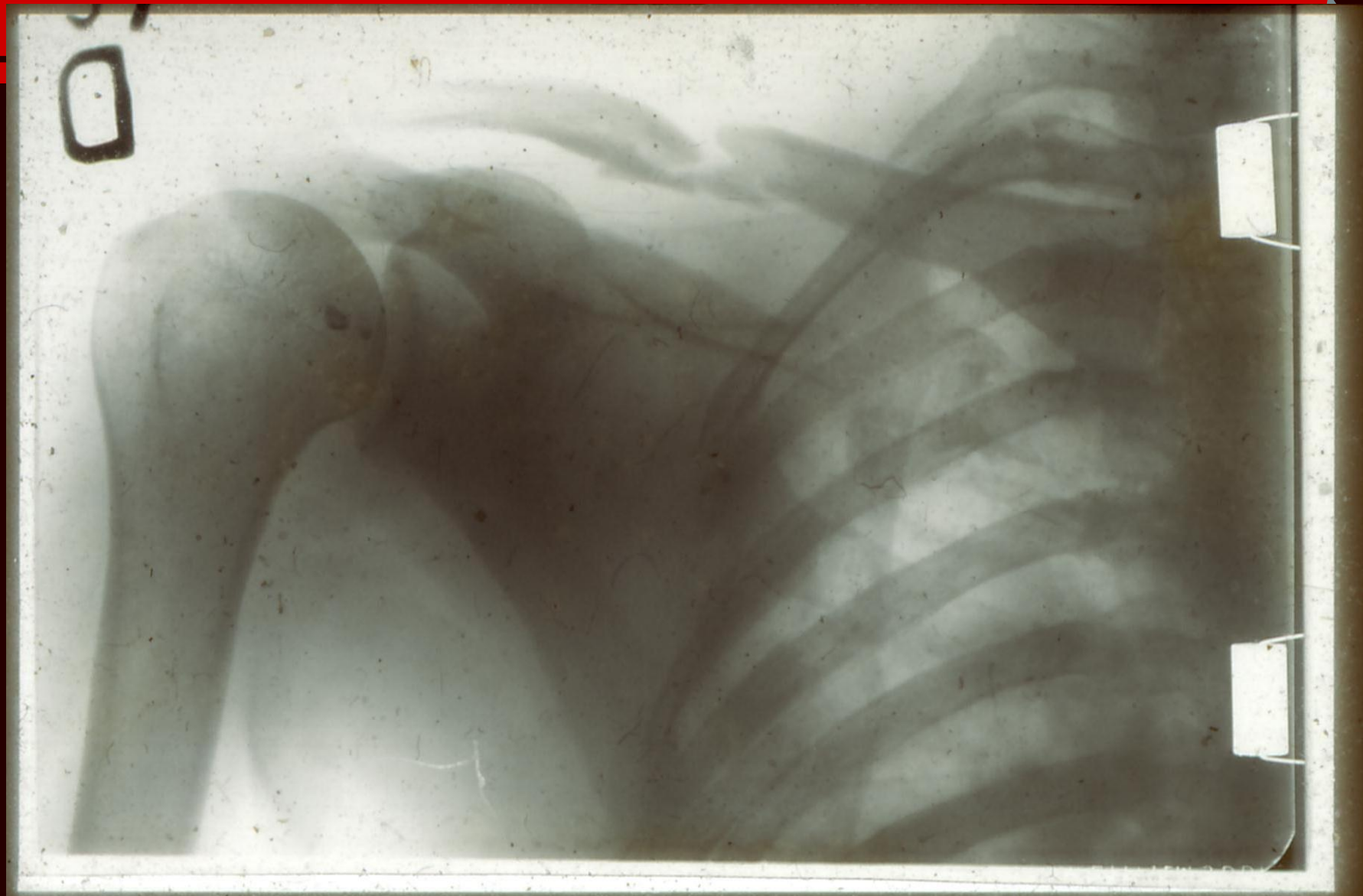
1. Early maintenance stage of upper limb
2. Stage of early maintenance of shoulder – 3-4 weeks after accident
3. Loading stage
4. Functional recovery stage
5. Training (with effort) stage – advanced state of recovery



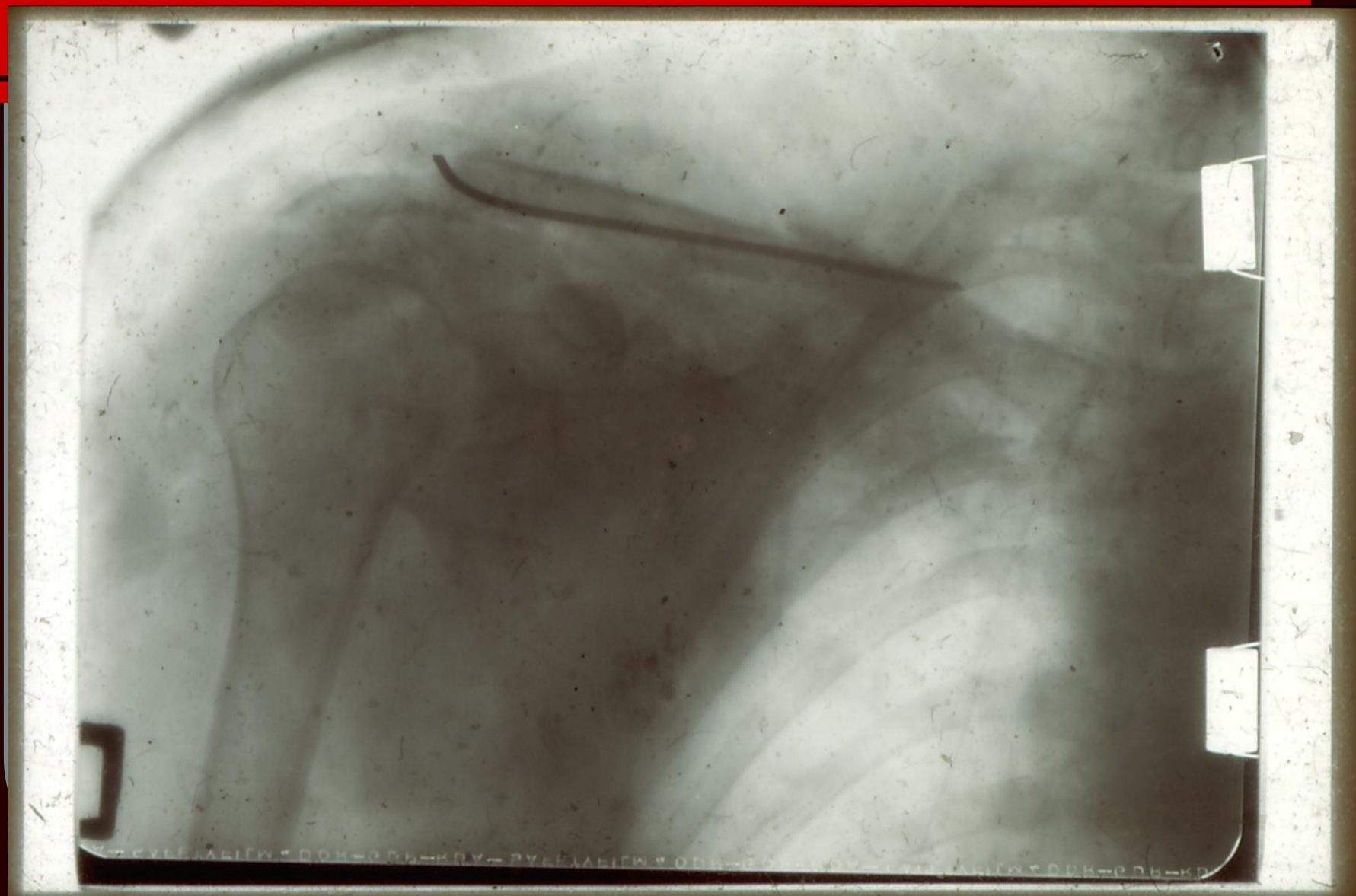


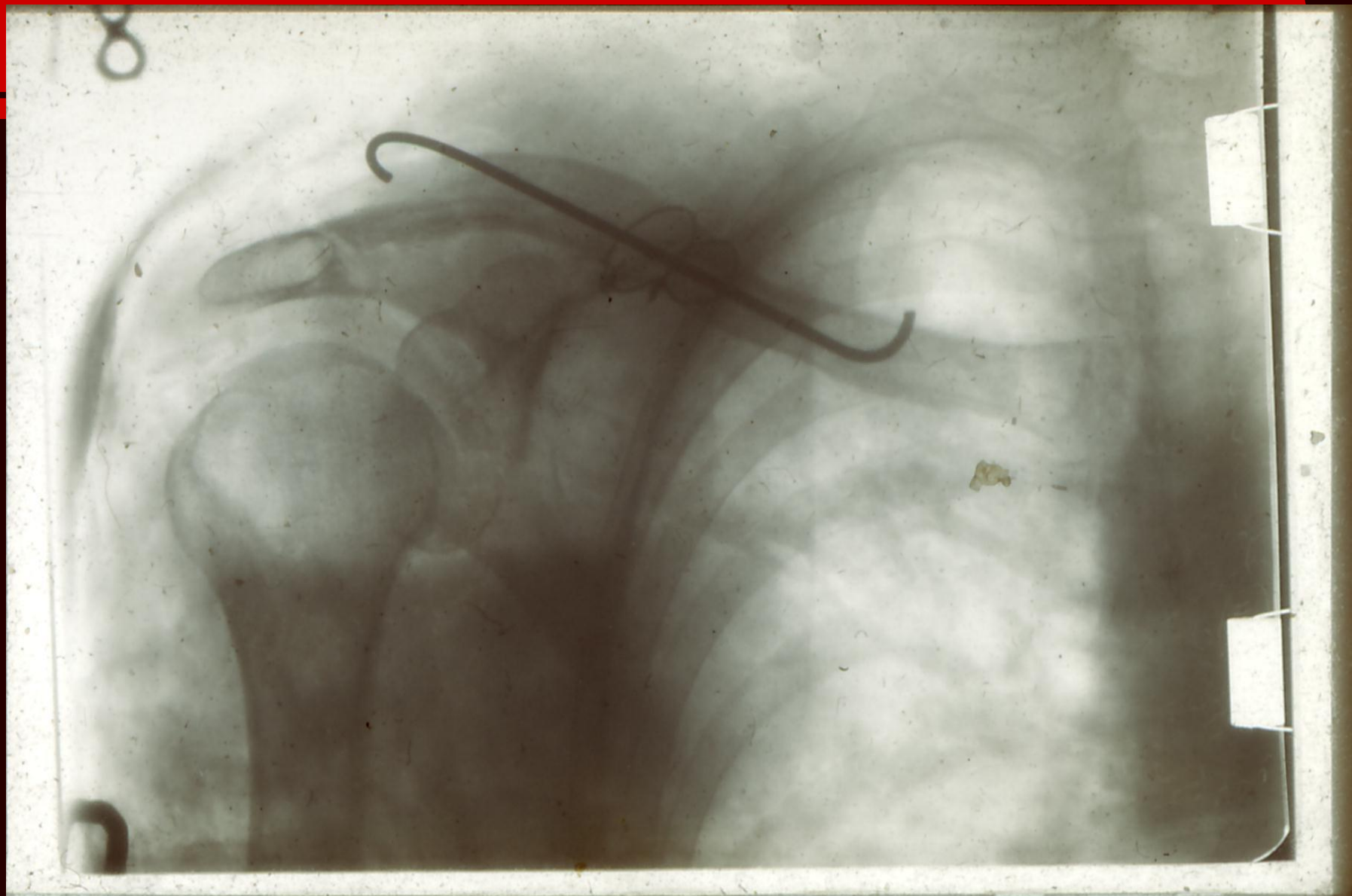
Incomplete greenstick fracture - children









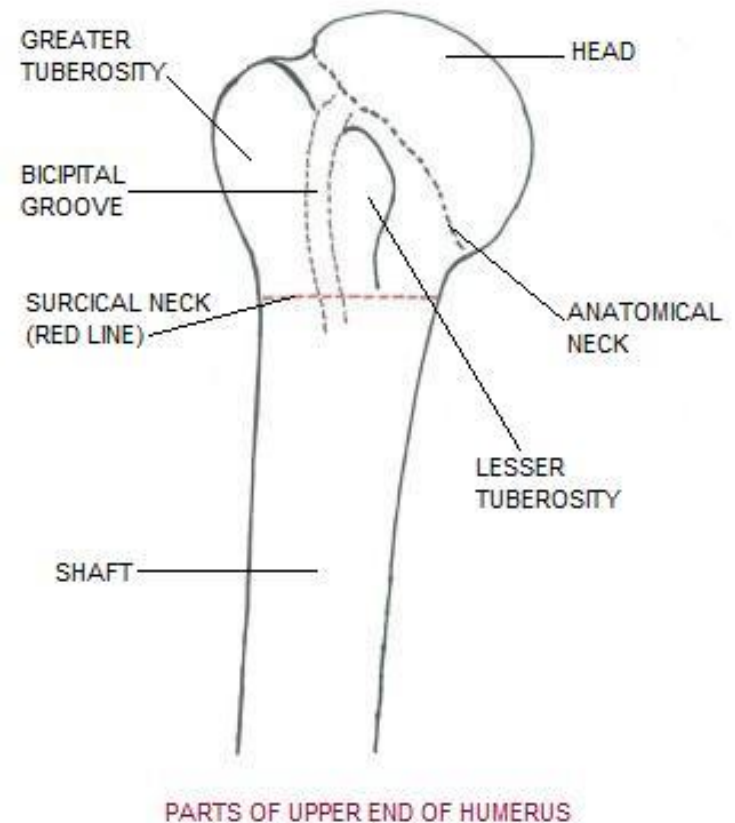




FRACTURES OF THE HUMERUS

Classification

1. Fractures of proximal end
 - Fractures of anatomical neck
 - Fractures of surgical neck
 - Fractures of tuberosities
 - Fracture-luxations
 - Fractures with detachment of periosteum



FRACTURES OF THE HUMERUS

Classification

2. Fractures of humeral shaft
3. Fractures of distal extremity
 - Supracondiliary fracture
 - Sub- and intercondiliary fracture
 - Isolated fractures of humeral condyles

FRACTURES OF THE HUMERUS

Fractures of proximal extremity

Mechanism of injury

- Direct
 - Falling onto shoulder
 - Traumatic injury
- Indirect
 - Falls onto extended upper limb
 - Strong muscular contractions

FRACTURES OF THE HUMERUS

Frequency:

- Humeral neck fractures – most frequent
- Anatomical neck – rare, intra-articular trajectory
- Surgical neck – extra-articular: can be meshed or non-meshed

FRACTURES OF THE HUMERUS

CLINICAL EXAMINATION

Inspection

- Swelling of the joint
- “Hockey stick” deformity of the arm
- Hennequin’s ecchymosis – 24-48 hrs

Palpation

- Painful spots
- Abnormal mobility
- Total or partial loss of function

Examination of the pulse in radial artery and sensitivity of axillary nerve

Radiological exam establishes diagnosis

FRACTURES OF THE HUMERUS

Treatment

- Without displacement – orthopedic treatment – immobilization in torso-brachial cast 14-21 days
- Nonmeshed fractures – reduction under anesthetic then 21 days immobilization in toraco-brachial cast
- Fractures with non-reducible displacement – surgical treatment – metallic osteosynthesis

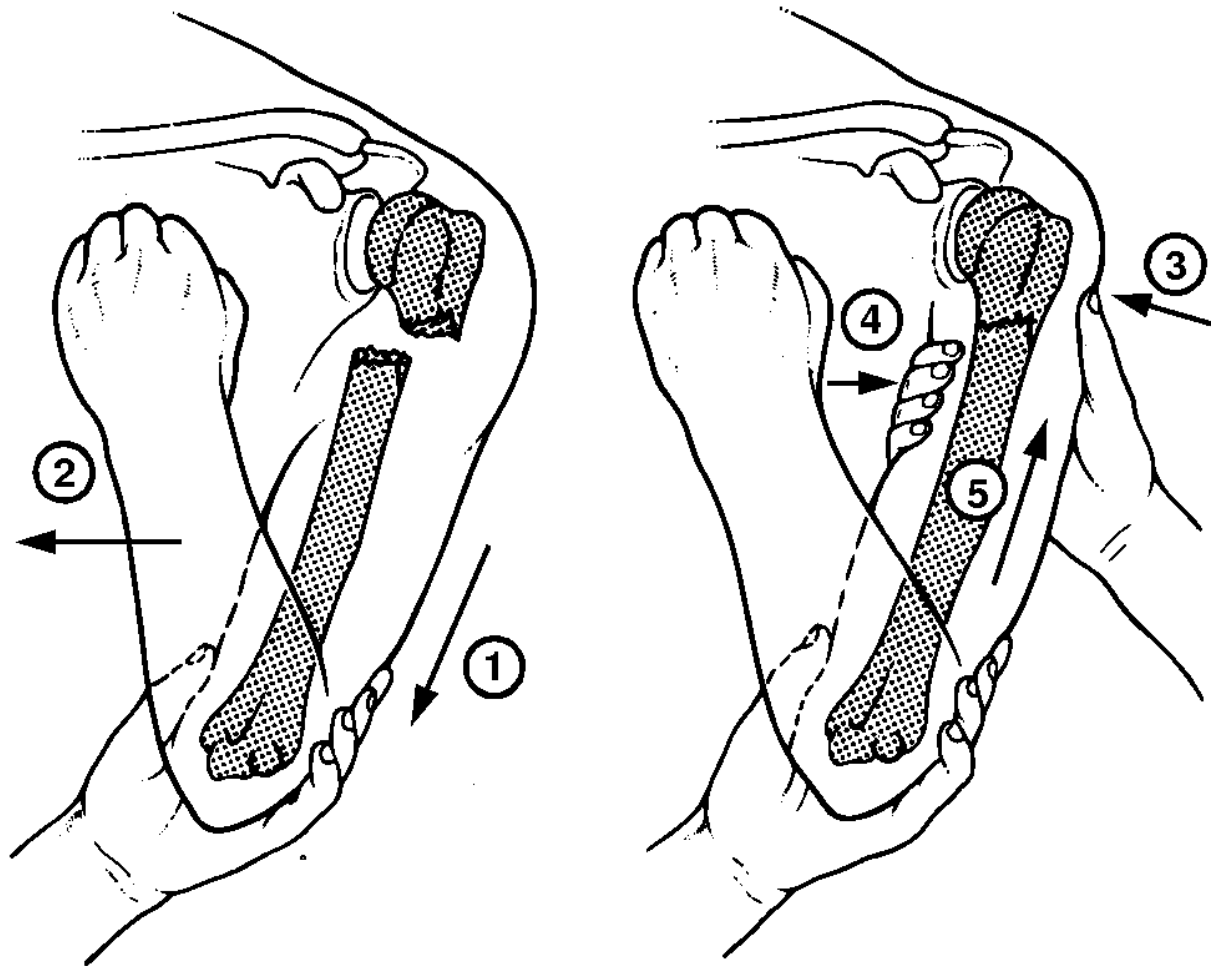
FRACTURES OF THE HUMERUS

Fractures of humeral shaft

Classification:

- A. Closed/open
- B. Location:
 - A. Proximal 1/3rd
 - B. Medium 1/3rd
 - C. Distal 1/3rd
- C. Trajectory:
 - A. Transverse
 - B. Oblique
 - C. Oblique + spiral

REDUCING A FRACTURE OF THE NECK OF THE HUMERUS



FRACTURES OF THE HUMERUS

Complications

a) Immediate

- Opening of fracture
- Injury to humeral artery
- Injury to radial nerve

b) Late

- Pseudarthrosis, late consolidation
- Osteitis, osteomyelitis
- Malunion

FRACTURES OF THE HUMERUS

CLINICAL EXAM

- Arm swelling and deviation of anatomical axis
- Abnormal mobility
- Bone crepitus
- Pinpointed pain
- Total loss of function

FRACTURES OF THE HUMERUS

TREATMENTUL

1. Emergency

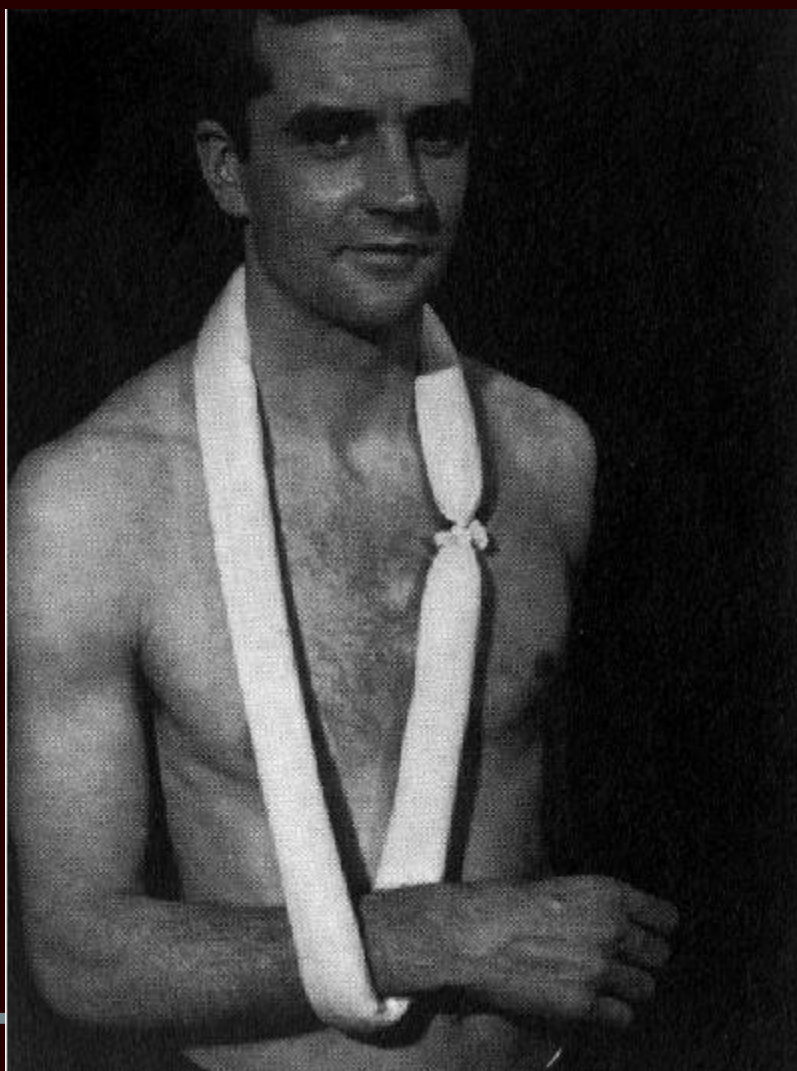
Temporary fixation

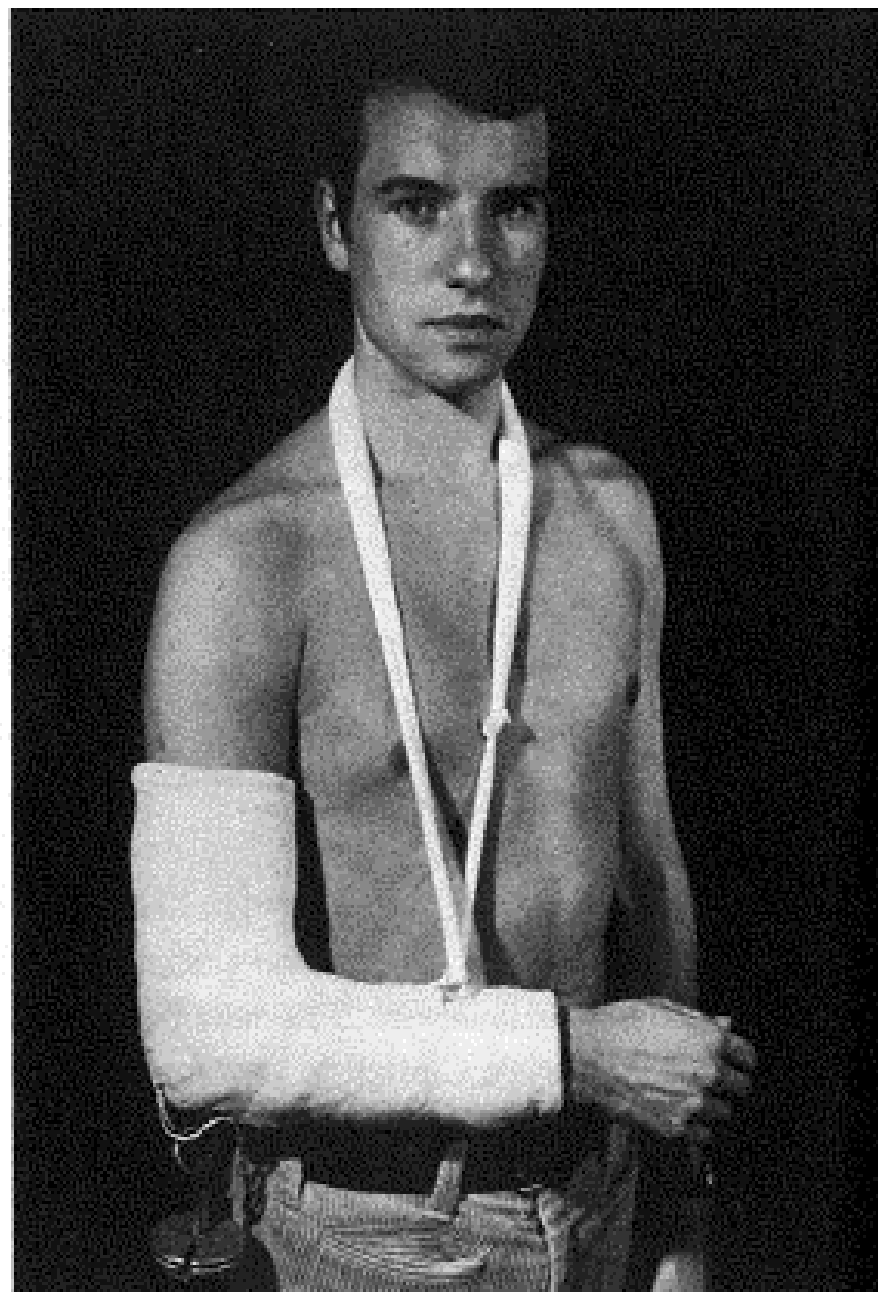
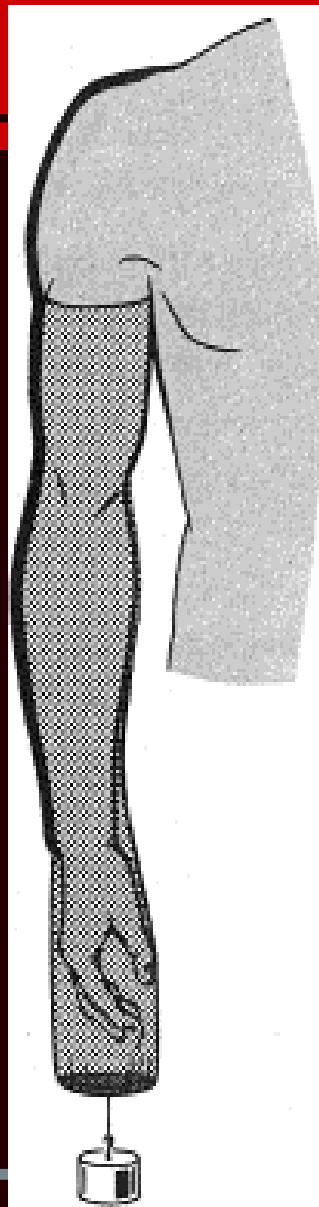
2. Orthopedic

Orthopedic reduction and immobilization in hanging cast
8-10 weeks

3. Surgical

- Fractures which are unstable or not reducible orthopedically
- Open reduction and metallic osteosynthesis





FRACTURES OF THE HUMERUS

Fractures of the distal end of the humerus

1. Supracondiliary fracture

-Frequent in children, rare in adults

Mechanism of injury:

Frequently direct

More rarely indirect – hyperflexion,
hyperextension

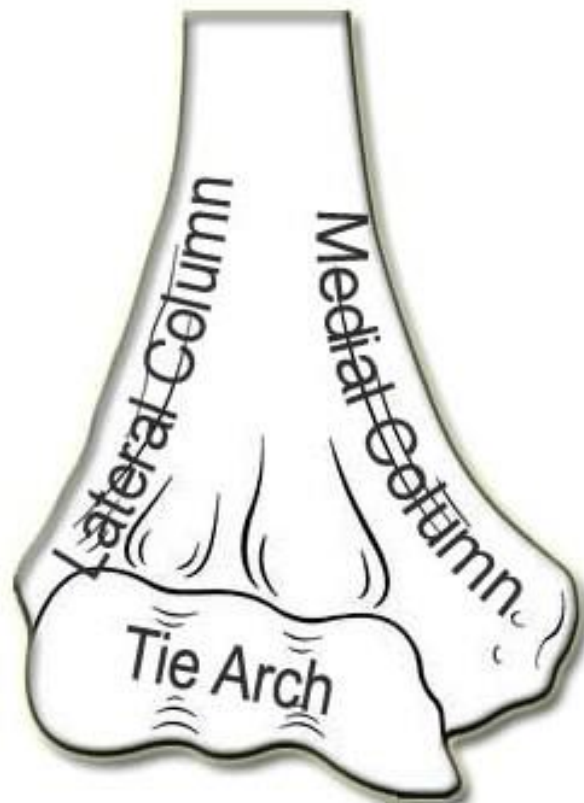
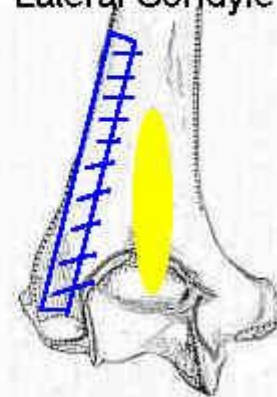
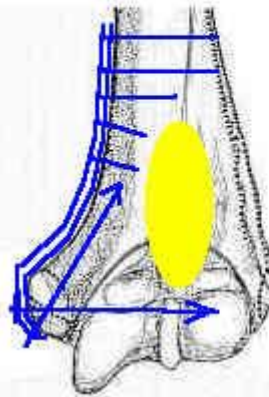
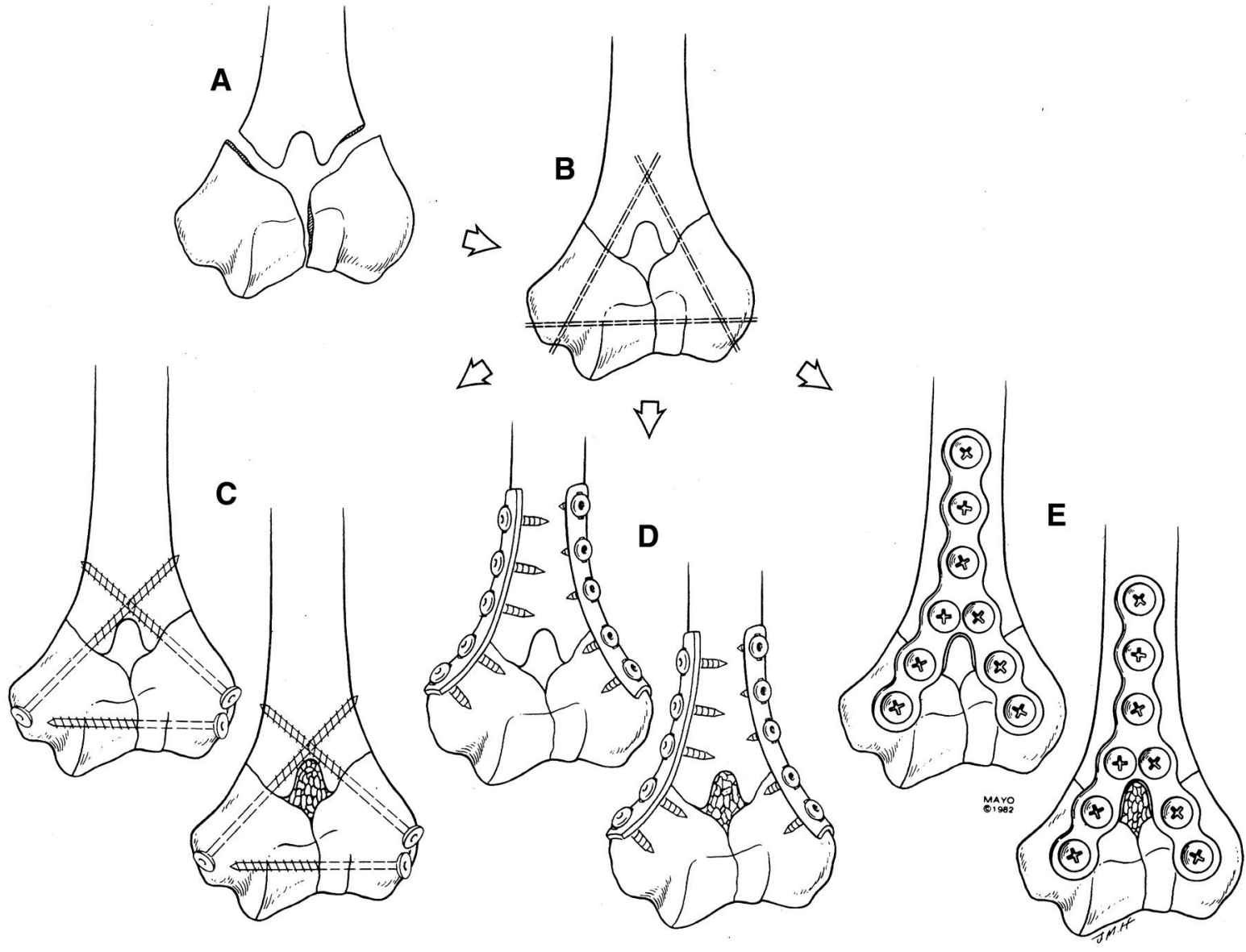


Plate Applied Medially
Screws Applied to Avoid the Fossa
Plate Applied Posterior to
Lateral Condyle





FRACTURES OF THE HUMERUS

CLINICAL EXAM

- Globulous deformity of the elbow
- Pinpoint pain
- Abnormal mobility
- Total or partial loss of elbow function

FRACTURES OF THE HUMERUS

TREATMENT

1. Orthopedic

- Orthopedic reduction and immobilization in brachio-antebrachio-palmar cast
- Trans-olecranian continuous extension

2. Surgical

- For fractures where orthopedic reduction cannot be achieved or maintained
- Open reduction and metallic osteosynthesis

FRACTURES OF THE HUMERUS

2. Supra and inter-condiliary fracture

More frequent in adults

Intra-articular trajectory, frequently determines joint stiffness

Mechanism of injury

- Direct
- Indirect

FRACTURES OF THE HUMERUS

Complications

1. Immediate

- Opening of the fracture
- Lesion of humeral artery
- Lesion of cubital nerve

2. Late

- Pseudarthrosis
- Malunion
- Osteitis and osteomyelitis

FRACTURES OF THE HUMERUS

CLINICAL EXAM

- Tumefaction of the elbow due to hemarthrosis
- Subcutaneous ecchymoses
- Abnormal mobility, bone crepitus
- Total loss of function

Checking of the pulse in radial artery and integrity of cubital nerve

Radiological exam is mandatory.

FRACTURES OF THE HUMERUS

TREATAMENT

Without displacement – orthopedic

With displacement – surgical

FRACTURES OF THE HUMERUS

3. Isolated fractures of humeral condyles

- Rare in adults

Mechanism of injury:

- Frequently indirect

CLINICAL EXAM

- Difficult to ascertain

Radiological exam – certain diagnosis

TREATMENT

Fractures with little or no displacement – immobilization in cast for 3 weeks

Fractures with significant displacement – open reduction and metallic osteosynthesis



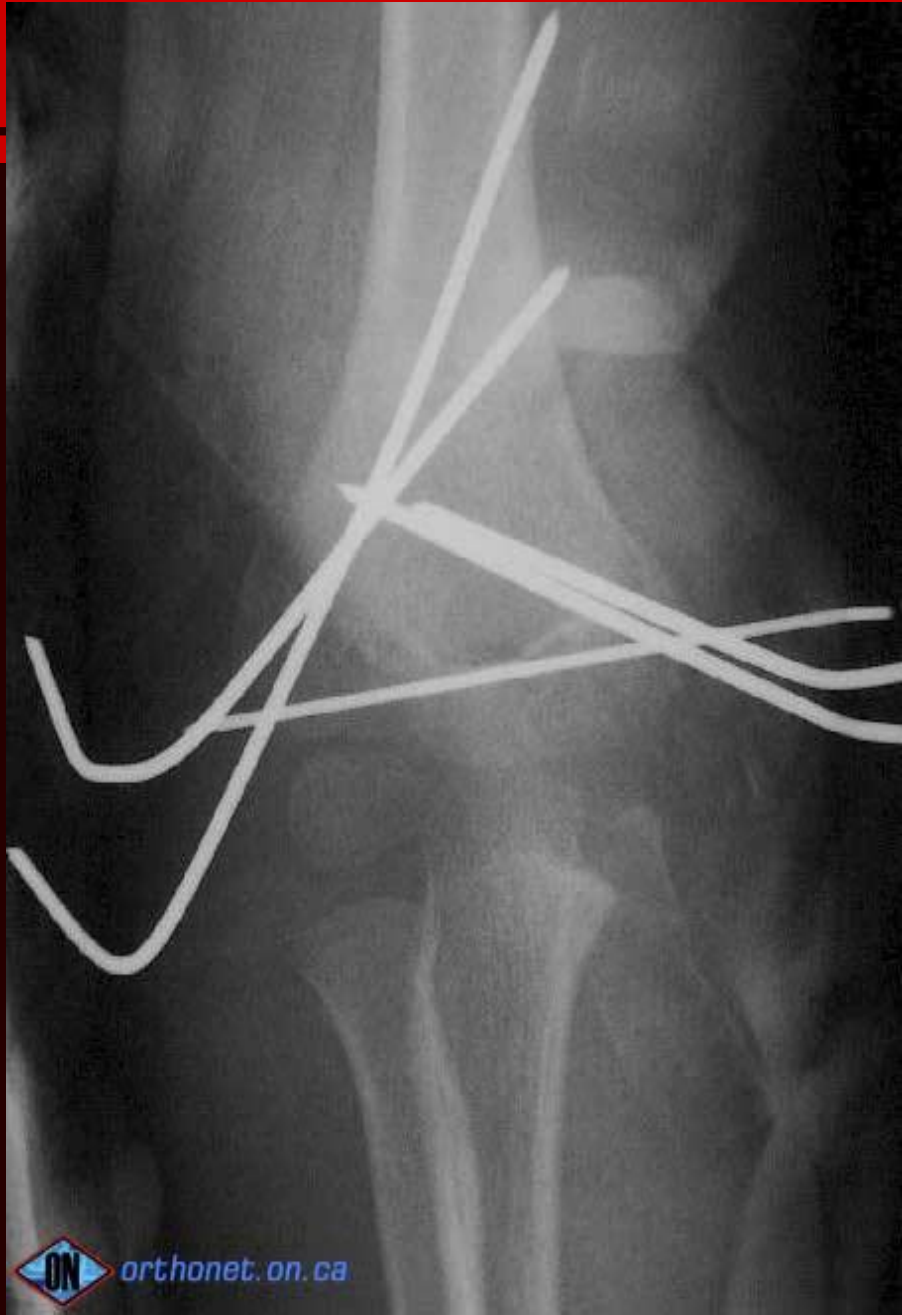


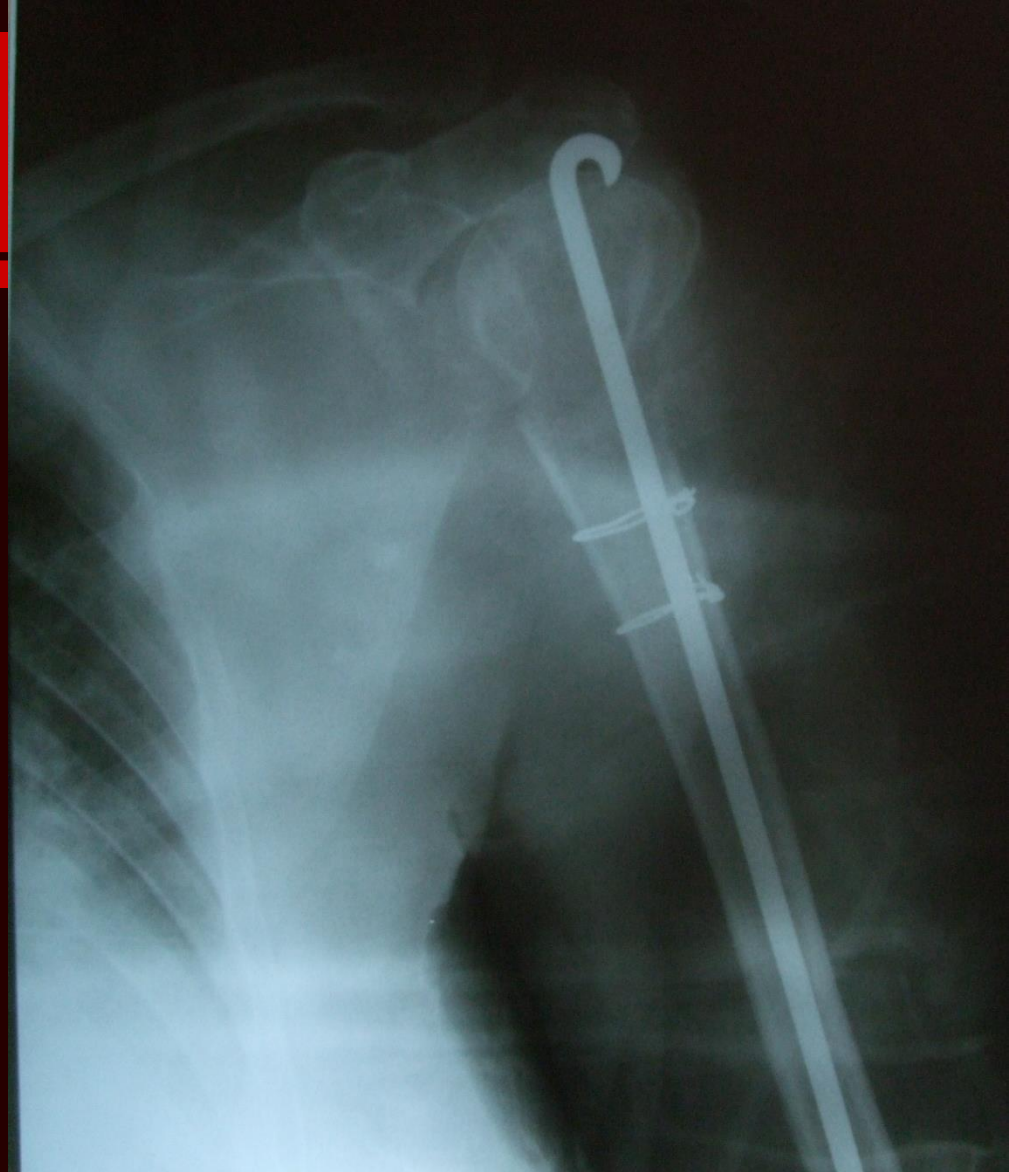
**anterior-posterior view:
adult**

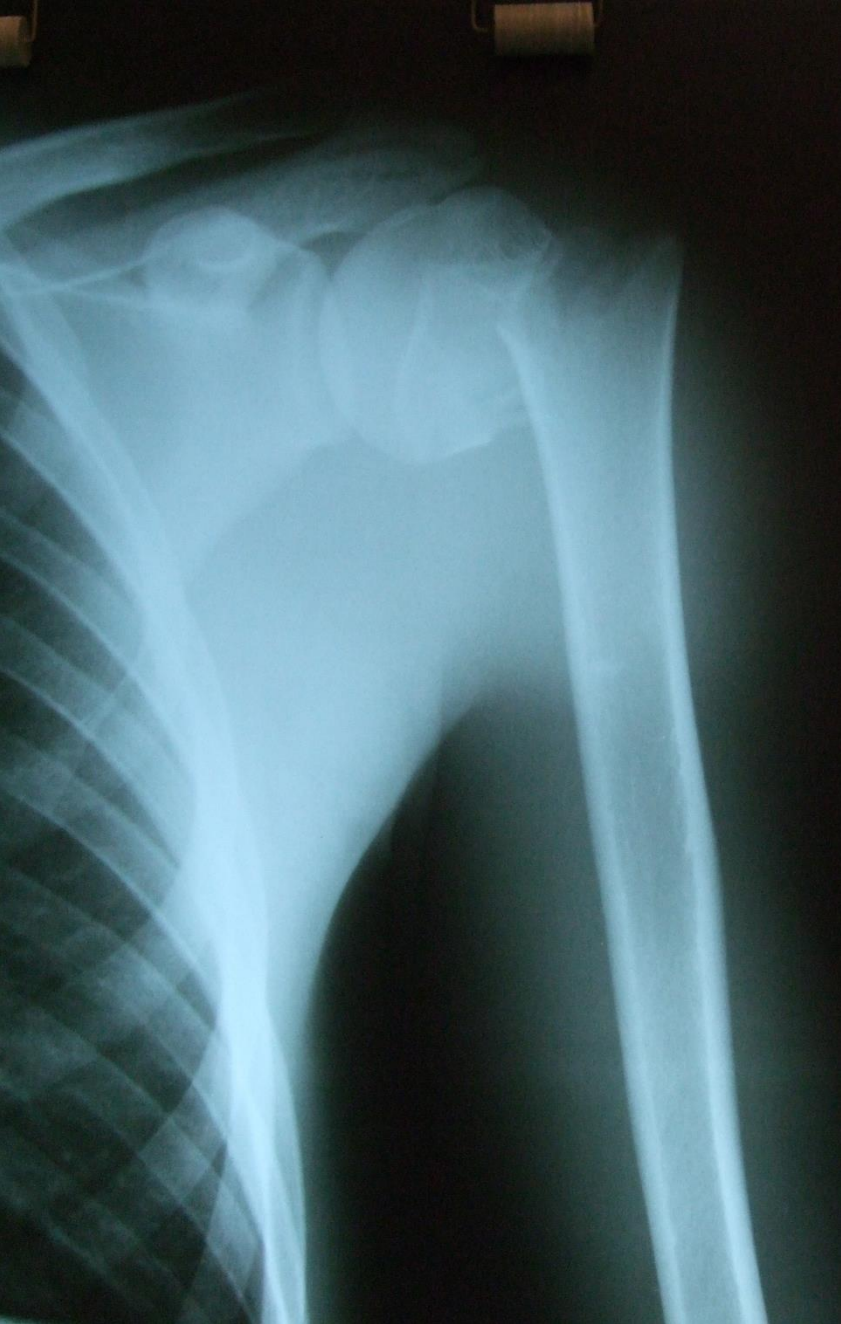
























FRACTURES OF THE OLECRANUM

Almost exclusively in adults

Mechanism of injury:

- Indirect – frequent
 - Falling onto the hand with extended forearm
 - Violent contractions of tricep muscle
- Direct – more rare

FRACTURES OF THE OLECRANUM

Classification – 3 types

- Fr. Of the olecranon tip
- Fr. Of the body (middle portion)
- Fr. Of the base

FRACTURES OF THE OLECRANUM

CLINICAL EXAM

- Deformity of posterior elbow
- Bruising
- Inter-fragmentary depression
- Passive movement is possible, active movement abolished

Radiological exam ascertains type and association with a fracture of the coronoid or radius head

FRACTURES OF THE OLECRANUM

TREATMENT

Orthopedic:

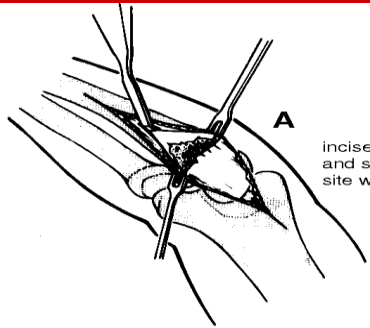
Fractures without displacement, or diastasis under 0,5 cm

Cast immobilization at 100-110° or even in extension – 3 weeks

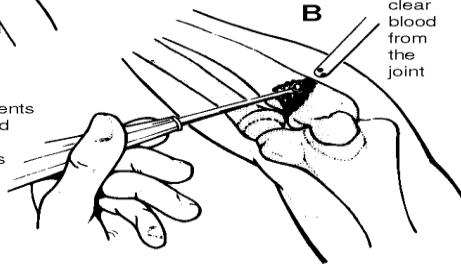
Surgical

Open reduction and metallic osteosynthesis

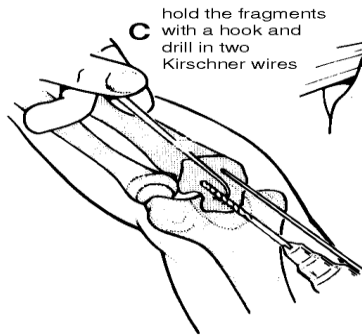
TENSION BAND WIRING



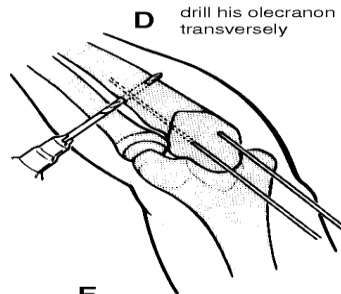
incise the periosteum
and scrape the fracture
site with a gouge



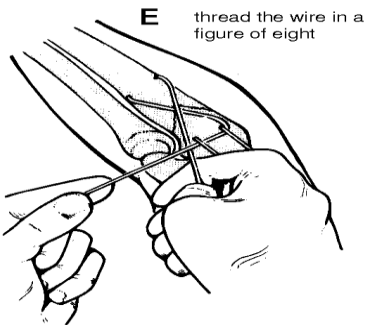
clear
blood
from
the
joint



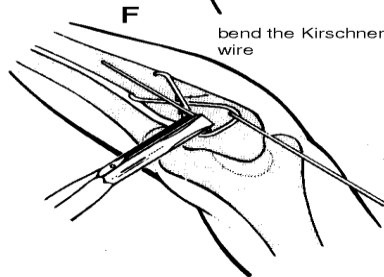
hold the fragments
with a hook and
drill in two
Kirschner wires



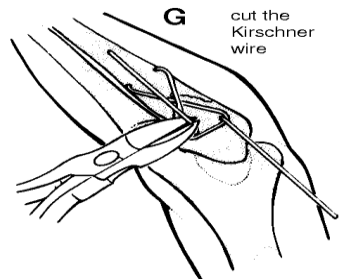
drill the olecranon
transversely



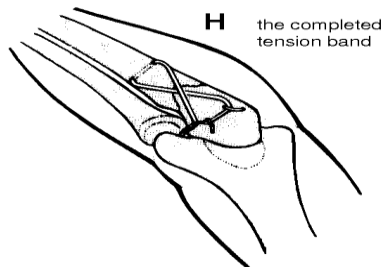
thread the wire in a
figure of eight



bend the Kirschner
wire



cut the
Kirschner
wire



the completed
tension band











FOREARM SHAFT FRACTURES

56% of total forearm fractures

- Radius and ulna – united by the interosseous membrane => *pronation and supination*
- Fracture => *impossibility of pronosupination and prehension*

FOREARM SHAFT FRACTURES

Mechanism of injury

- Direct – most frequent in adults
- Indirect – falling onto the hand – stressing bone curvatures

Classification

1. Fracture of both bones
2. Fracture of radial shaft +/- dislocation of distal radioulnar joint
3. Fracture of ulnar shaft +/- dislocation of proximal radioulnar joint

FOREARM SHAFT FRACTURES

Complications

Immediate

- Opening of fracture focus
- Vasculonervous lesions
- Volckmann's syndrome

Tardive

- Late union
- Malunion
- Osteitis, osteomyelitis
- Joint stiffness

FOREARM SHAFT FRACTURES

DIAGNOSTIC

1. “Bayonnet”-like swelling and deformity
2. Pinpointed pain
3. Abnormal mobility
4. Bone crepitus
5. Total loss of function in forearm

Assessment of radial artery pulse, neurological exam

FOREARM SHAFT FRACTURES

TREATMENT

Almost exclusively surgical

Orthopedic:

- Fractures with displacement of only one bone
- Surgery is absolutely contraindicated

Surgical:

- Open reduction and metallic osteosynthesis
- Post-operative – immobilization in cast 1-2 months









FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

- Most frequent type of fracture
- Over 25% of all fractures
- 2/3 of forearm fractures

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

ANATOMY

Distal end of the radius:

- Four-sided under transverse section
- Lateral side** - inferior, underneath the radio-carpal joint line – radial styloid apophysis
- Medial side** – ulnar notch – part of the distal radioulnar joint
- Anterior and posterior sides** – tendons of the hand flexor and extensor muscles
- Inferior side** – concave forward-to-back and transversal.

Divided into 2 areas – medial – lunate bone; lateral - scaphoid

- Ligaments: palmar, dorsal radiocarpal, radial and ulnar collateral ligaments of the wrist

Radiocarpal synovial sometimes elongated toward inferior radioulnar joint

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

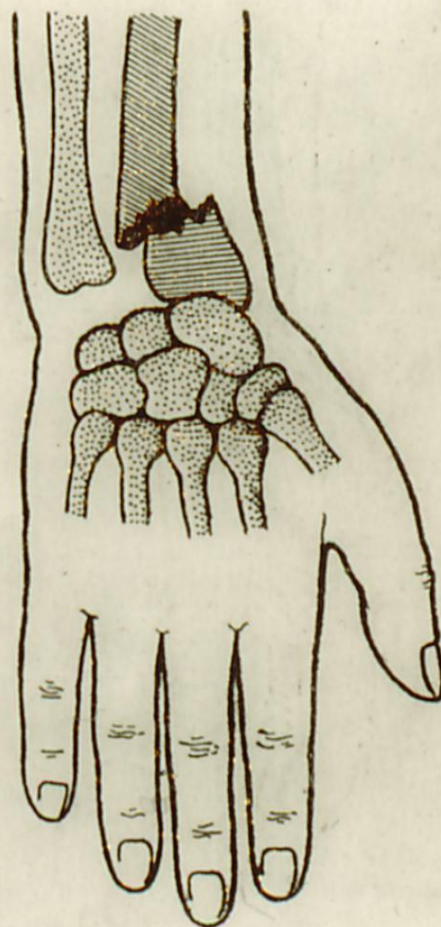
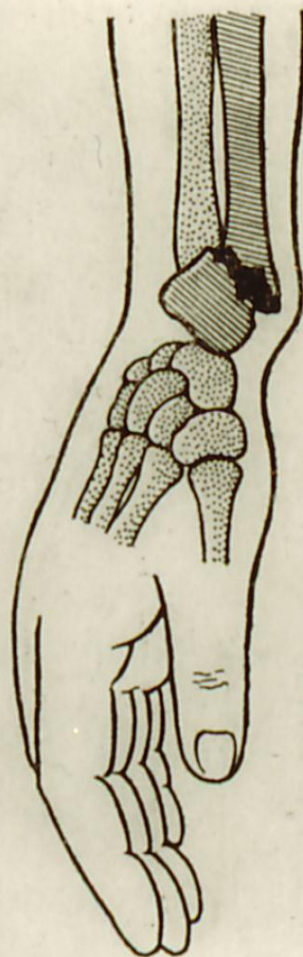
Mechanism of injury

- Direct – very rare
- Indirect – frequent
 - Hyperextension of the hand – anterior and lateral radiocarpal ligaments
 - Falling onto the hand in hyperextension or hyperflexion

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

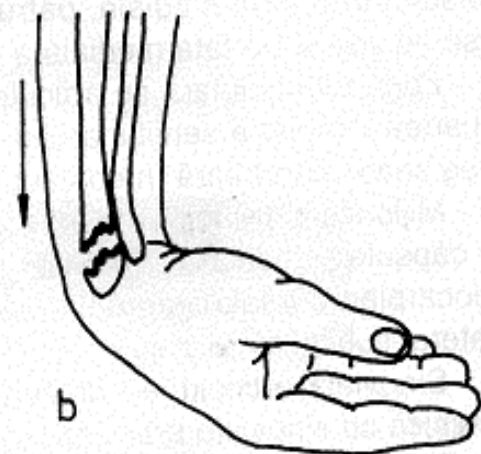
Anatomo-clinical forms

- Fractures with posterior displacement (compression-extension)
- Fractures with anterior displacement (compression – flexion)
- Supraarticular- Pouteau-Cooles
- Supraarticular- Goyrand-Smith
- Fractures of the postero-internal fragment
- Articular-anterior marginal fractures (Letenneur)
- Articular-posterior marginal fractures (Rhea-Barton)
- Fractures of the radial styloid
- T-shaped simple and frontal fractures
- Comminuted fractures

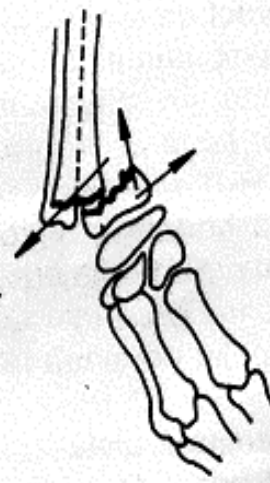
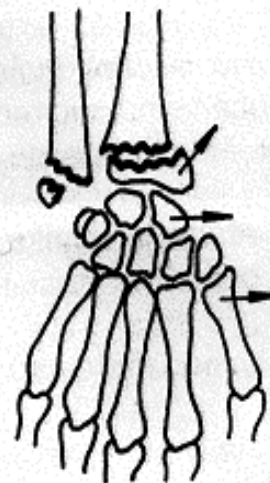




a



b



Fractura Goyrand- Smith



FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

- **Pouteau-Cooles – most frequent**
 - Trajectory: transverse
 - -basal
 - -high
 - Penetration of epiphyseal fragment by the diaphyseal fragment
- Fractures of the postero-internal fragment make the transition between supra- and intra-articular fractures
- Articular fractures: parcellar of the radial styloid, marginal posterior, T-shaped
- Anterior displacement: GOYRAND-SMITH (POUTEAU-COOLES reversed)
- Comminuted fractures – rare, require violent injury

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

DIAGNOSTIC

Pouteau-Cooles

- Linear ecchymosis of the palm
- Swelling of the region
- Sign of the radial tendon cord - VELPEAU
- “Bayonnet” or “dinner fork” hand – Nelaton and Velpeau



FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

Palpation : tip of the radial styloid 1 cm below cubital styloid

Ascension of the radial styloid -
PATHOGNOMONIC sign (Laugier)

- Bone crepitus, abnormal mobility – in displaced fractures
- Pinpointed pain
- Limited flexion and extension
- Pronation-supination less affected

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

Radiological exam – 2 views:

A-P: fracture trajectory, ascension of radial styloid

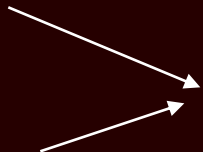
Side: tipping of the distal fragment

Consolidation -15-20 days

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

COMPLICATIONS

Immediate

- Fracture opening
 - Vascular and nervous
- 
- rare

Frequent:

- Fracture of ulnar styloid (Gerard-Marchand)
- Fracture of distal ulnar epiphysis
- Inferior radio-carpal diastasis
- Secondary displacements in non-displaced fractures

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

Late

- Pseudarthrosis-exceptional
- Vicious callus
- Malunion
- Joint stiffness and locking
- Stiffness of finger joints
- Diminished grasping strength - frequent
- Post-traumatic algic osteoporosis (Sudeck)
- Reflex sympathetic dystrophy syndrome
- Carpal tunnel syndrome – most frequent – medial nerve
- Guyon syndrome – cubital nerve – more rare
- Ruptures of the extensor pollicis longus tendon, more rarely flexor pollicis longus

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

TREATMENT

Orthopedic – treatment of choice

I. Without displacement:

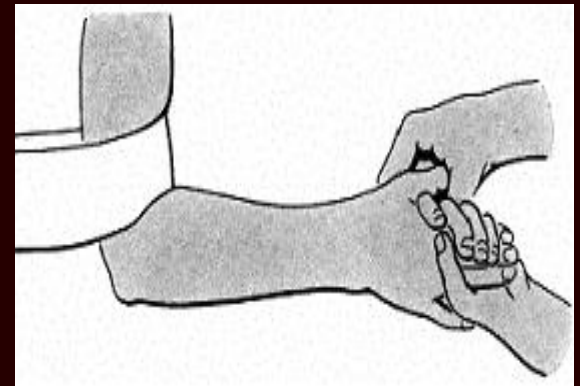
Immobilization in cast –30-37 days

1. Compression-extension fracture:

-Quick reduction

Method: strong traction,

Hand in intermediary position



FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

TREATMENT

Immobilization in cast, with slight flexion and cubital tilt



2. Compression-flexion fractures: unstable
If unable to reduce orthopedically –
osteosynthesis with transcutaneous wire
- II. Comminuted fractures, with articular trajectory – surgical treatment

FRACTURES OF THE DISTAL EXTREMITY OF THE RADIUS

TREATMENT OF COMPLICATIONS

Osteoporosis – early mobilization of fingers

Vicious callus – surgical:

- Linear osteotomy, followed by immobilization via cast, or metallic osteosynthesis with K-wires – callus with sagittal displacement
- Cuneiform, anterior osteotomies – old callus









FRACTURES OF THE HAND BONES

1. Fracture of carpal scaphoid

Mechanism of injury:

Indirect-falling onto hand in external supination

Diagnosis:

- Edema, swelling
- Pain on palpation of the anatomical snuff box and the scaphoid tubercle
- Limited carpal movements
- Inability of finger semi-flexion

Certain diagnosis - radiological



FRACTURES OF THE HAND BONES

1. Fracture of carpal scaphoid

Treatment:

Immobilization in
antebrachio-phalangeal
cast, with opposed thumb-
4 weeks



Afterwards, progressive restarting of
movements, if pain appears – forearm-palm
cast 3-4 wks

Aseptic necrosis or pseudarthrosis – surgical
cure

FRACTURES OF THE HAND BONES

2. Metacarpal fracture

Mechanism of injury:

Most frequent – direct

Diagnosis:

Swelling of dorsal hand

Massive hematoma

Deformity of the region

Abnormal mobility

Pinpointed pain

Painful flexion

Certain diagnosis - radiological

FRACTURES OF THE HAND BONES

2. Metacarpal fractures

Treatment:

Orthopedic:

- Reduction by traction in the axis of the digital radius and progressive pressure onto the back of the metacarpals
- Immobilization via cast 3-4 wks.

Surgical:

Non-reducible, comminuted fractures, massive hematoma which produce signs of hypertension in the hand

Open reduction and metallic osteosynthesis with wires or wire loops, then immobilization via cast 3 weeks.









