HANDWRITTEN NOTES

DAMS

α

ORTHOPEDICS

CRISP, CONCISE, CONCEPTUAL

Integrated Edition

Student first @DAMS

DAMS Publications

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HOW TO MAKE BEST USE OF NOTES?

A Message by Mentor Duo Specially for you,

- *Read the notes thoroughly, they are absolutely concise, crisp & conceptual and hence it is best advised not to add a lot of extra information to them as that will dilute the quality.*
- *Images have been provided alongside to aid in better understanding and also help you solve image-based questions, these images have been specially picked by the faculty so have a high probability of being asked in exams.*
- *Notes are handwritten in a way to help make them easier to retain, a lot of tables, graphs and algorithms have been used to simplify the learning.*
- *While reading notes try and use the CFAQ technique —*
  - *A. Use the C to denote concept part in the notes and ensure you are clear with this part in the first go if not then it's advisable to listen to this part of the video from your course.*
  - *B. Use the F To denotes facts in your notes, it is okay if you can't remember them in first go but will need repeat reading. But these facts are important for exams as they could be integrated to clinical questions.*
  - *C. Use A to denote applied parts, this is how concepts and facts are asked indirectly in exams. This will also help you develop MCQ solving skill.*
  - *D. Use Q to denote areas where faculty has said it's a direct question or a PYQ or a potential question.*
- *This technique will help you summarize your notes In way that your second reading will become easy and faster.*
- *Active space has been provided with these notes to make your own annotations alongside and this will help you maintain one single notebook for one subject.*
- *Try and solve MCQs with every topic from DQB. Your goal should be to start with at least 30 MCQs every day and then increase to at least 50 MCQs every day. Also, when you do a topic wrong write it alongside the notes that this topic needs to be read again but mark only the specific area that you have done wrong not the whole topic.*
- *After the topic is covered then in the active space try and summarize the topic in the form of mind map. This will help in active recall and make your revision easier.*

Best Wishes & Happy Learning!!!!!

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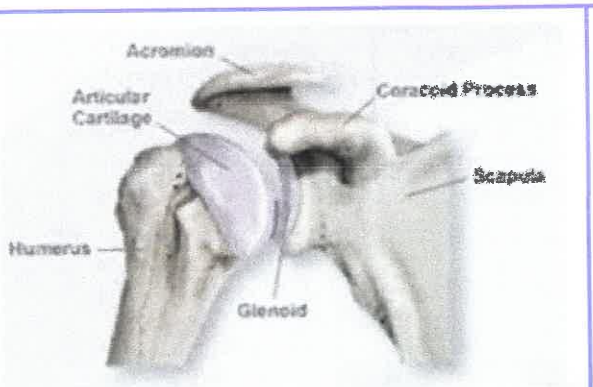
ORTHOPEDICS

SHOULDER JOINT (ANATOMY)



Shoulder Joint : BALL & SOCKET JOINT

T : TALOCALCANEONAVICULAR J.
H : HIP J.
I : INCUDOSTAPEDIAL J.
S : SHOULDER J.

- **MC Joint to undergo dislocation : Shoulder**

WHY? (i) $\frac{\text{Glenoid}}{\text{Head}} = \frac{1}{4}$

(ii) Excess mobility at the cost of stability

(iii) Rotator cuff is deficient Inferiorly

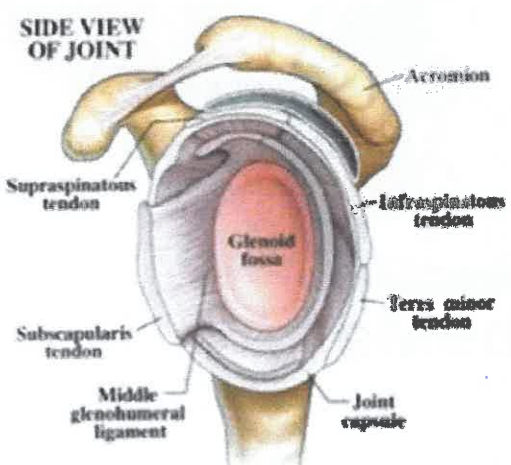
ROTATOR CUFF musculotendinous cuff made by blending of CAPSULE+

L.T. ← A. SUBSCAPULARIS (IN. Rotation) (missed / forgotton muscle of shoulder) (May AIIMS 2015)

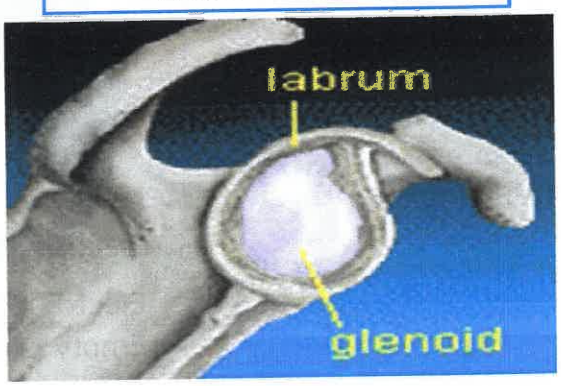
G.T. ← B. Supraspinatus (0-15 Abduction)
C. INFRASPINATUS (Ext. Rotation)
D. Teresminor (EXT. Rotation)

ROTATOR INTERVAL ⟹

- **Difference between subscapularis and supraspinatus** S & S



GLENOID LABRUM



DEEPENS GLENOID (50%)

Glenoid cavity is a pear shaped cavity, the margins of which are lined by fibrocartilage called as glenoid labrum.

SHOULDER STABILISERS

STATIC

1. Capsule
2. Glenoid labrum
(Increase depth of Glenoid by 50%
3. Negative intra articular pressure
4. Glenohumeral ligaments (GHL)
   - SGHL → 0° Abduction
   - MGHL → 45° Abduction
   - IGHL → 90° Abduction

DYNAMIC

1. ROTATOR CUFF (Primary)
2. DELTOID
3. BICEPS

(Secondary)

Injury Around Shoulder

1. **Shoulder dislocation** 2. **Recurrent shoulder dislocation**

SHOULDER DISLOCATION

Anterior shoulder dislocation (90-95%)

ABDᴺ ER

Highly painful
e.g. vigorous throwing of Ball

Posterior S.D (3-4%)

ADDᴺ IR

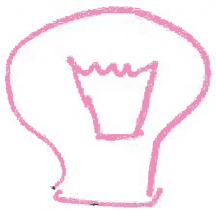
Painless/minimally painful

4 'E'
- Epilepsy
- Electric Shock
- Electric Bulb Sign
- Empty Glenoid sign

Inferior shoulder dislocation/ LUXATIO ERECTA (1-2%)

HYPERABDᴺ

SALUTE POSTURE
Painful



Complications:
- hours: immediate
- days: early
- weeks / months: delayed / late

MC Complication of Shoulder Dislocation

- Immediate = Injury to circumflex branch of Axillary N.
- Overall – Recurrence
- Delayed/Late = " Recurrence

Mx of ANT. SD → Closed Reduction (CR)

Methods of closed Reduction

i. Hippocratic technique
ii. Stimson's gravity method
iii. Modified kocher's technique (method of choice)
   - SEQUENCE : TEA.I
     Traction → ER → Adduction → Int. Rot^{N}

RECURRENT SHOULDER DISLOCATION

MATSEN's classification

TUBS (TORN LOOSE)

Ⓣ Traumatic

Ⓤ Unidirectional
(MC: ANTERIOR)

Ⓑ Bankart lesion
(MC cause of Recurrent A.S.D)
- AVULSION OF ANTEROINFERIOR GLENOID LABRUM

Hill-Sachs lesion: (2nd MC Cause)
- Bony defect @ posterolateral aspect of Head of Humerus

Ⓢ Surgery
Arthroscopic Bankart's/Hillsach's repair

AMBRI BORN LOOSE

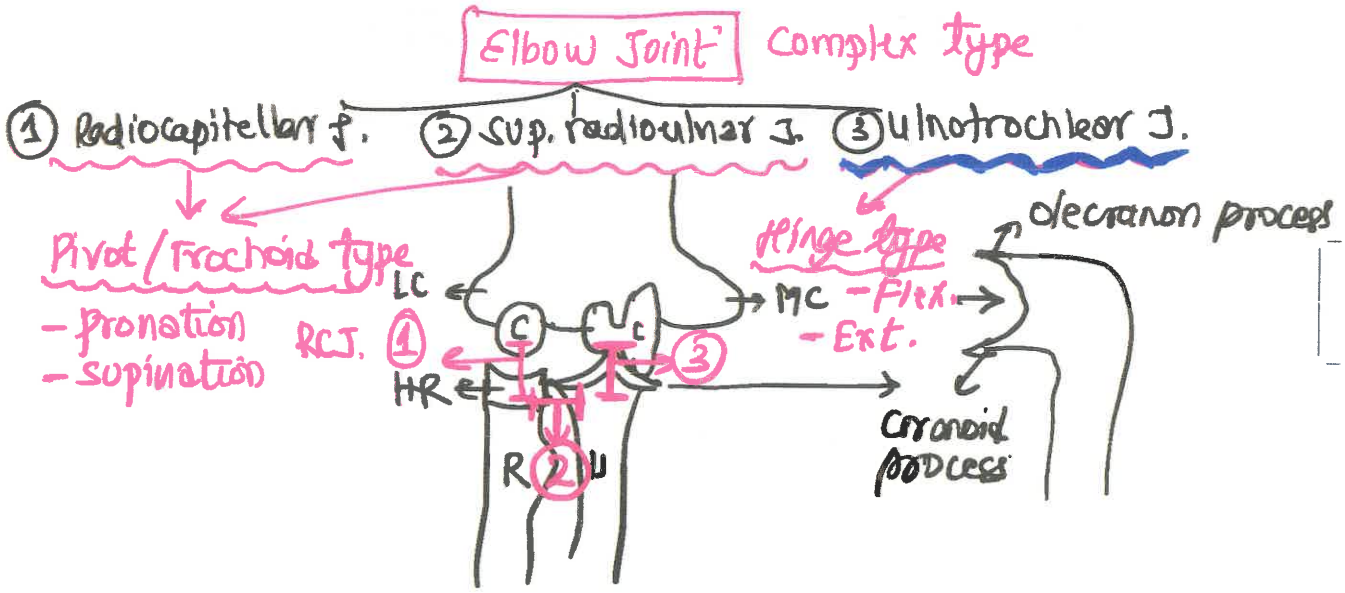
Ⓐ Atraumatic

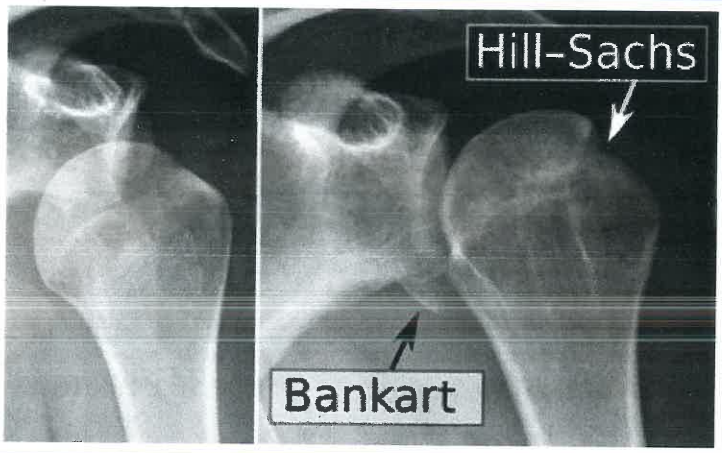
Ⓜ Multidirectional

Ⓑ Bilateral
MRI: Capsualr laxity/ connective tissue disorder
MARFAN: syndrome/ EHLER DANLOS syndrome/Hyperalasticity syndrome

Ⓡ Rehabilitation
Isometric Rotator cuff strengthening exercises

Ⓘ Internal capsular closure
Not advised much d/t fear of capsular fibrosis





Elbow Joint is a Complex type of joint, includes 3 joints:

1. Radiocapitellar joint
2. Superior rdioulnar joint
3. Ulnotrochlear joint ➡ Hinge type (flexion/ extension)

Radiocapitellar & sup. radioulnar are Pivot Type of joint (Pronate/ supinate)

MC Complication of Shoulder Dislocation

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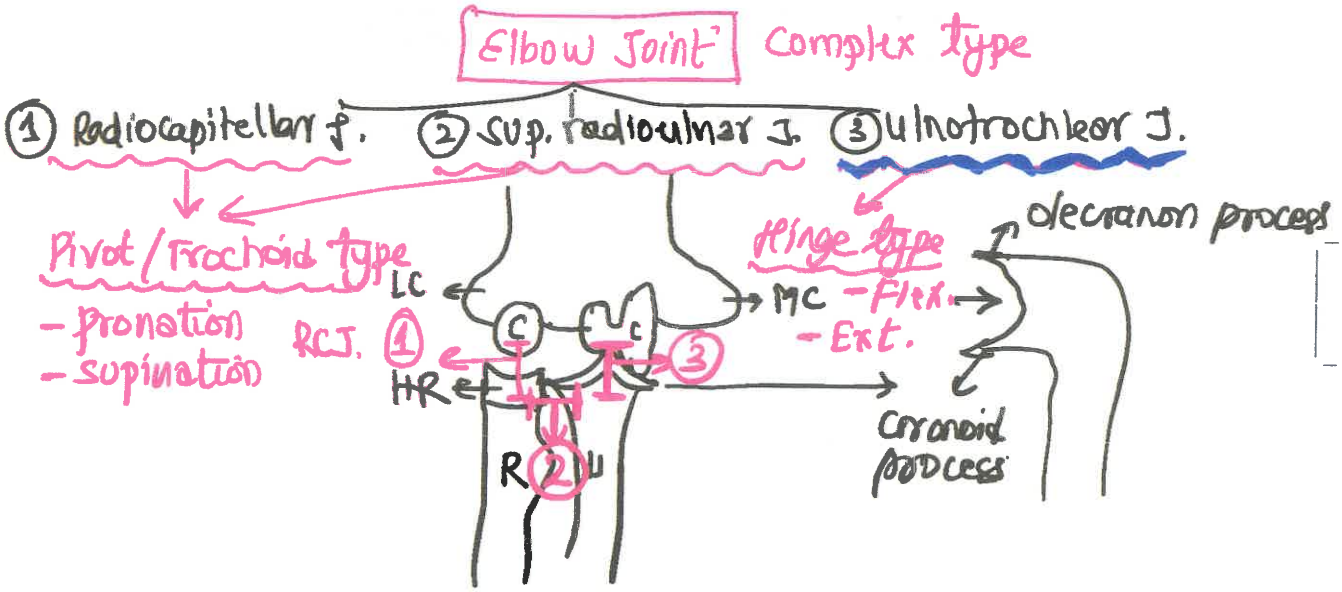

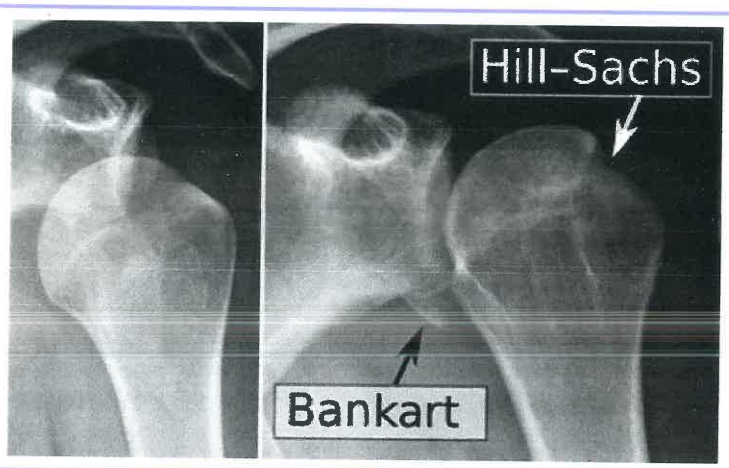

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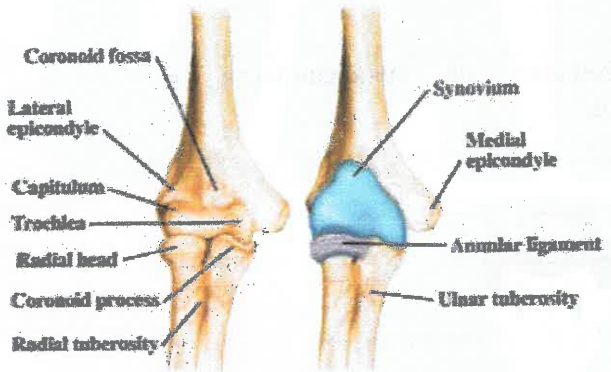


Three Bony point Relationship

- Olecranon (O)
- Lateral (LC) condyle
- Medial condyle (MC)
- Elbow @ flexion = 
- Elbow @ extension = 
- ALTERED → # olecranon, # L.C., # M.C
- NORMAL → Supracondylar # Humerus (SC#H)

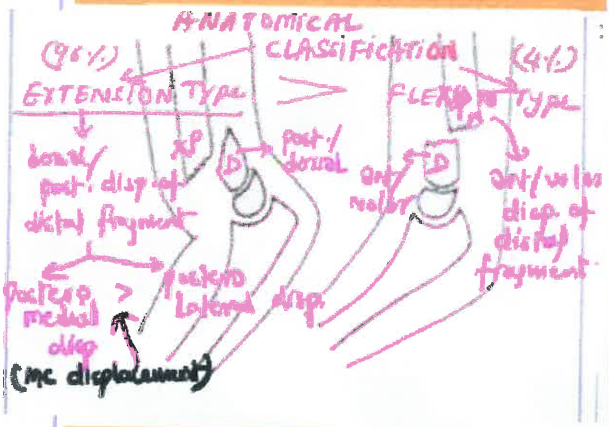
#s around elbow

- Supracondylar # Humerous
- # lateral condyle humerous

SUPRACONDYLAR # HUMERUS

- Extra-articular # - Three Bony point Relationship Ⓝ
- MC mode of injury = fall on outstretched hand (FOOSH)
- MC Mech. Of injury = HYPEREXTENSION
- MC # due to FOOSH in children
- MC # in children around elbow
- **TYPES** (Anatomical Classification)
  - **EXTENSION**
    - 96% → Dorsal/post disp (Posteromedial > Posterolateral) of distal fragment
  - **FLEXION** 4% → volar/anterior displacement of distal fragment

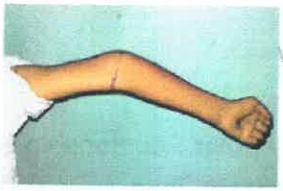
SUPRACONDYLAR FRACTURES

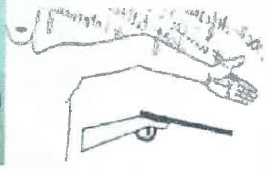


SUPRACONDYLAR FRACTURES

COMPLICATIONS OF SUPRACONDYLAR # HUMERUS

1. **MC:** MALUNION → CUBITUS VARUS (Gun stock deformity)
   - Due to UNCORRECTED MEDIAL TILT
   - Static **DEFORMITY** (does not progress beyond skeletal maturity)
   - Cosmetic **DEFROMITY** (No limitation in functional daily outcome)
   - **Mx** Surgery (done only after skeletal maturity for cosmetic indications Modified French osteotomy





2. **NEUROLOGICAL INJURY**

MC Nerve Injury in SC#H:

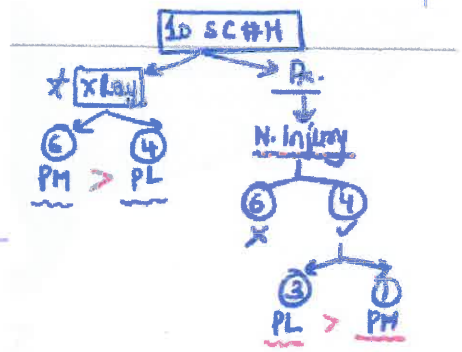
- OVERALL = Anterior Interosseous nerve (branch of median nerve)
- POSTEROLA TERAL = Anterior Interosseous nerve (branch of median nerve)
- POSTEROMEDIAL DISPLACEMENT = Radial nerve
- ANTERIOR/VOLAR DISPLACEMENT = Ulnar nerve

3. **MC ARTERIAL INJURY: Brachial Artery** d/t proximal segment

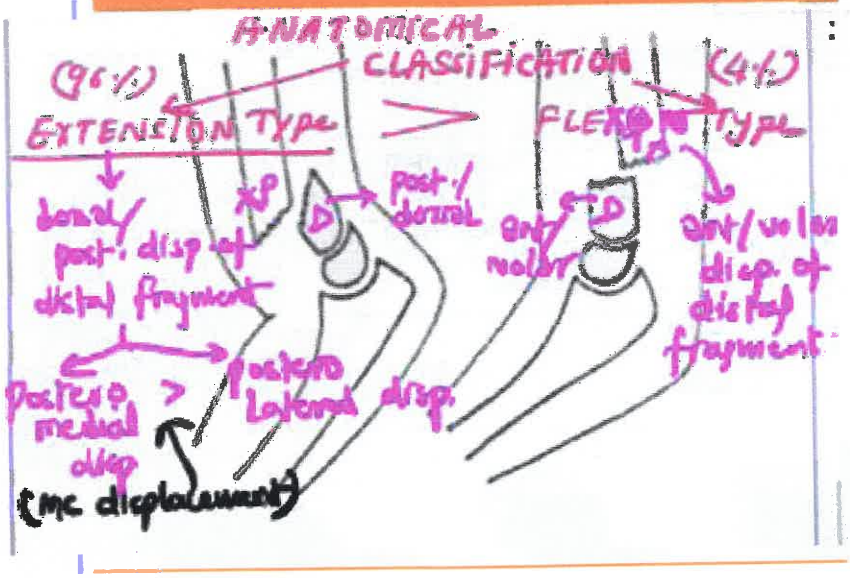
Sx for cubitus varus done only if:
1. Age >18
2. For cosmetic reason

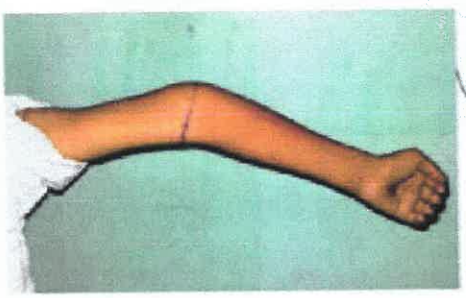
Posteromedial # > Posterolateral #
Nerve injury seen in: Posterolateral # > Posteromedial #
Therefore most common nerve injured is Anterior Interosseous nerve (injured in posterolateral)

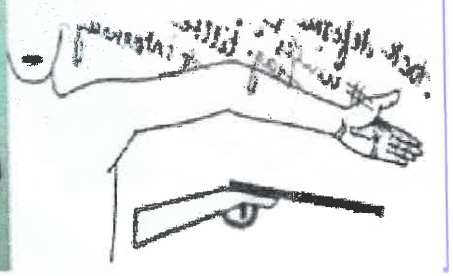
Displacement due to distal fragment
Neuro-vascular injury due to Proximal fragment

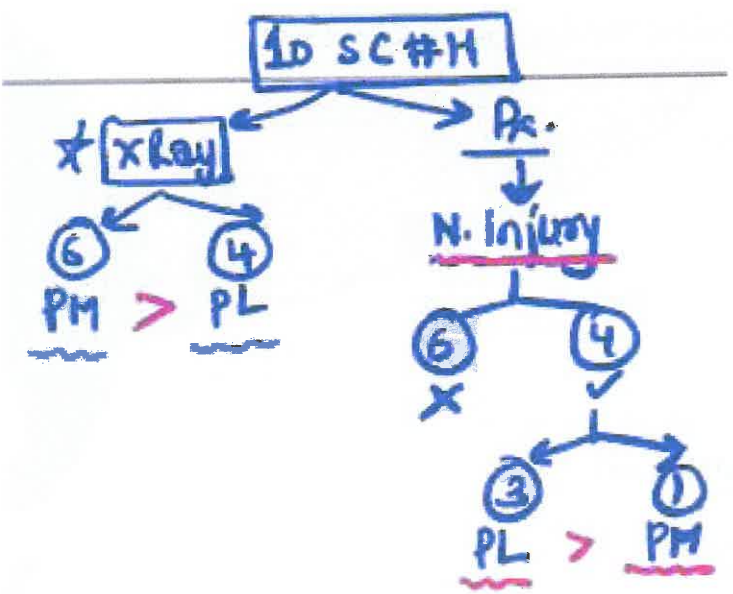


SUPRACONDYLAR FRACTURES

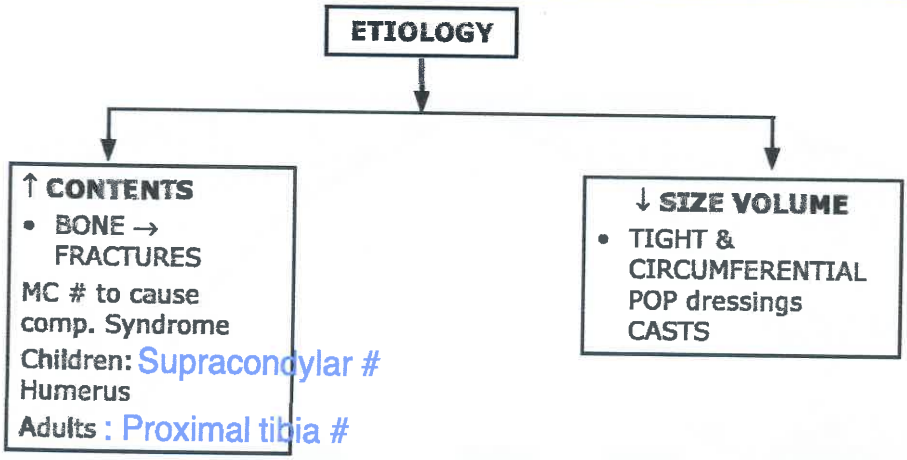








4. COMPARTMENT SYNDROME (Increase pressure leading to symptom complex)



MUSCLES

- CRUSH SYNDROME/
- TRAUMATIC RAHABDOMYOLYSIS

VESSELS

- VASCULAR INJURY

CLINICAL PICTURE 7'P'S

- Ⓟ Pain (1st symptom)
- Ⓟ Pain on passive stretching of fingers (STRETCH TEST): 1st Sign: Most diagnostic
- Ⓟ Pressure Increases
- Ⓟ Paresethesia
- Ⓟ Pallor
- Ⓟ Pulselessness (most unreliable P)
- Ⓟ Paralysis (Last P)

Ⓝ Pressure 6-12 mm (diagnostic > 30 mm) Mx: Emergency fasciotomy

VOLKMANN'S ISCHEMIC CONTRACTURES (VIC) Complication of compartment syndrome

5. Ischemia

Necrosis → Fibrosis → Contractures

VOLKMANN'S DEFORMITY / HAND

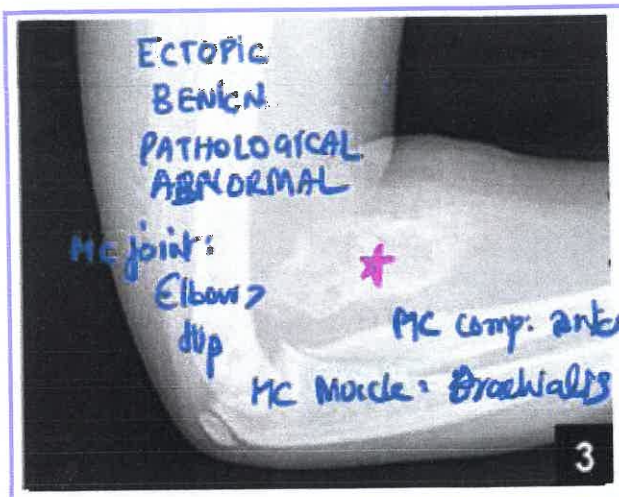
Forearm: Thinned/ atrophied

Palm: hollow

Wrist: Flexion (due to flexor contractures)

MCPJ: Hyperertension (due to paralysis of lumbricals)

PIPJ. / DIPJ. : Flexion



Mx :

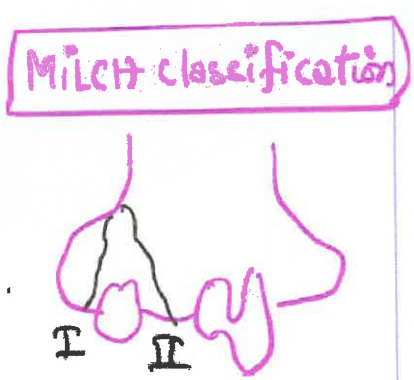
- Passive correction of deformity followed by TURN BUCKLE SPLINT/volkmann's splint
- SURGERY for Non-correctible coreas
  - Distal sliding of common flexor origin c/a MAXPAGE SURGERY

6. MYOSITIS OSSIFICANS

- Delayed/rare complication of SC# Humerus
- ECTOPIC, BENIGN, ABNORMAL, PATHOLOGICAL BONE FORMATION due to passive massage/mobilization /manipulation of a healed SC# Humerus → mechanical stimulus for bone formation
- MC joint: Elbow > Hip
- MC compartment: Anterior
- MC Muscle: Brachialis
- Mx :
  - Acute : Rest + Ice packs + NSAIDs 3 weeks
  - Chronic: Surgical excision of entire bone block in TOTO (as one piece)

#LATERAL CONDYLE HUMERUS

- Intra-Articular
- Three Bony point Relationship ALTERED
- Less common than SC# Humerus
- MILCH CLASSIFICATION :
  - I LATERAL (# line W.R.T. CAPITELLUM)
  - II MEDIAL
- MC complication requiring Rx : NON UNION



CUBITUS VALGUS

- FUNCTIONAL DEFORMITY
- DYNAMIC DEFORMITY (progress beyond skeletal maturity)

Mx: MILCH# osteotomy to be done as soon as possible to avoid.

MC Nerve injury = slow onset (TARDY) ULNAR N. PALSY

#S/INJURIES & EPONYMS (23)

- ARM/FOREARM (6)
- D.E.R. (4)
- CARPALS/MC&/phalanges (13)

CUBITUS VALGUS

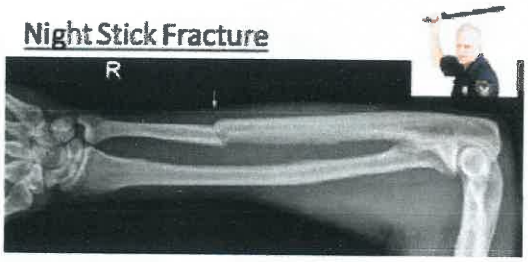
Monteggia's Fracture

- # of proximal 1/3rd of ulnar shaft
- Radial head dislocation

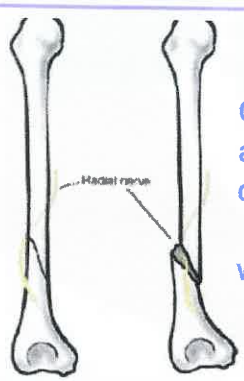
2. GALEAZZI'S

- # of shaft of radius at junction of middle & distal 1/3rd
- Distal radioulnar joint dislocation

Night Stick Fracture

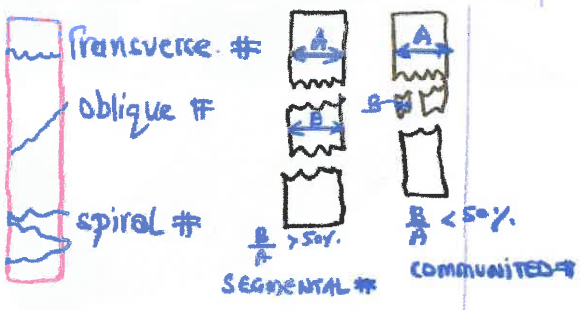


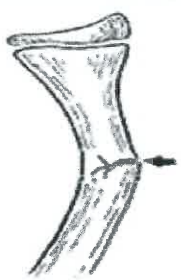
Isolated # of shaft of ulna



4. HOLSTEIN LEWIS

Oblique & displaced # at the junction of upper 2/3rd & lower 1/3 rd with radial nerve palsy

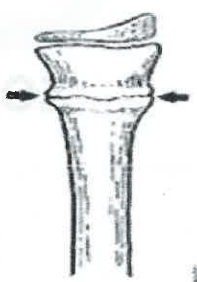




Greenstick Fracture

- Incomplete #
- Unicortical #
- Diaphyseal #
- Radius > Ulna
- Concavo-convex deformity

MC # in children (overall)



Torus Fracture

- Metaphyseal #
- Complete #
- Bicortical #
- Radius mainly
- No Concavo-convex deformity

less common than greenstick #

MC # in children around elbow: Supracondylar #

4 # of DER (Distal end of radius)

Intraarticular & Extraarticular

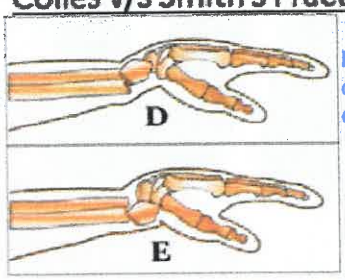
7. BARTON'S

Intraarticular # of DER with
Radio scaphoid joint subluxation

BARTON'S disease:
Vit C def: Scurvy +
Vit D def: Rickets

8. CHAEUFFER'S

Intraarticular # of DER with
Radial styloid bony fragment with
Intact Radio scaphoid joint anatomy



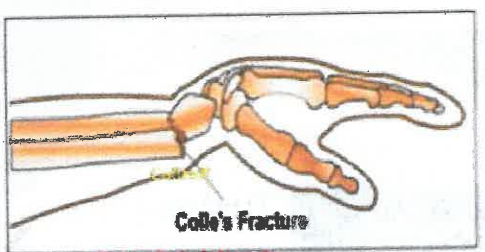
9. COLLE'S

Extraarticular # of DER with
dorsal / posterior displacement
of distal segment

10. SMITH'S

Extraarticular # of DER with
Anterior / Volar displacement
of distal segment

MC complication of Smith's:
malunion --> Garden Spade Deformity



MC complication of
Colle's:
finger stiffness

2nd MC complication:
Malunion -->
Dinner fork deformity

#s / injuries with eponyms

Carpals, metacarpals, phalanges

11. Fracture Scaphoid

MC Carpal bone #

Base of anatomical snuff box
Classical C/F: tenderness/ swelling in anatomical snuff box
Scaphoid has retrograde blood supply
MC site of # is waist
MC complication: non union
Rx: Scaphoid / glass holding cast
MC mode of injury: FOOSH
MC # d/t FOOSH in adults
Xray: oblique view

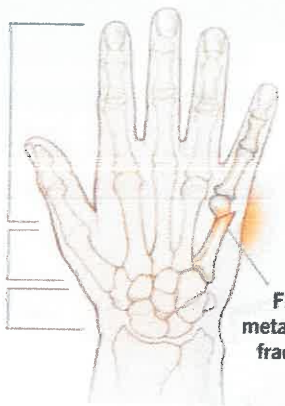
12. Bennett v/s Rolando 13.

Oblique & displaced # T/V/Y shaped communited #

Both are Intraarticular #s of base of 1st metacarpal extending into trapezio-1st metacarpal joint

14. Boxer's fracture

MC metacarpal #

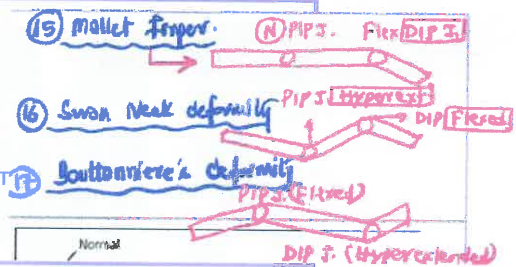


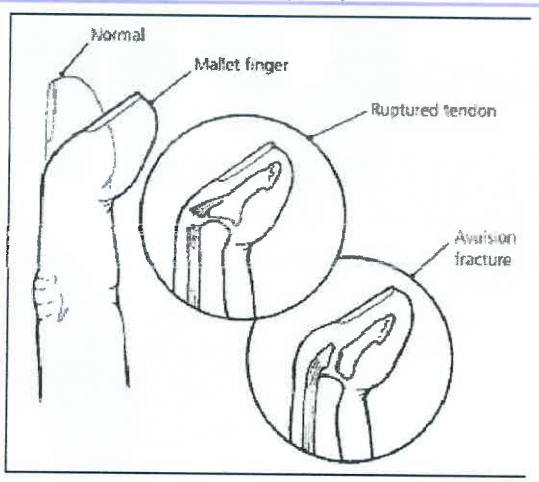
# of neck of 5th Metacarpal

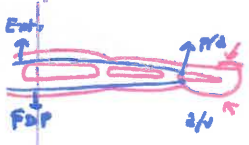
15. MALLET FINGER
PIP: normal
DIP: flexed

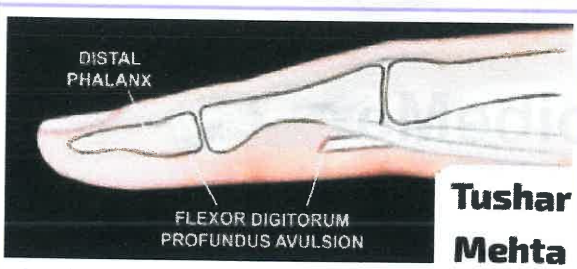
16. SWAN NECK DEFORMITY
PIP: Hyperextended
DIP: flexed

17. BOUTONNIERE'S DEFORMITY
PIP: Flexed
DIP: Hyperextended





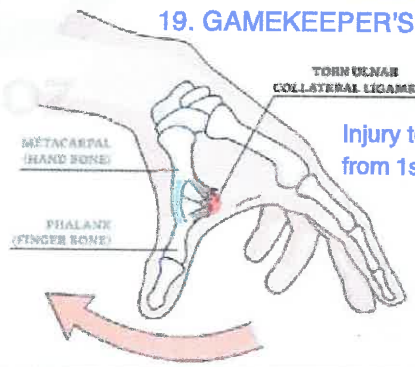




18. JERSEY FINGER

Avulsion of FDP from volar aspect of base of distal plalanx

19. GAMEKEEPER'S THUMB/ SKIER'S THUMB



Injury to ulnar collateral ligament (UCL) from 1st metacarpal phalangeal joint