

Glenohumeral instability

Rockwoods

Background : definition
classification
patho anatomy

Assessment-

Mechanisms of injury
Associated injuries
S₂ and S_m
Imagings

Work up

Acute instability

Definition

Gleno-humeral instability

humeral head does not remain centered in the glenoid cavity
Symptomatic

Classification:

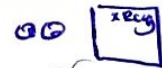
Classificat°

- Severity → Subluxation / Dislocation
- Etiology → traumatic / microtraumatic / atraumatic / neuro muscular
- Chronicity → acute / chronic
- Frequency → initial / recurrent
- Volition → voluntary / involuntary
- Direction → Ant / Post / Inf / Bi- / Multi- directional

Dislocation → complete symptomatic dissociation of the articular surfaces

without spontaneous reduction → Permanent

To define dislocation



→ complete dissociation



→ reduce it manually

Subluxation → symptomatic dissociation of articular surfaces
with spontaneous reduction

Subluxation

Symptomatic

dissociation degree varies including complete
with spontaneous reduction

Dislocation

symptomatic

complete dissociation of articular surfaces

without spontaneous reduction

x Ray → complete
Manual reduction

Sx: Apprehension
+/- pain

Etiology

Neuro-muscular

Seizure

Electrical shock

Imbalance of muscular
stabilizer → instability

Atraumatic
no
single
episode
of trauma

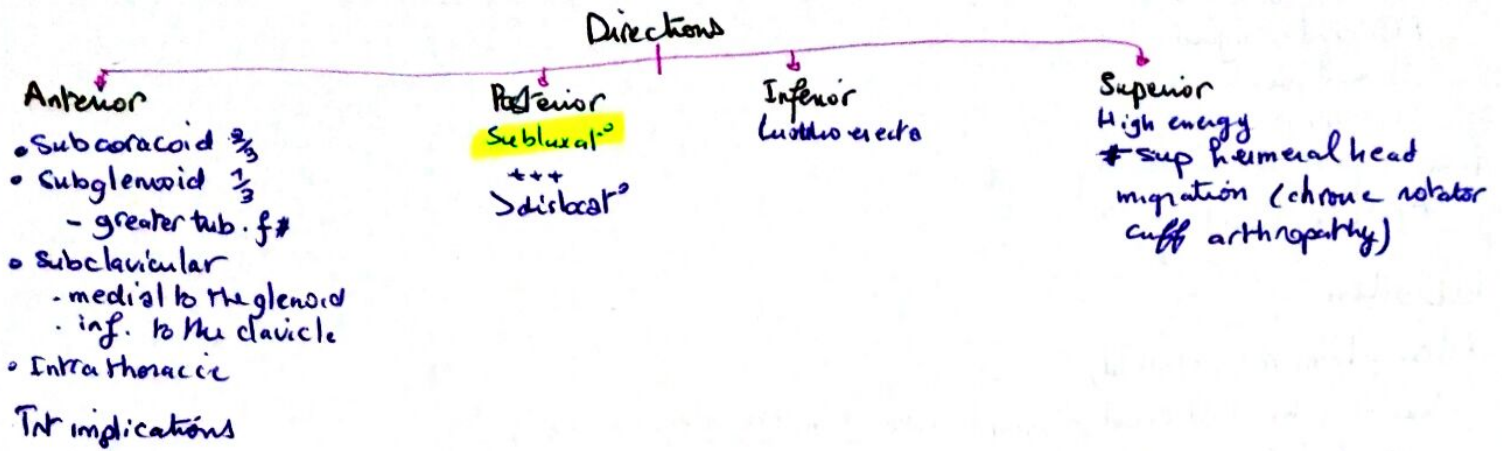
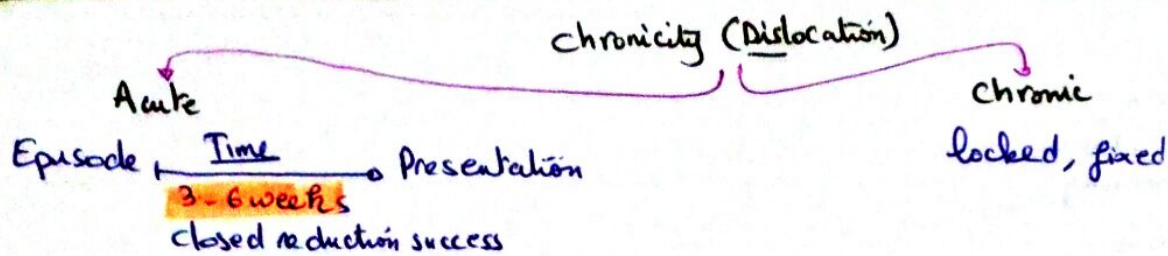
Microtraumatic
Repetitive S and Ase
microtrauma
→ chronic joint
change.

Traumatic

Fall

Motor vehicle accident

Large external forces → instability



Common patterns of instability

- * Traumatic Anterior Dislocation
- Recurrent Anterior subluxation
- * Acute/Chronic Traumatic posterior dislocation
- Recurrent posterior subluxation $\left\{ \begin{array}{l} \text{acquired} \\ \text{volitional} \\ \text{dysplastic} \end{array} \right.$
- Dysplastic Recurrent post subluxation
- MDI

Traumatic Anterior Dislocation

♀ < 30 y

older $\rightarrow$ +++ associated injuries (rotator cuff)

pathoanatomy:

Capsulo-labral avulsion (Bankart lesion)

Acute/Chronic Posterior Dislocations

Uncommon

high energy trauma

seizures/electrical shock

50% missed $\rightarrow$ chronicity

OTA classification

Shoulder region "10"

Shoulder girdle $\rightarrow$ 1

Dislocation $\rightarrow$ 0

Letter $\rightarrow$ Joint

A $\rightarrow$ glenohumeral

B $\rightarrow$ sternoclavicular

C $\rightarrow$ acromioclavicular

D $\rightarrow$ scapulo-thoracic

Another N^o $\rightarrow$ Direction

- 1 $\rightarrow$ Ant.
- 2 $\rightarrow$ Post.
- 3 $\rightarrow$ Lat
- 4 $\rightarrow$ Med
- 5 $\rightarrow$ Other (superior)

Anterior Glenohumeral Dislocation

(10.A1) in OTA

Recurrent in young

Assessment of GH instability

Mechanisms of injury
Associated injuries

Ant.
Post.

S and Sm... Presentation of acute instability

History
PE

Mechanisms of injury:

Ant. instability

Indirect mechanism:

Abduction
Extension (Retropulsion)
External rotation

humeral head chaulching:

- ant capsule + lig
- glenoid rim anteriorly
- rotator cuff

Direct: rarely

Young Old
athletic injuries falls

Less common types → extremely
high energy

Luxation erecta: inferior

Extreme hyperabduction in which
proximal humerus levered against
the acromion and dislocates inferiorly
Associated with Greater tuberosity fractures

Direction of the instability is the same where humeral - lig challenge.

Stable joint

Humeral head chaulching somewhere the lig. → direction of the instability

A bd → goes away

A bd: the "bi" says bye

A dd → come closer

Posterior instability

Indirect mechanism:

Flexion (Antepulsion)
Adduction

Internal rotation

with an axial load (eg. fall on outstretched ^{arm} hand)

Single traumatic episode
repetitive microtrauma

Neuro Muscular events:

- alcohol withdrawal - seizures - electrical shock

The internal rotators latissimus dorsi
pectoralis major
subscapularis

Overwhelm the less strong external rotators
teres minor
infra spinatus

Associated injuries

- Tearing of the ligaments and capsular restraints
 - most common injury
 - key pathoanatomy for recurrent dislocation

young → recurrence
old → rotator cuff tear

Anterior instability

Hill Sachs lesion:

Postero-superolateral humeral head

Compression

Fracture

Compression mechanism: arm abduction + external rotation → humeral head crushed on the anterior glenoid rim.



Ant. dislocation → recurrent → 100% Hill Sachs Lesion
→ single episode → 40-90%

Repeated events → enlargement of the lesion → becomes symptomatic → further instability

Hill Sachs! → Recurrent! → Management!

Fractures: non displaced neck f# that may displace with reduction

→ Greater tuberosity f# → ↓ ROM (malunion, retractile capsulitis)

Most common in older (>30) than in younger

Associated f# → ↓ risk of recurrent instability

Recurrent instability
Hill Sachs → hillmount
F# → ↓

Rotator cuff tears

↑ with age (40 → 40%,
60 → 80%)

Weakness, stiffness, specifically ext. rotation and abd

Subscapularis rupture → persistent instability in elderly

Mis Dx as neurologic injury (axillary nerve → deltoid contraction to eliminate nerve injury)

>40y — U/S or MRI to rule it out?

Neurologic injury

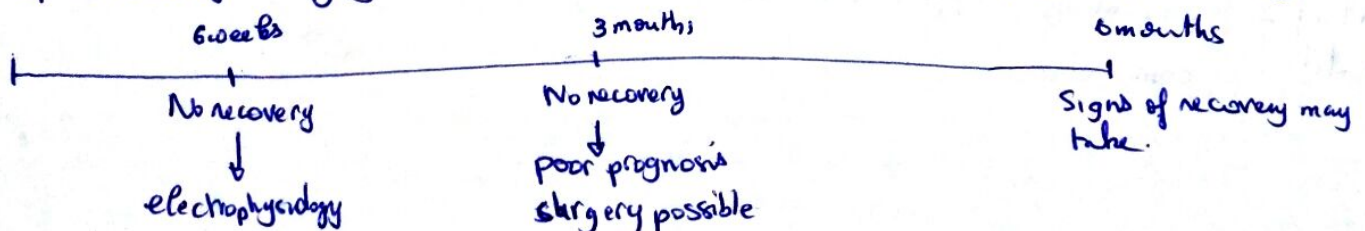
Brachial plexus proximity axillary nerve injury most common
not clinically relevant (1/3 patients → EMG evidence)
5% only → clinical

Mechanism of nerve injury Traction
Direct pressure

Neuro. injury → isolated → young males ++
→ multiple → old females ++

Neurologic exam: - sensory (can be misleading! it seems abn but axillary nerve is good)
- motor testing must be included, isometric contraction of deltoid

If the neurological injury doesn't recover in 6 weeks → electrophysiological investigations



Vascular injury:

Rare

Elder patients ++ Fragile vessels

Axillary artery and vein injury

Their **occlusion** more common in luxation erecta

Lesion as a cpc of reduction

S₁ and S₂: **dysvascular arm**
expanding hematoma

Posterior instability

Fractures: neck of humerus most are undisplaced
lesser tuberosity.
greater tuberosity

Reverse Hill Sachs lesion

Presentation of acute instability

History

Trauma, Mechanism description

Extreme pain (-initiating event - subsequent muscular spasm attempting to stabilize the joint)

Cause: Trauma / Neuro Muscular

Mechanism

Pain

Suspect a post. disloc^o
to detect it

PE Inspection

Gross deformity

Swelling

Palpation
fullness

Complete neuro Vx exam of the upper extremity
axillary n. → sensation + deltoid strength
musculocutaneous - " + biceps/brachialis
pulse.

Shoulder motion → limited, limitation to

internal rotation + ~~add~~?
↓
ant. dislocation

external rotation + ~~abd~~? abd
↓
post. dislocation

fully abducted
↓
Luxatio erecta

Reduction

Radiographical control