Shoulder Arthroplasty

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Faculty

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Spectrum of Replacements

Hemiarthroplasty

Total Shoulder Arthroplasty

Reverse Shoulder Arthroplasty

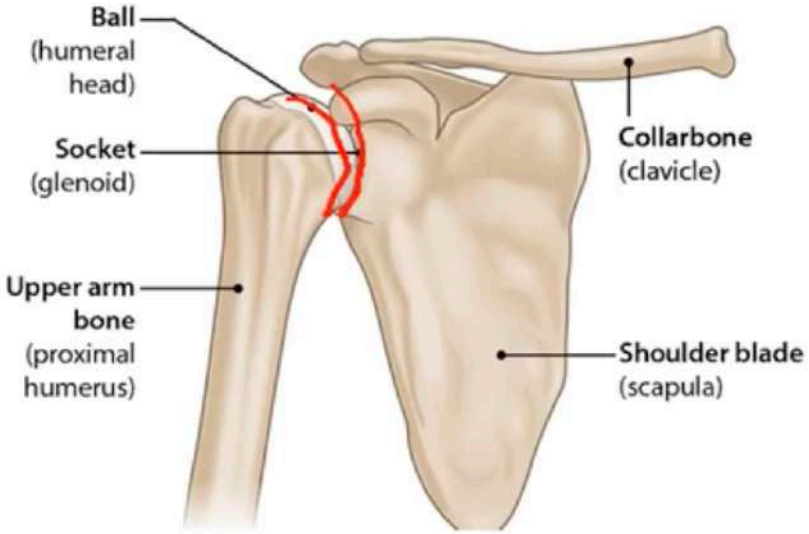
Contraindications to TSA all except-

- A. Rheumatoid arthritis with non functional cuff
- B. Osteoarthritis with sourçil sign on Xray
- C. Full thickness Supraspinatus tear
- D. Cuff tear arthropathy

H + G

- Bone stock (−)
- Func Rot. cuff.
- No infection
- No nerve palsy.

Anatomy of Glenohumeral Joint



- Ball and socket type of synovial joint

- Glenoid – very shallow and
- Head of humerus very large

↑ Movements in all axes

MC jt to dislocate. shoulder. child →

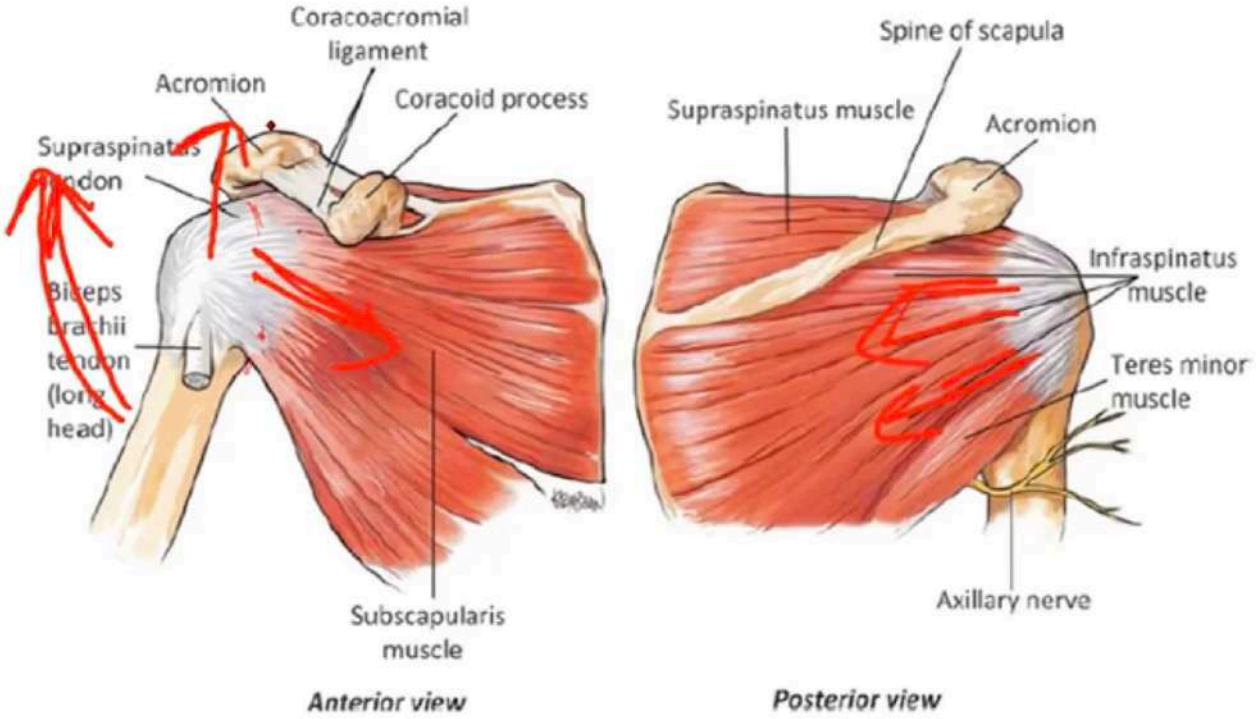
Highly Unstable joint

To provide stability

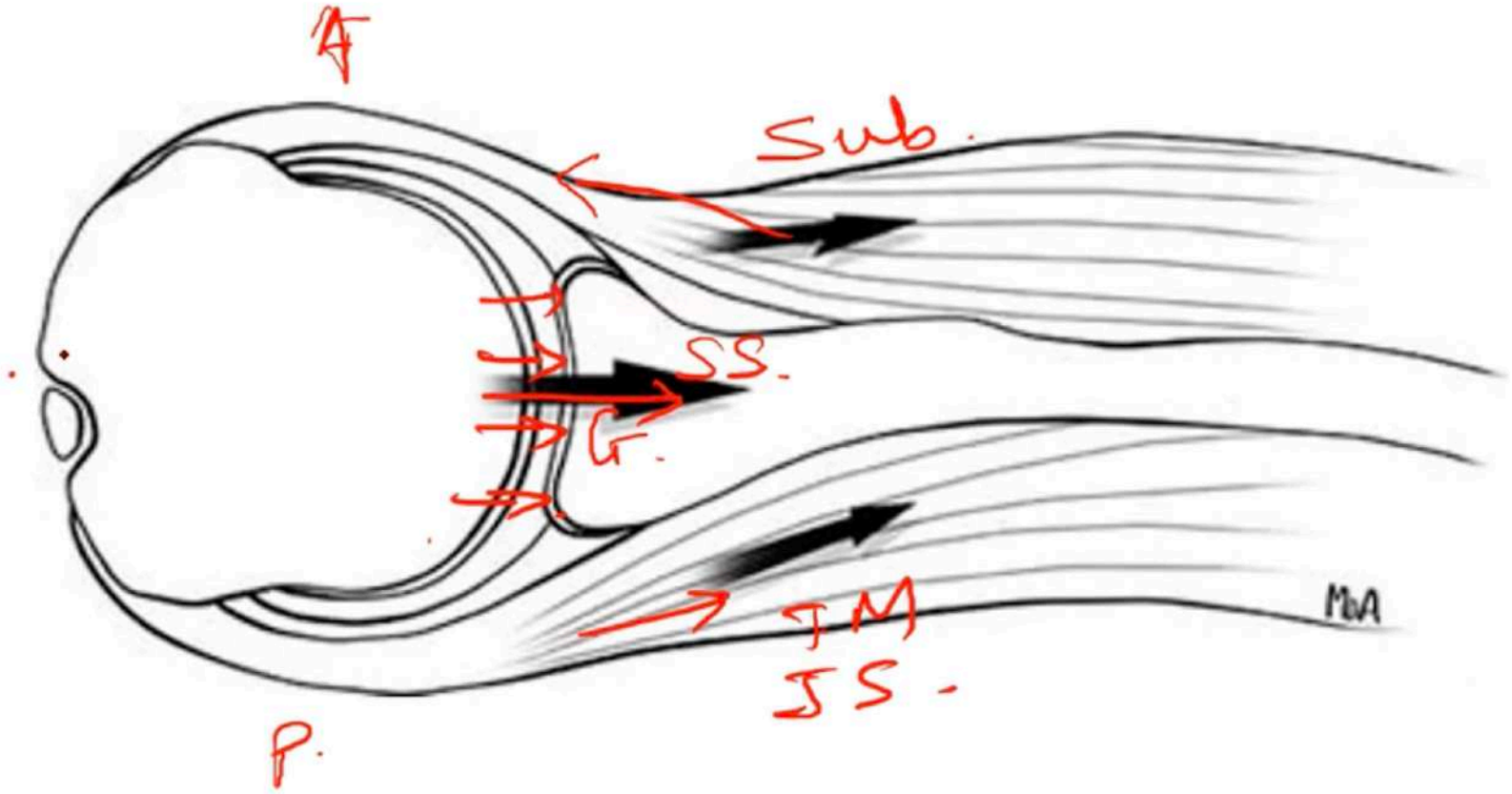
- Static Stabilizers
  - Labrum
  - Glenohumeral ligaments
  - Negative intraarticular pressure
- Dynamic stabilizers (muscle)
  - Rotator cuff muscles
  - Long head of Biceps

Rotator cuff

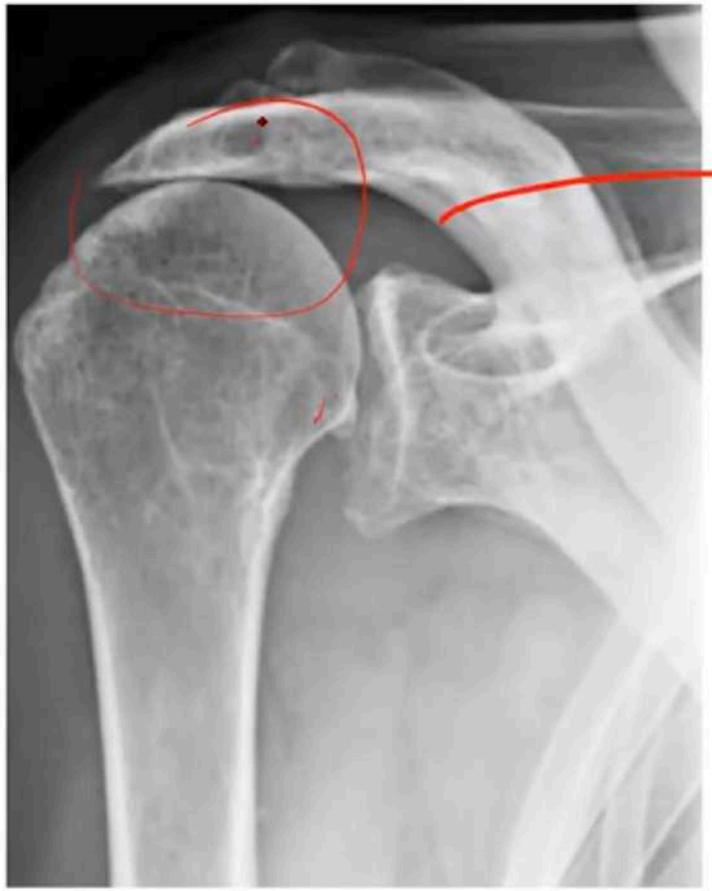
- "Contraction-compression Model of stability"



Contraction – compression stability



What if rotator cuff tear or non functional?



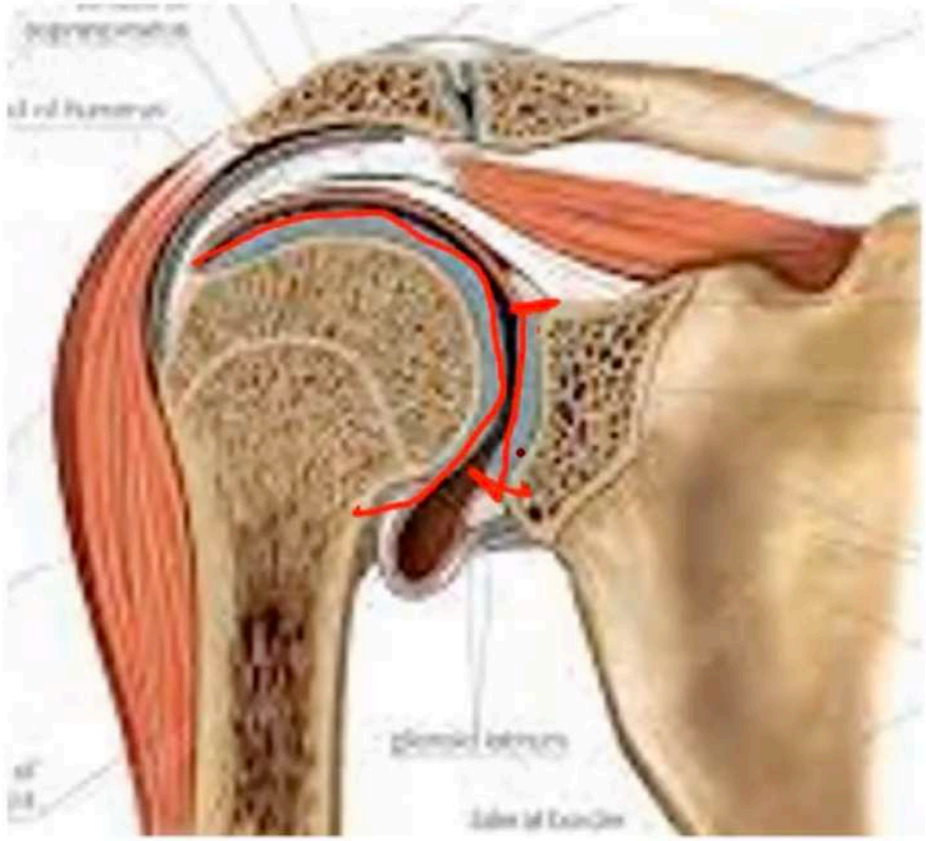
Cuff. tear arthro

sclerosis ~~acromion~~

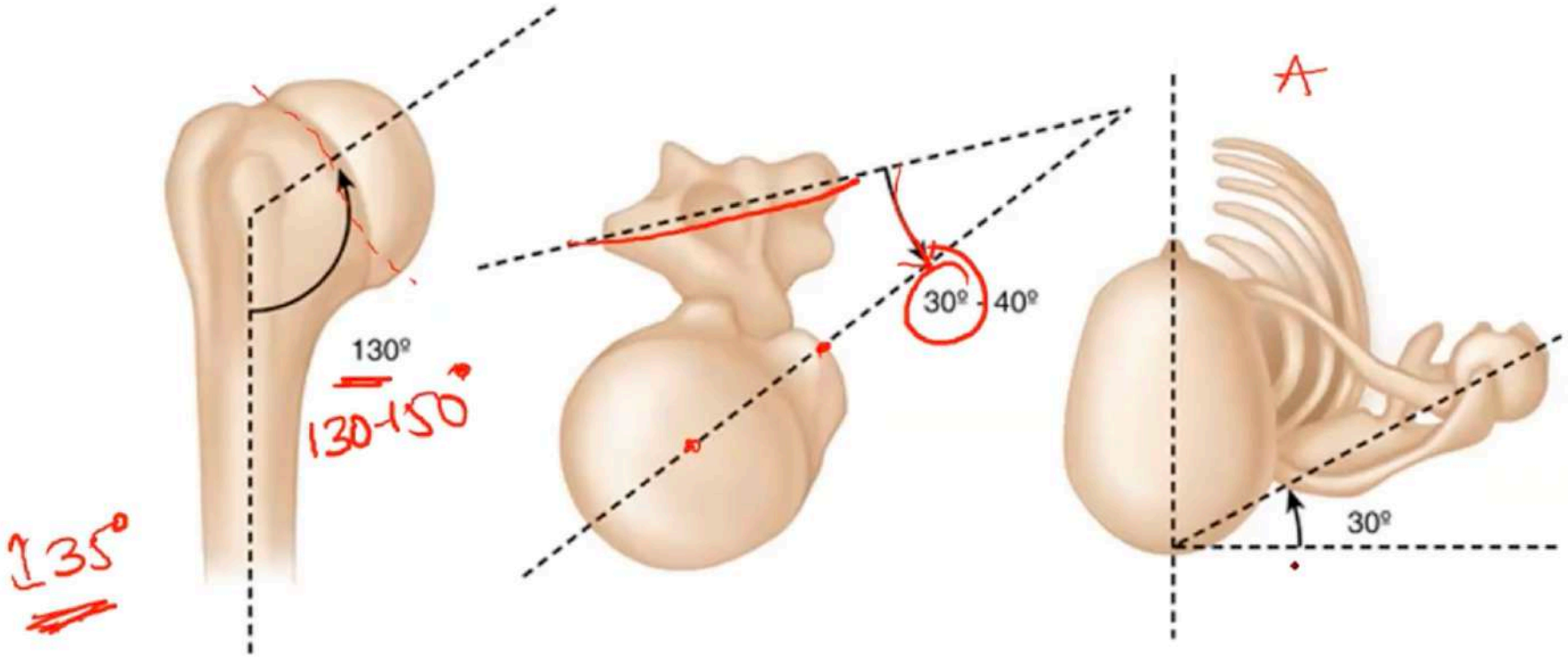
"Sourcil"

=

Ball and socket joint

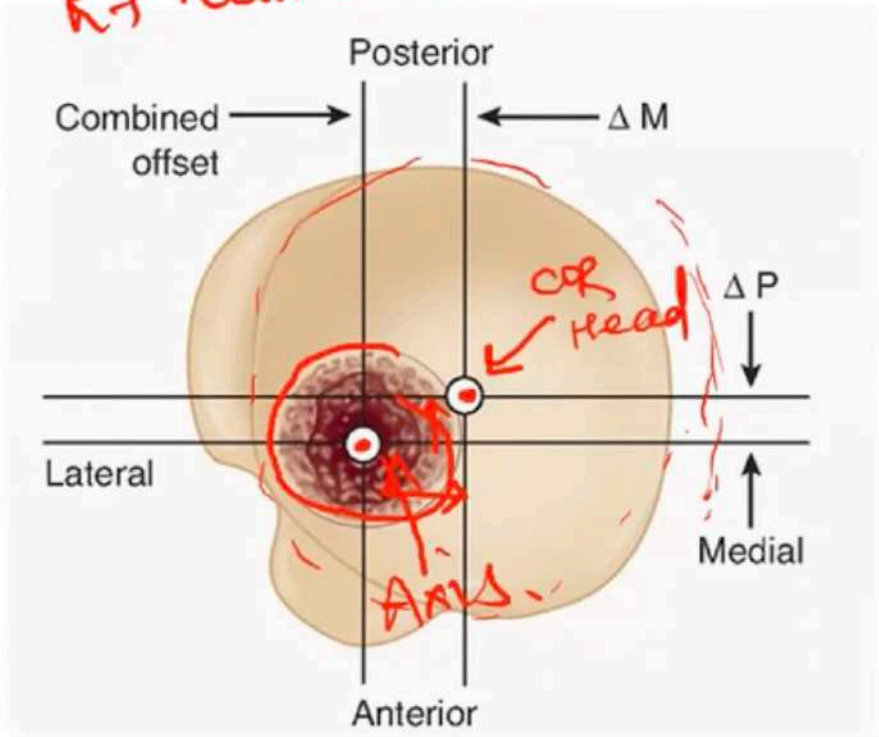


Biomechanics

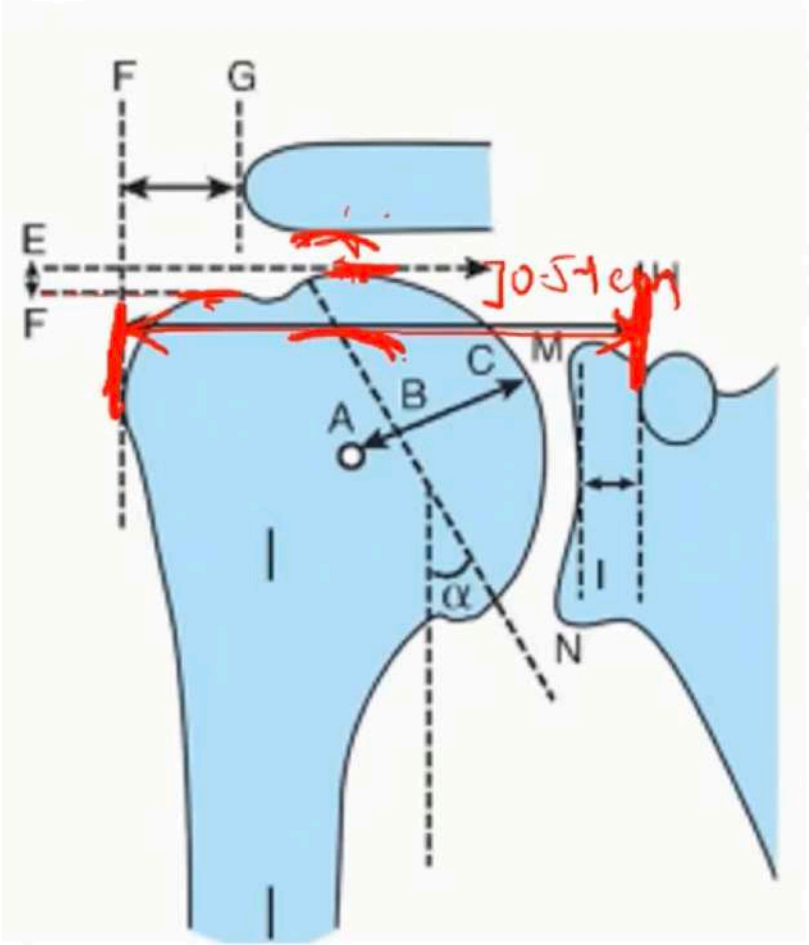


- Head shaft angle
- Humerus retroversion
- Scapular plane

Humeral Head offset



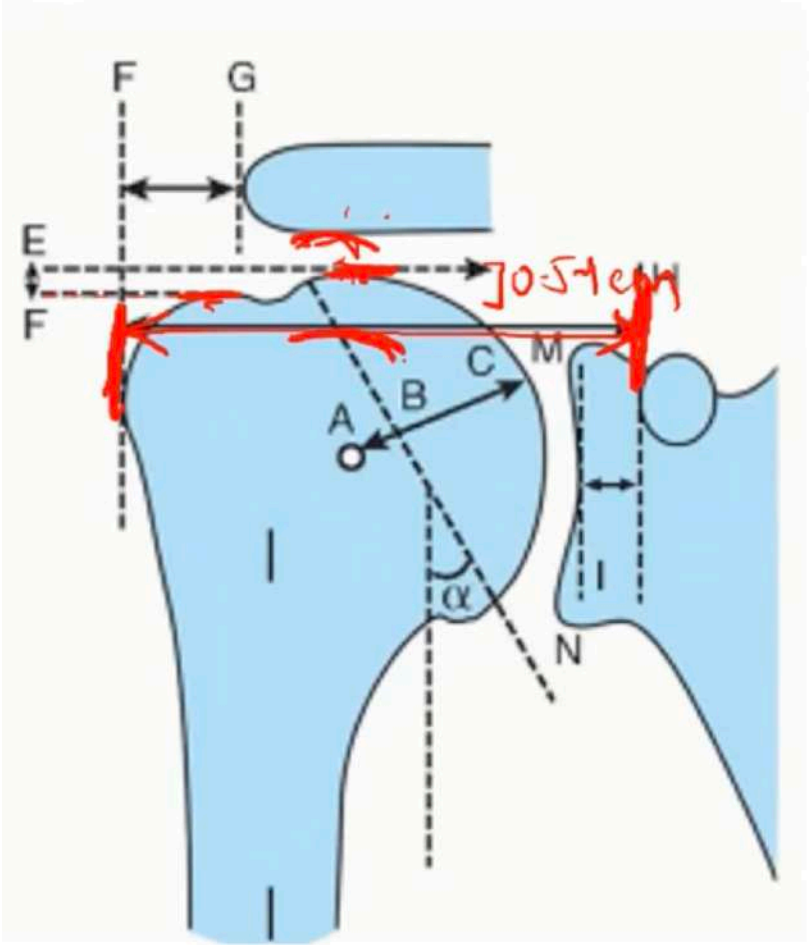
- 7 mm
- 3 mm



- Head is 1cm superior to Gt tip (EF)
- Lateral humeral offset (FH)= 5-6 cm

↑ → overstuff

↓ → ↓ Tension
Deltoid Rot.



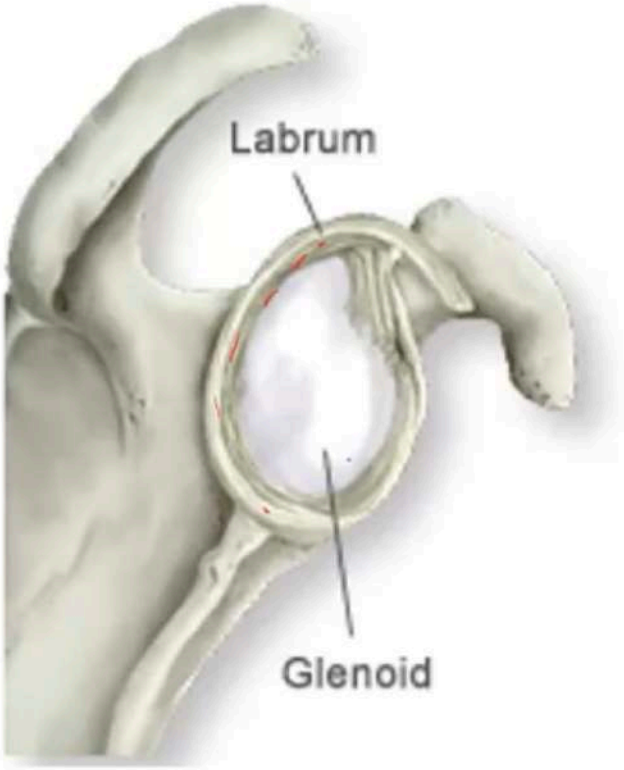
- Head is 1cm superior to Gt tip (EF)
- Lateral humeral offset (FH)= 5-6 cm
- What, if these are altered after TSA?

About Glenoid

- Pear shaped
- AP dimension superior < AP inferior

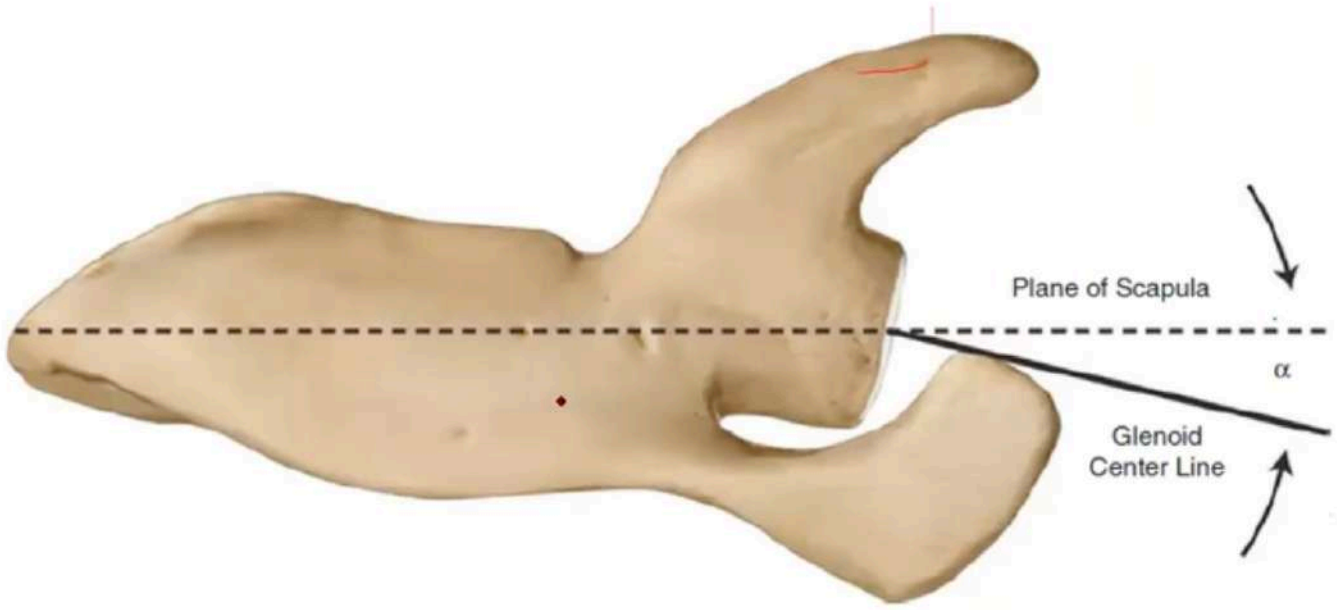
- Role of Labrum ??

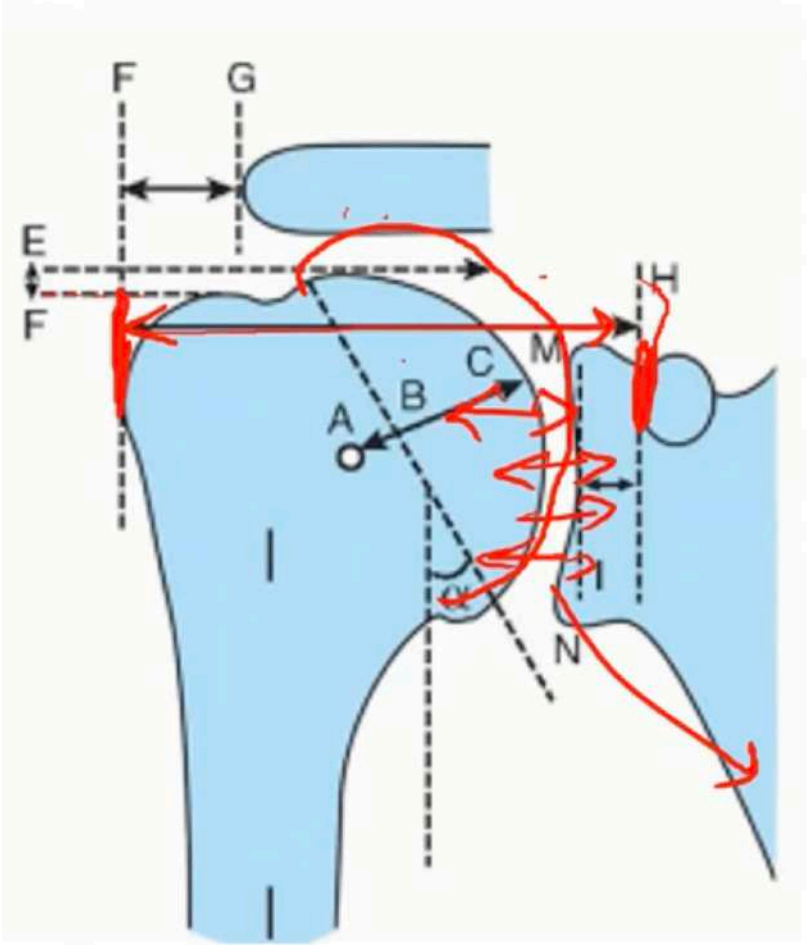
↑ 50% of depth.



Glenoid center line and version

- Glenoid version = 2 degree anteversion to 7 degree retroversion



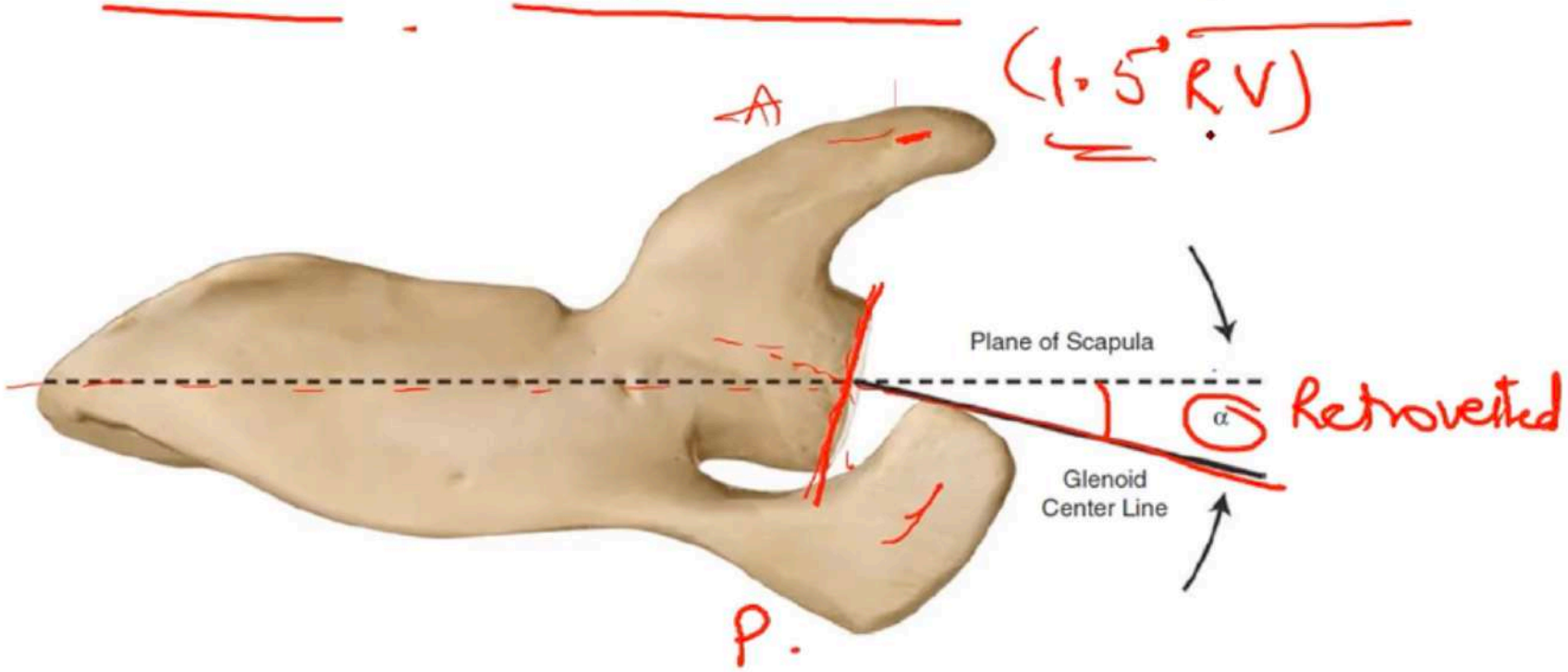


- Head is 1cm superior to Gt tip (EF)
- Lateral humeral offset (FH)= 5-6 cm
- What, if these are altered after TSA?

↑ wear in glenoid.

Glenoid center line and version

- Glenoid version = 2 degree anteversion to 7 degree retroversion

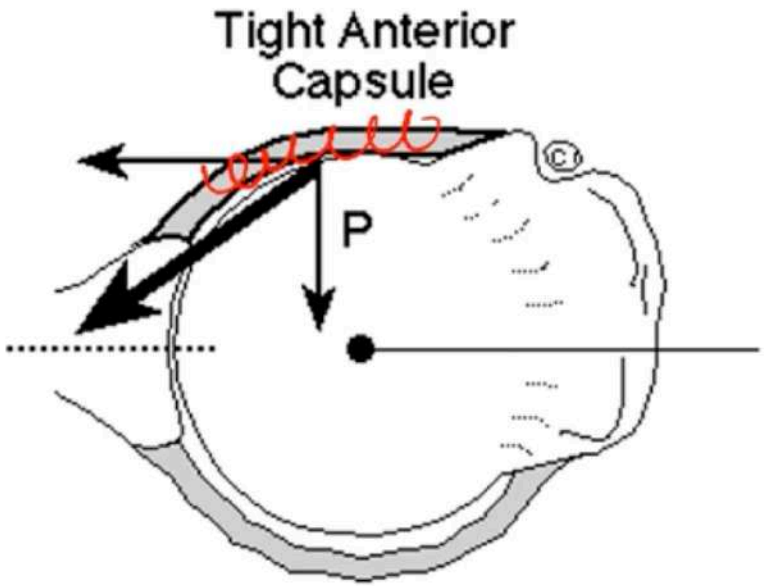


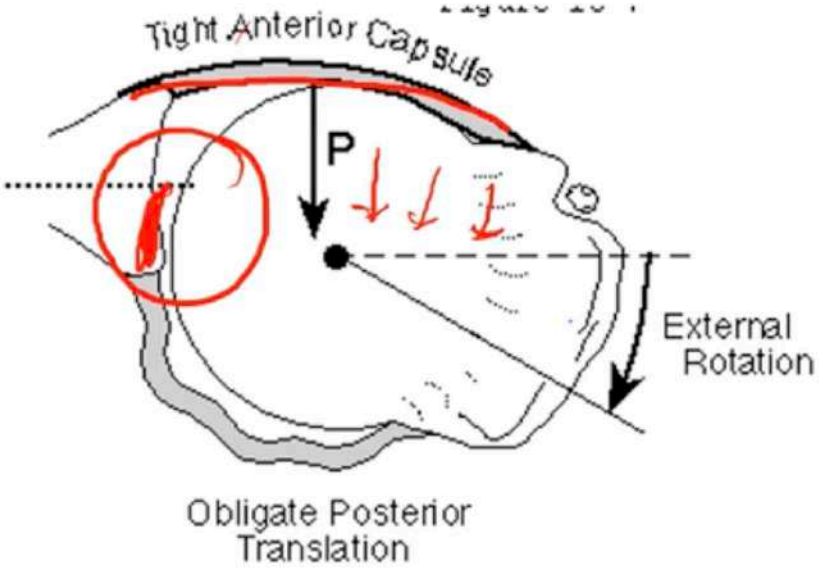
Indications for Shoulder arthroplasty ??

- Osteoarthritis
- Osteonecrosis
- Rheumatoid arthritis
- Post traumatic arthritis
- Proximal Humerus #
- Cuff tear arthropathy
- Post capsulorapphy arthropathy

Capsulorapphy arthropathy

↑↑ loose bodies





Indications for Shoulder arthroplasty ??

- Osteoarthritis → Asym → "Posterior Glenoid wear"
- Osteonecrosis
- Rheumatoid arthritis → "cuff arthropathy" / symmetrical arthritis.
- Post traumatic arthritis
- Proximal Humerus #
- Cuff tear arthropathy
- Post capsulorapphy arthropathy → ↑ loose.

Contraindications of Total Shoulder arthroplasty

- 1. Non functional Rotator cuff exc. Isolated → Hemi / RSA → Hemi
- 2. Infection
- 3. Nerve Injury – Brachial plexus
  Axillary nerve
- 4. Insufficient Glenoid bone stock → Hemi.

Work up for Surgery

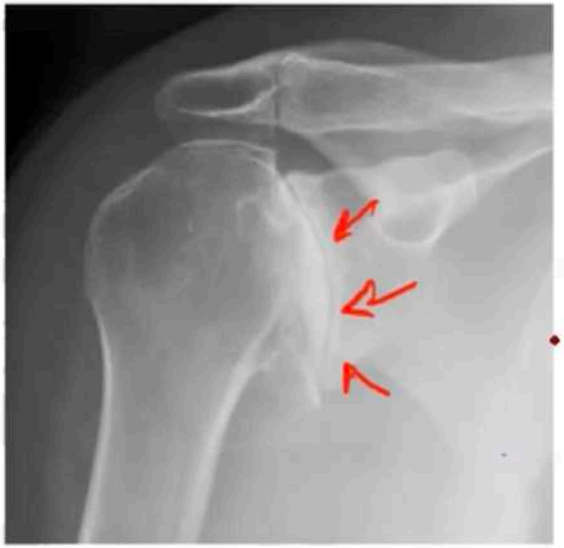
- History
- Clinical Examination
- Imaging – xRay

Xray

Goat's beard

Adv. OA of shoulder.

Loose bodies –
Capsulorapphy arthropathy



Reduced Joint space

Posterior subluxation

Role of CT

→ "Glenoid Bone stock & Version"

- To show the Glenoid bone stock and version
- Loose bodies
- Non Union or malunion

Role of MRI

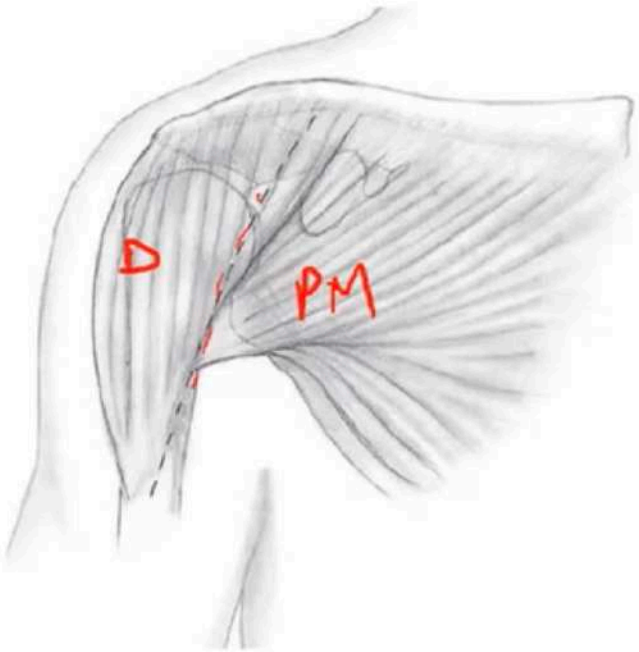
→ R.A. → "Cuff status"
←

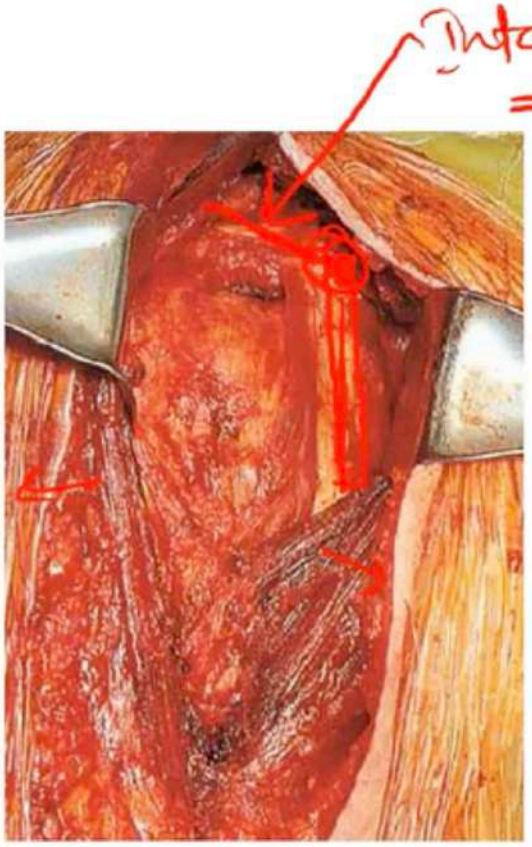
Hemiarthroplasty

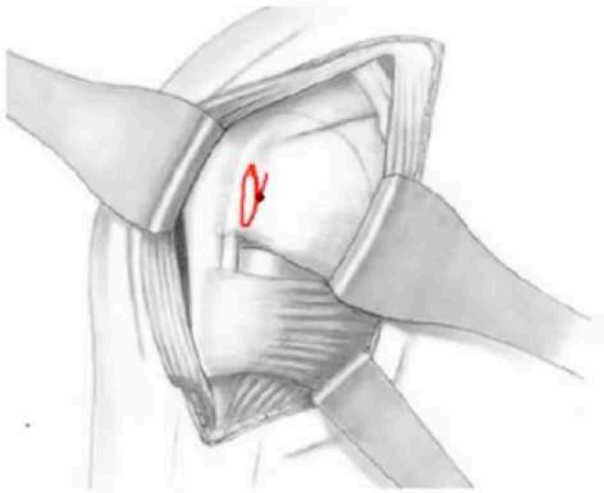
Indications-

- Problem is Humerus and Glenoid is Good → ON-
- Problem is in Humerus and Glenoid is not having sufficient bone stock
- Rotator cuff tears with good forward flexion → RSA > 90°
- High demand patient (Labourer requiring overhead abduction or heavy weight lifter or paraplegic patients)

Surgical steps





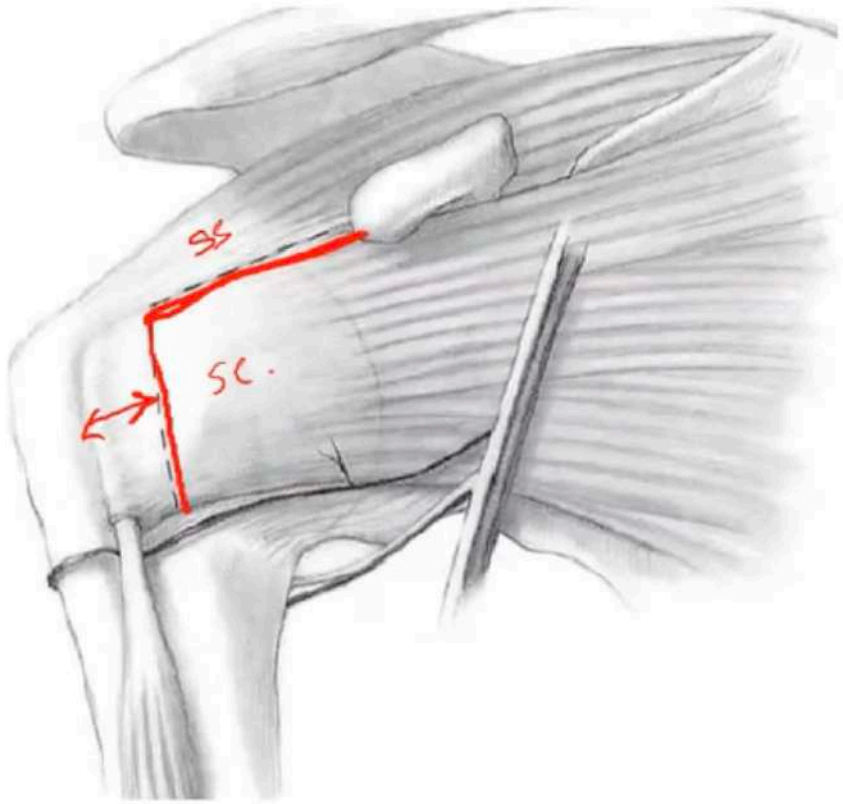


Deltopectoral approach - Incision

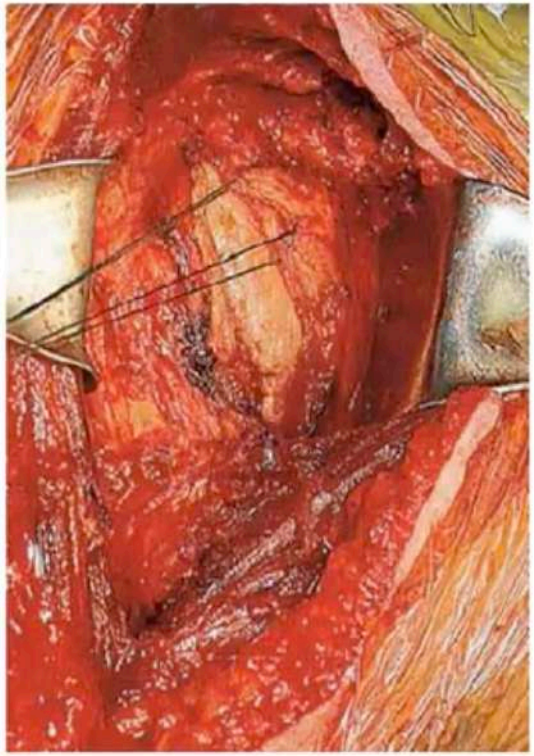
Retracting Pectoralis and Deltoid

Subscapularis exposure

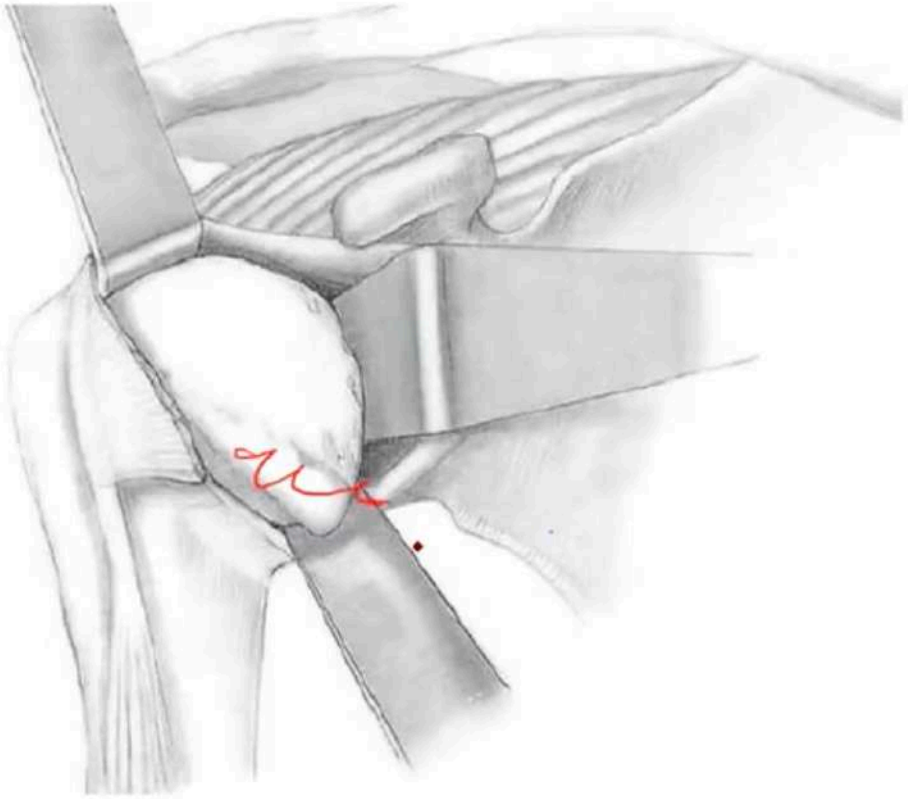
Subscapularis release



- 2 cm
- Z lengthening +/-

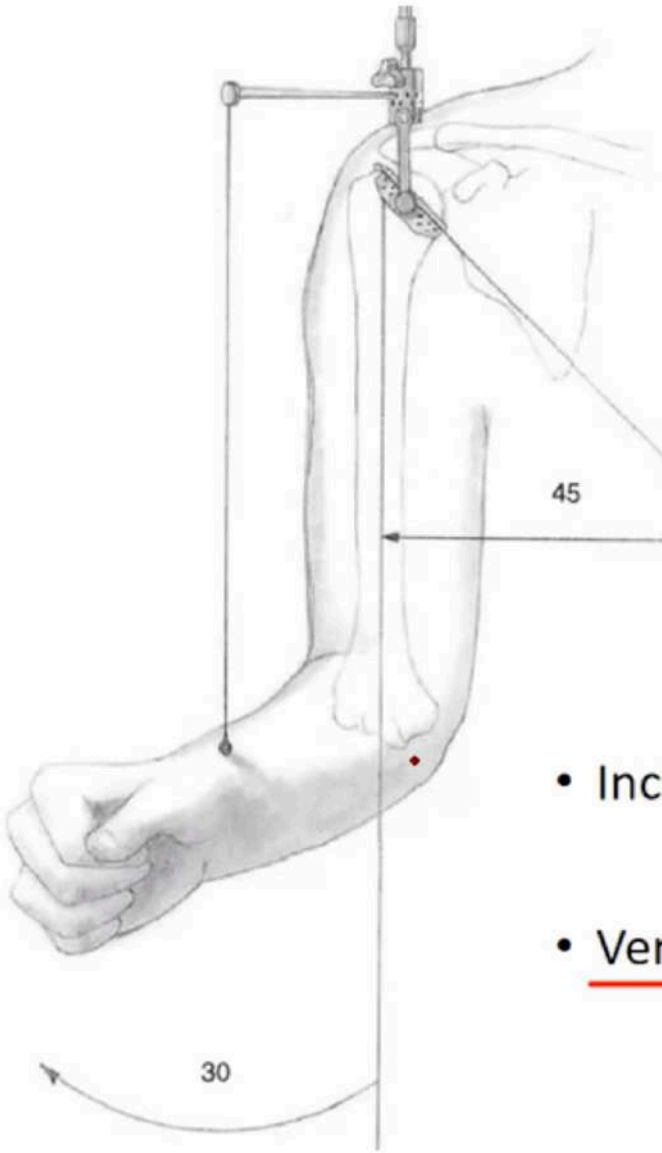


Subscapularis tagged and release

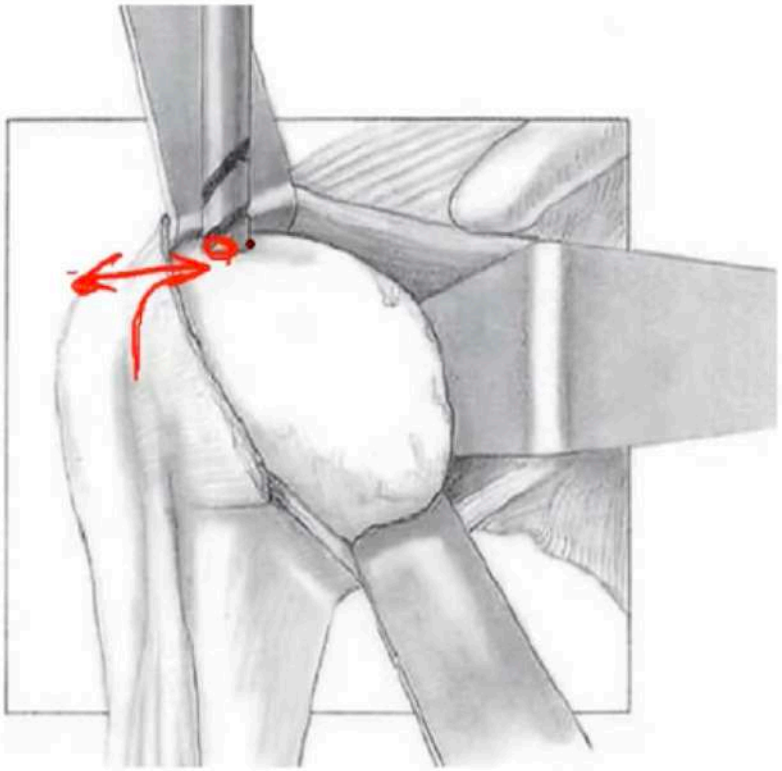


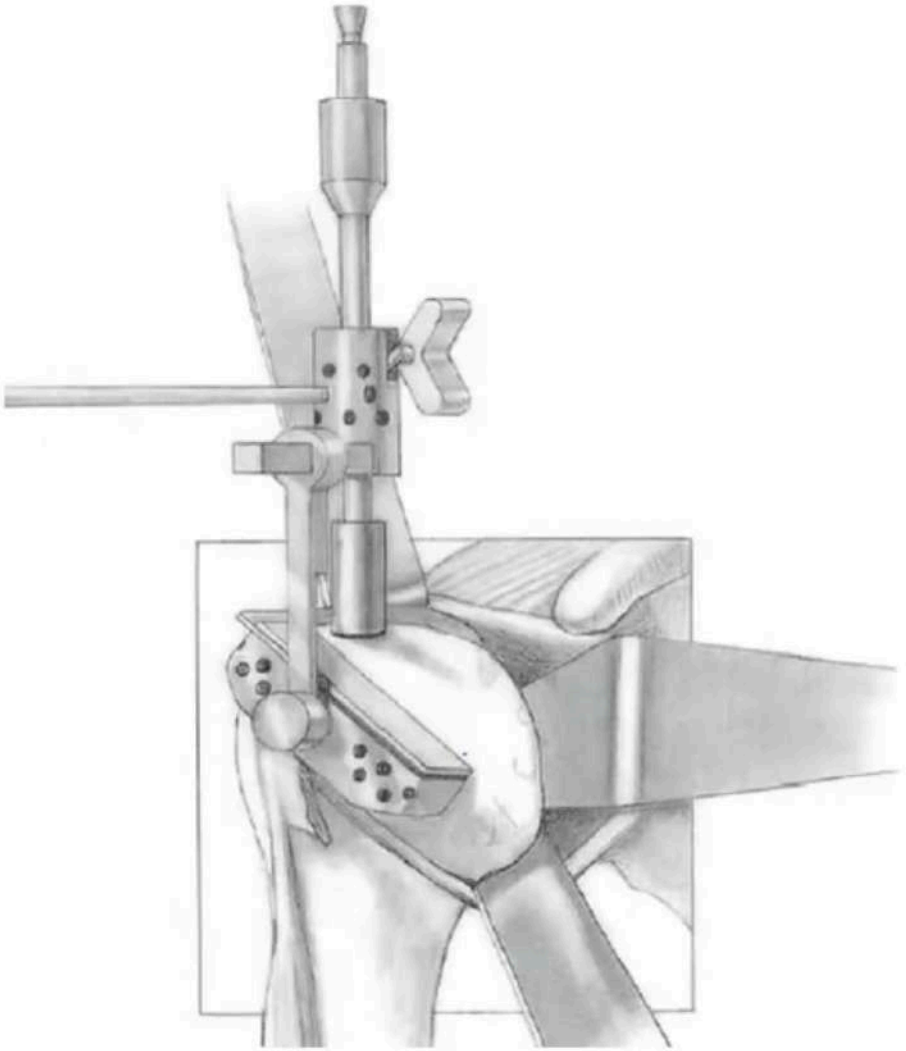
Dislocation of joint – ABER

Osteotomy of Head



- Inclination and → 135°. 45°.
- Version → 30° retroversion.

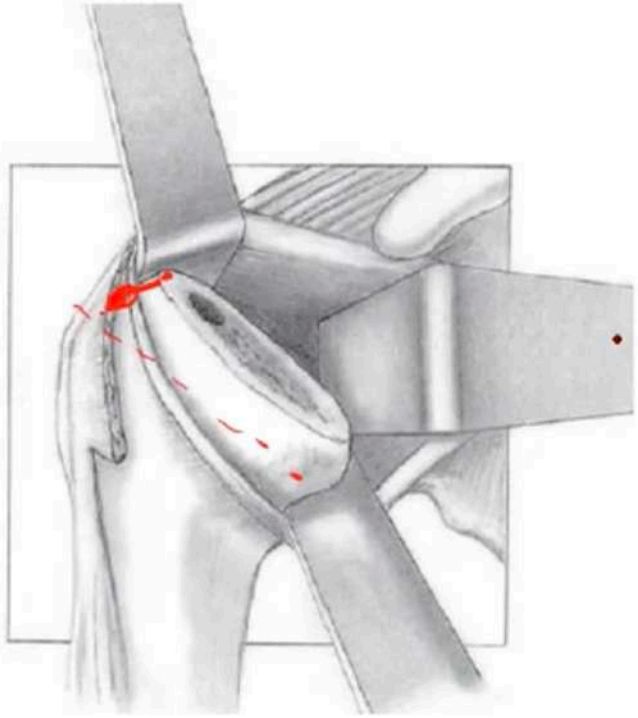




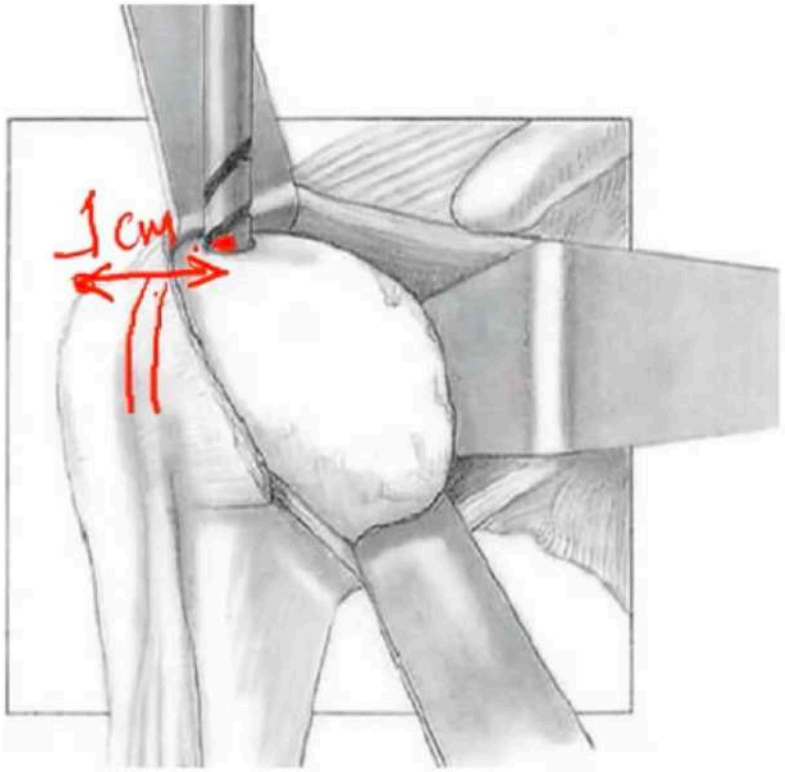
- Entry point :
- Just posterior to bicipital groove,

1 cm medial to GT tip

Cutting guide in place



- Osteotomy level - Just proximal to rotator cuff insertion



- Entry point :
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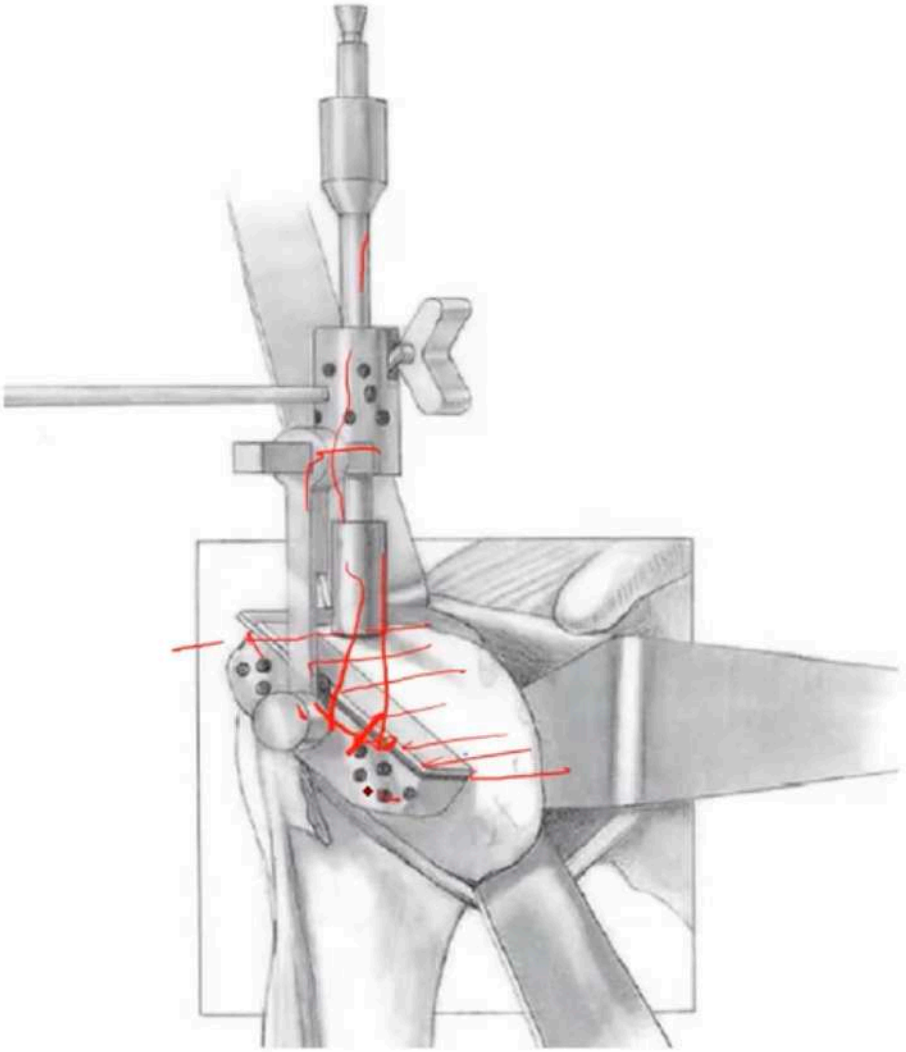
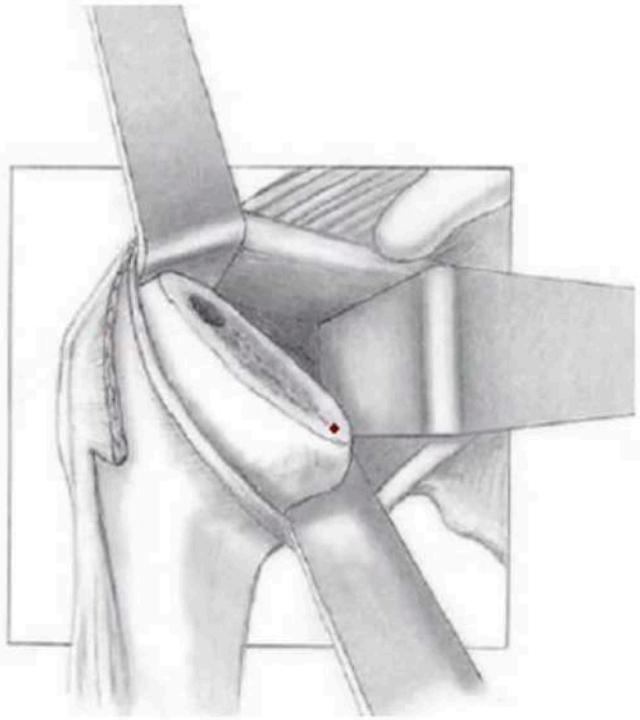


Cutting guide in place

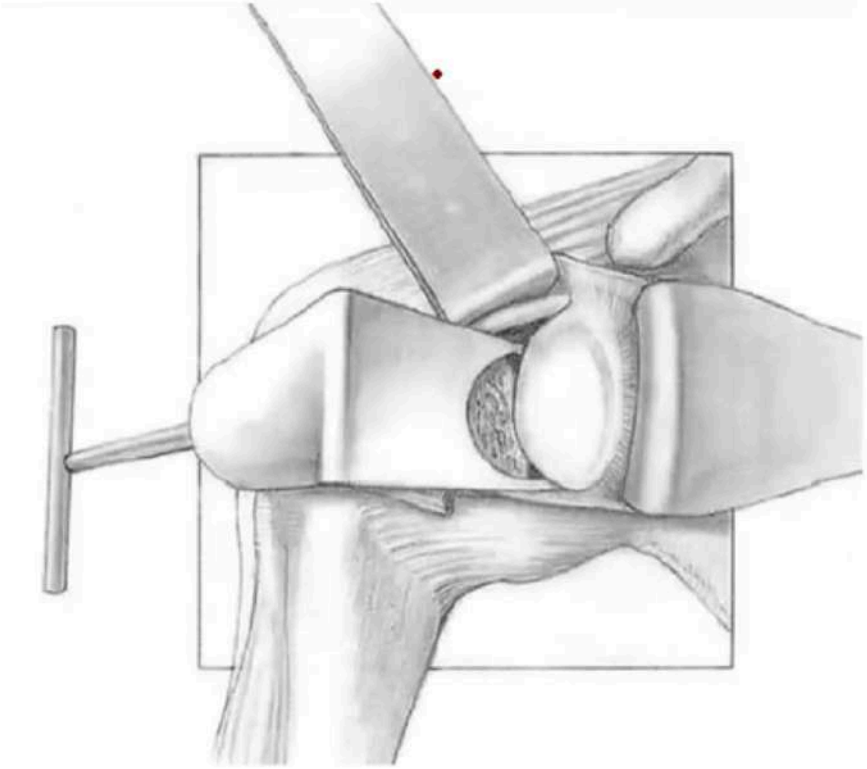


- Osteotomy level - Just proximal to rotator cuff insertion

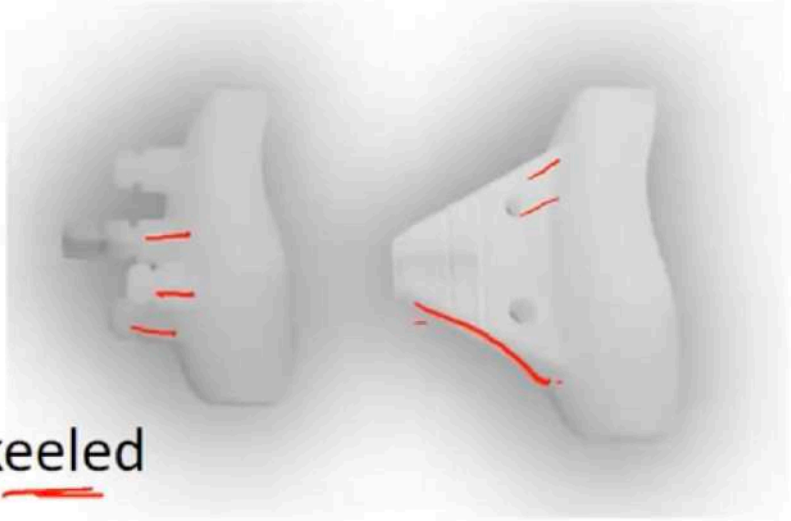
Humeral stem Insertion

- Uncemented
- Cemented

Glenoid preparation



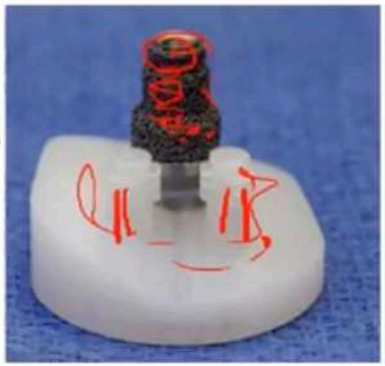
Glenoid varieties

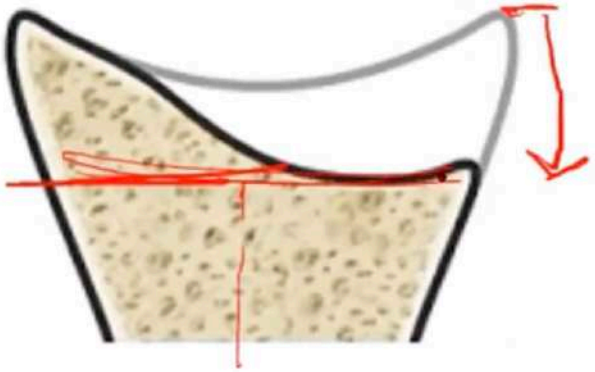


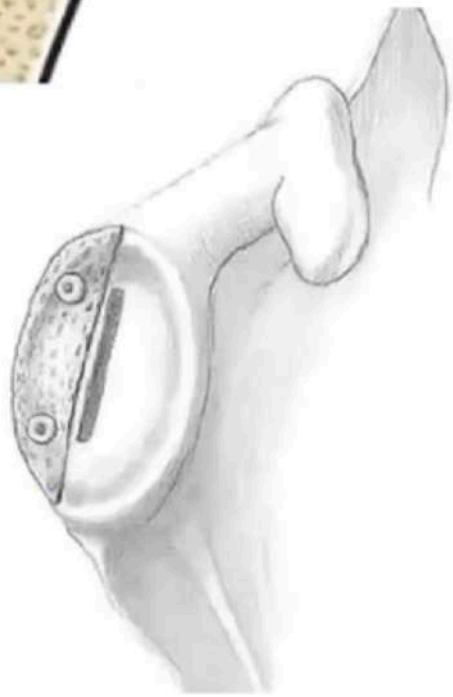
- All Poly-
  - Peg version better than keeled

- Metal Backed

- Hybrid





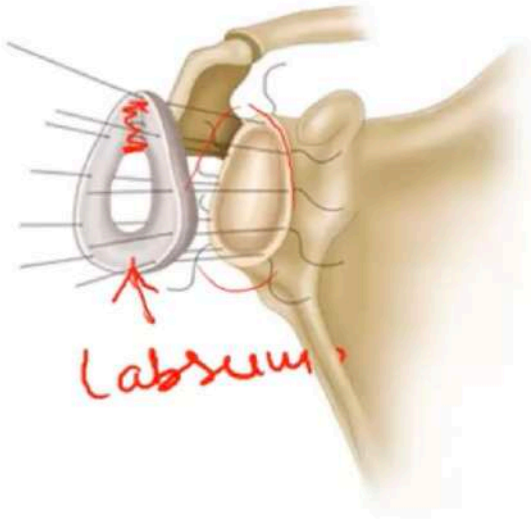


- For posterior Glenoid wear –
- Options are –

- 1. Ream excess anterior glenoid

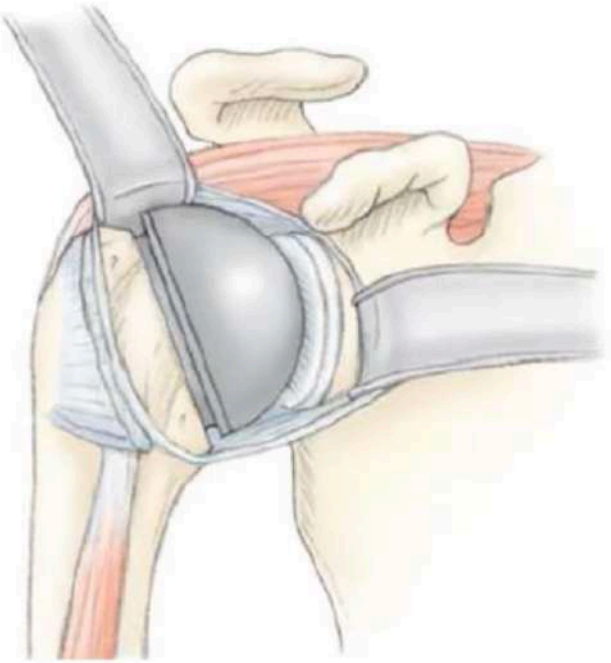
- 2. Bone graft posterior aspect

- For excessive medial wear-
- Options are –



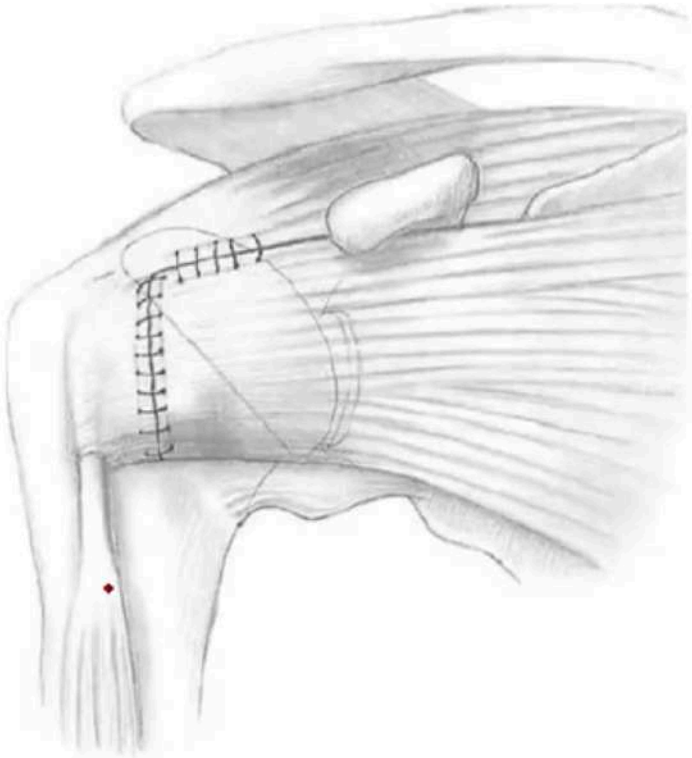
- 1. Use Hemiarthroplasty
- 2. Soft tissue interposition arthroplasty– Fascia lata or Lateral meniscus
- 3. Ream and Run arthroplasty

Humerus Prosthesis insertion



- Reduction of Joint –
- If Posterior subluxation still persists –
- Options are –
- 1. Use large Humeral head
- 2. Reduce the retroversion of humerus – Difficult
- 3. Tighten the posterior capsule
- 4. Immobilize in external rotation or delay ROM exercises

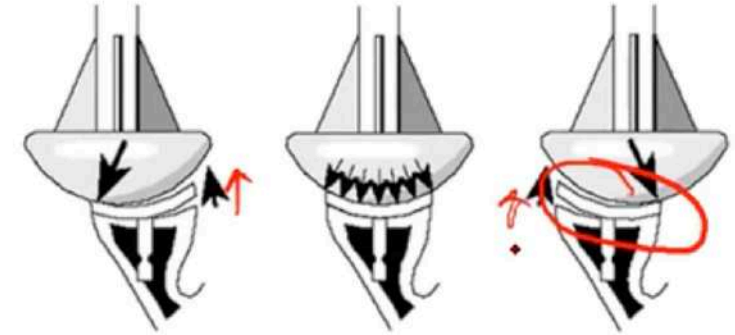
Subscap closure

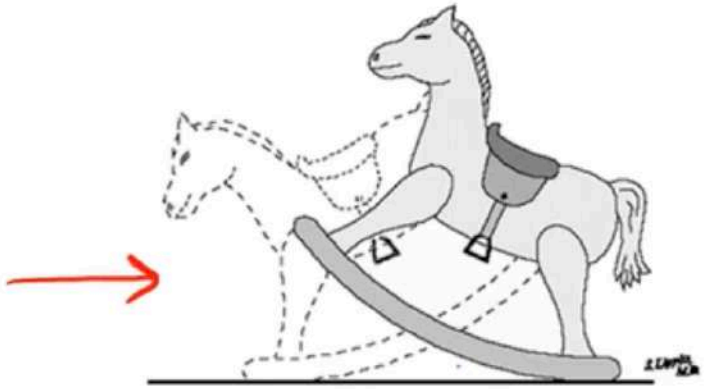


Complications

- Loosening – MC ?
- Glenoid – MC

  "Rocking Horse effect"





Complications

- Loosening – MC ?
- Glenoid – MC

  "Rocking Horse effect"

- Posterior Subluxation / Instability-

  Intraop

  Post op- Revise the component

- Anterior dislocation – Due to Subscapularis rupture-

  Repair

  Revise to Reverse shoulder arthroplasty

- Periprosthetic #- Most common intraop #- ? Humerus shaft.
- Infection
- Rotator cuff tear