

# Reverse Shoulder Arthroplasty

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EDUCATION EXHIBIT

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# Radiologic Assessment of Reverse Shoulder Arthroplasty<sup>1</sup>

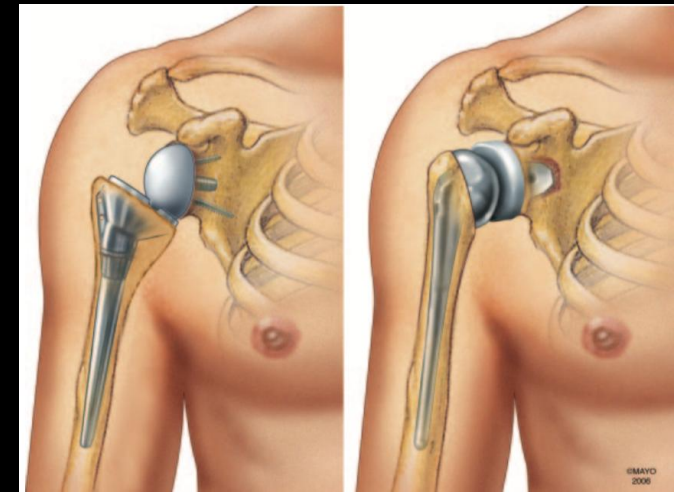
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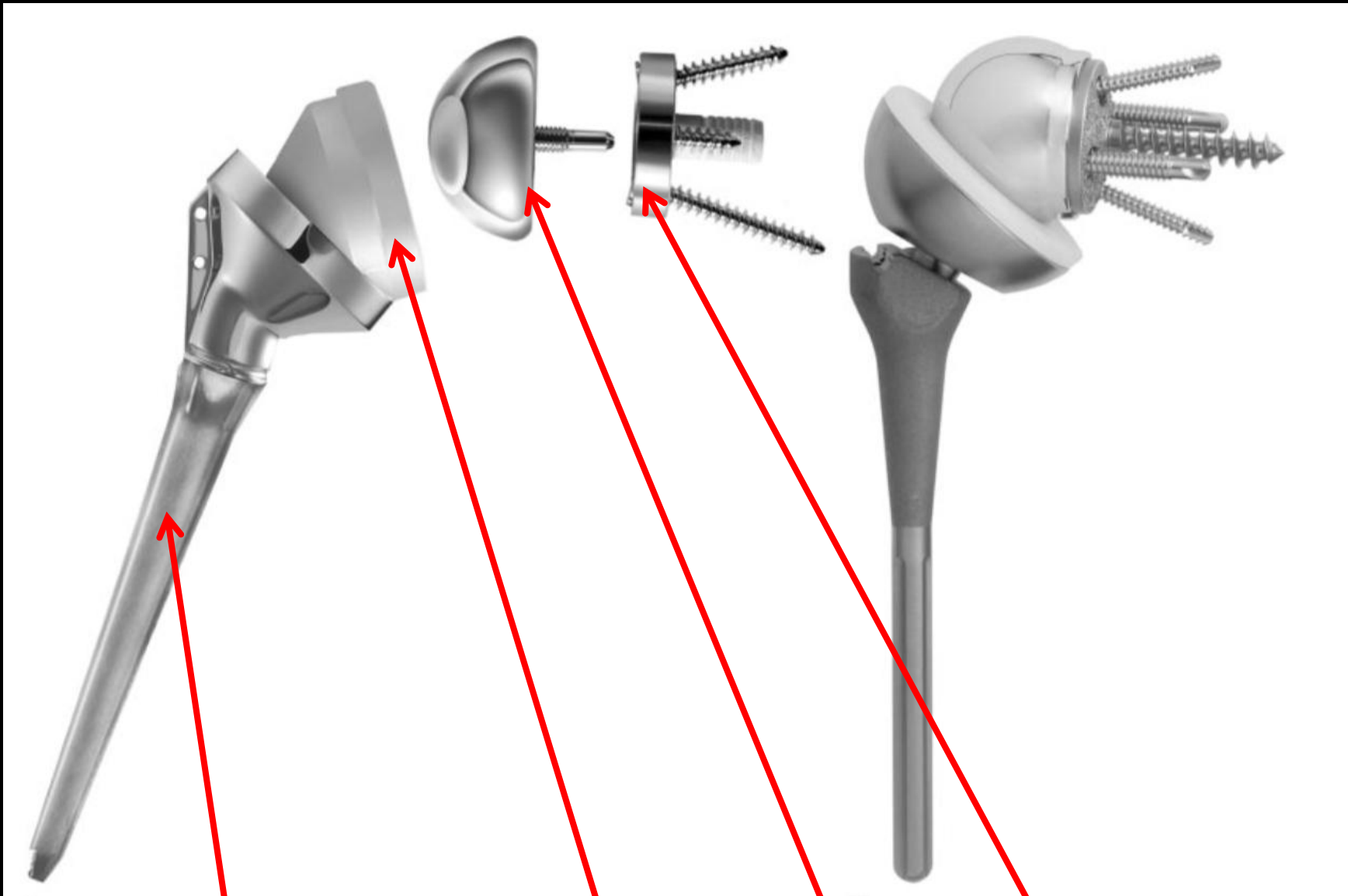
*Catherine C. Roberts, MD • Anders L. Ekelund, MD • Kevin J. Renfree,  
MD • Patrick T. Liu, MD • Felix S. Chew, MD*

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# Reverse shoulder arthroplasty

- Approved for clinical use in the United States in March 2004.
- Reverses the normal ball- socket relationship of the glenohumeral joint.
  - As a result the center of rotation is moved distally and medially, allowing for more control of the shoulder muscle by the deltoid muscle (improves leverage).
  - Allows for shoulder reconstruction in patients who have irreparable rotator cuff damage, pain, and “pseudoparalysis.”





Humeral component/stem, polyethylene insert, glenosphere, metaglene

# Pre-op evaluation

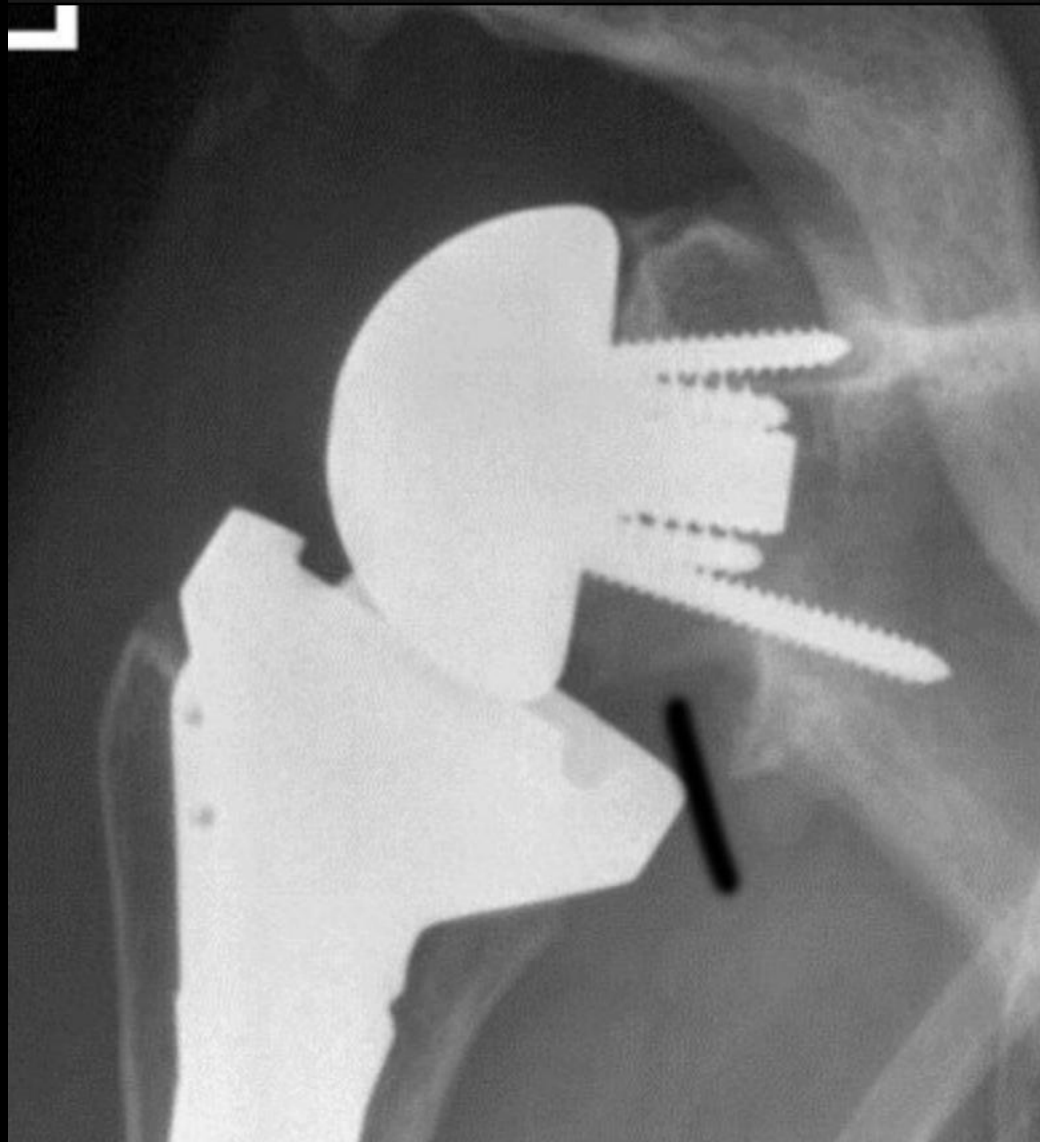


Squared off axillary scapular border

Normal sloped appearance

Squared off= metaglene must be placed higher.

Metaglene needs to be placed as low as possible to avoid impingement of humeral component and scapula (notching). Squared off is beneficial.



“Notching”

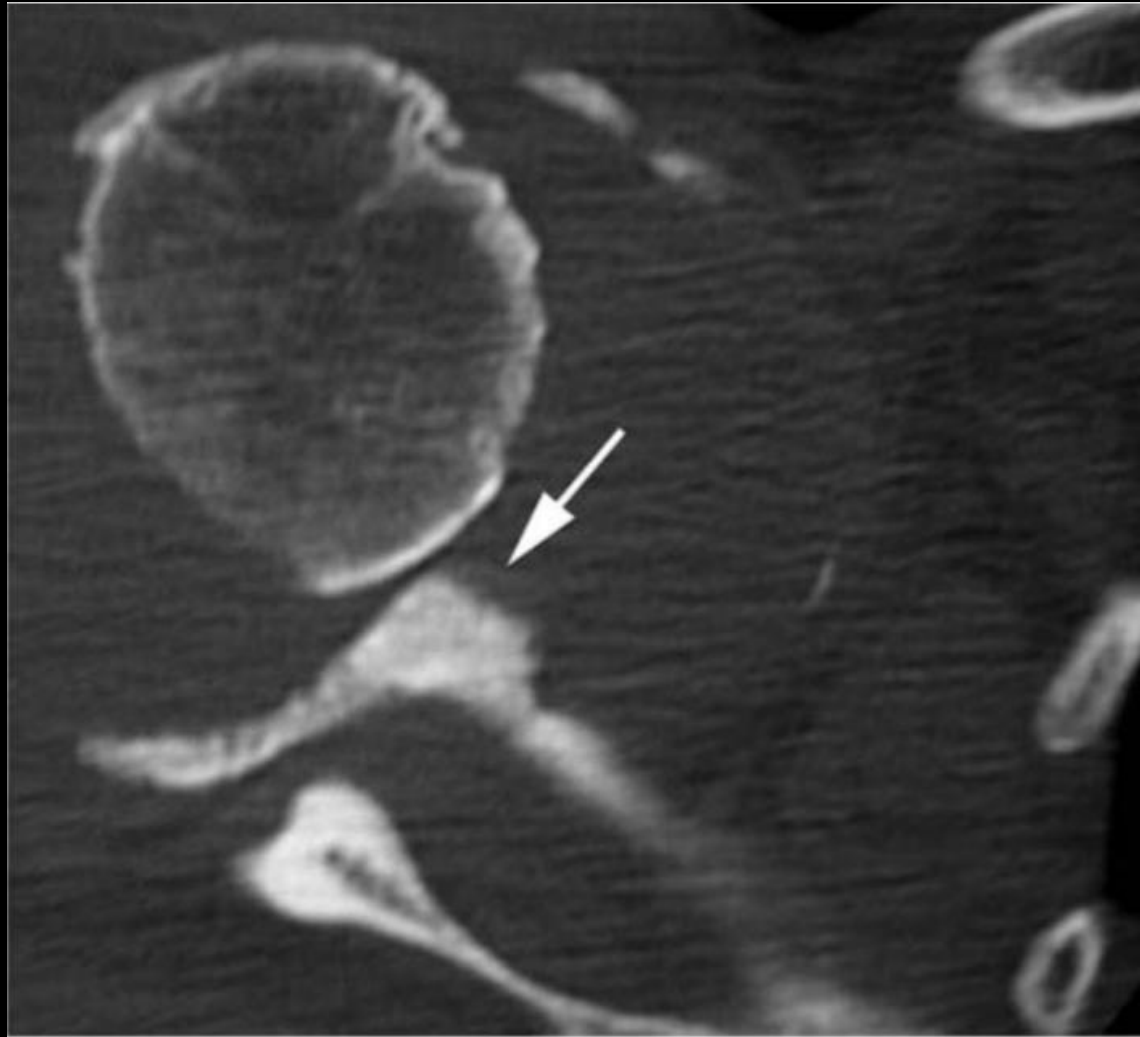
# Pre-op evaluation



- Should be at least **2cm depth** between the articular surface and the region where the glenoid narrows at the scapular neck

Glenoid bone stock

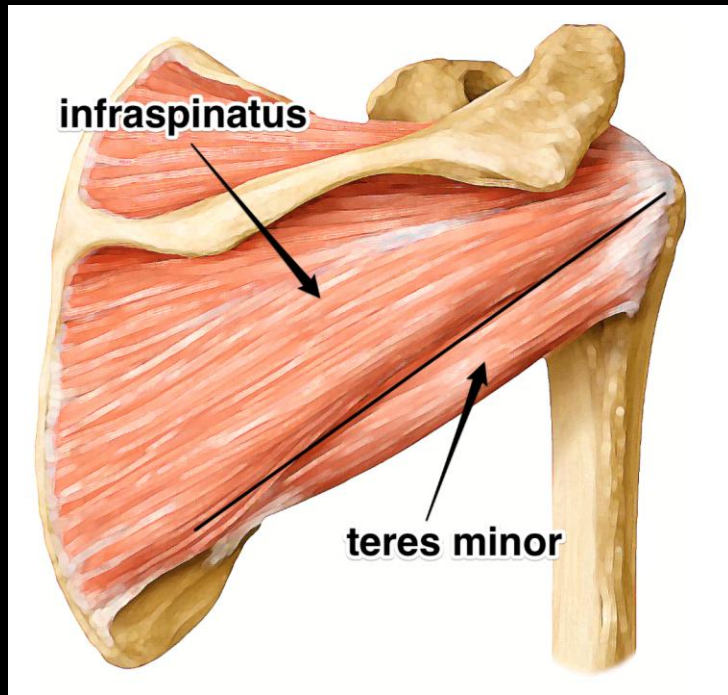
# Pre-op evaluation



Poor glenoid bone stock



# Pre-op evaluation

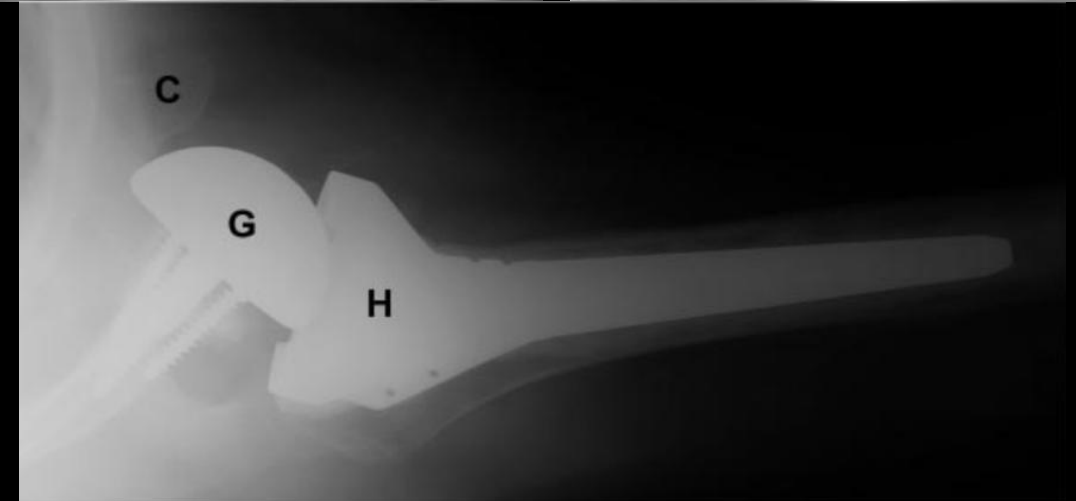
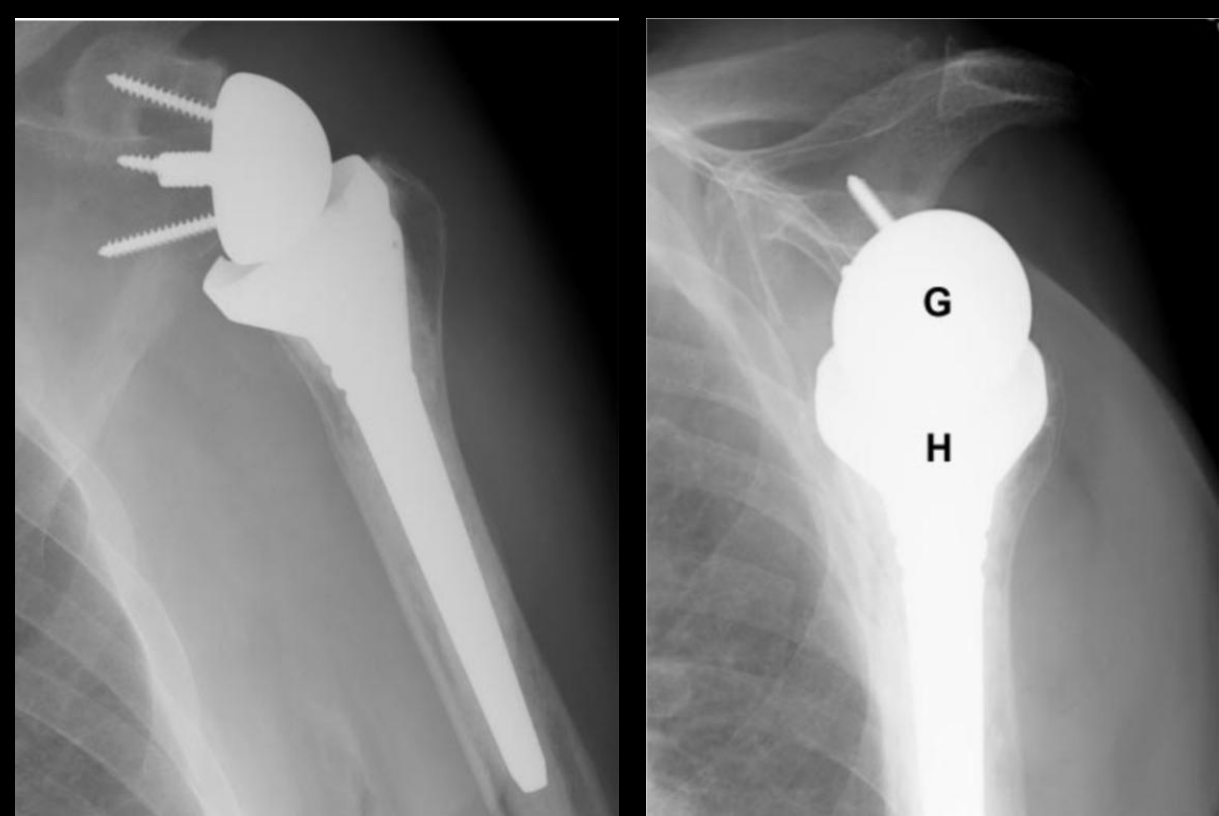


- If pre-op MRI is performed, teres minor should be carefully evaluated and commented on.
  - Patients with functioning TM have better active external rotation postoperatively than do patients with a nonfunctioning TM.

# Post-op evaluation

## Interpretation Checklist for Radiologic Evaluation of Reverse Shoulder Arthroplasty

- Are the humeral and glenosphere components aligned? If there is a dislocation, is it anterior or posterior?
- Is the metaglene placed flush with the native glenoid?
- Are the metaglene anchoring screws within the scapula?
- Are there regions of radiolucency at the component-bone or cement-bone interface?
- Are the components of the prosthesis intact?
- Is the inferior border of the scapula being eroded by the humeral component?
- Are there regions of new (heterotopic) bone formation?
- Are the supporting bones intact?

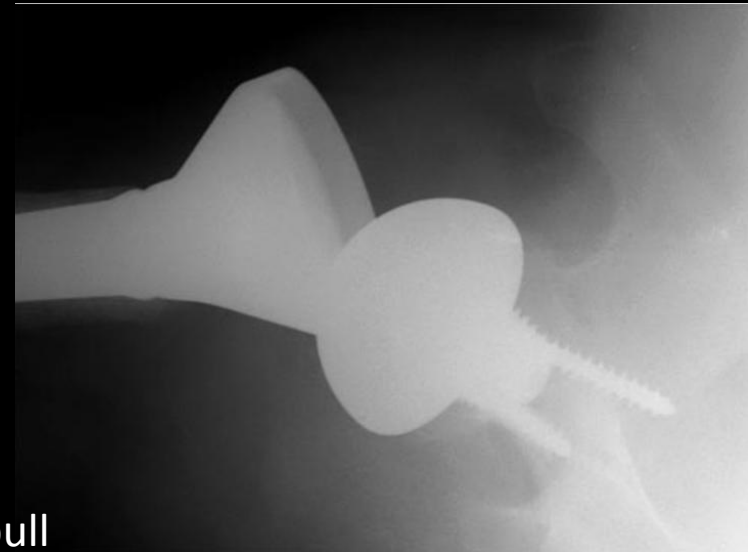
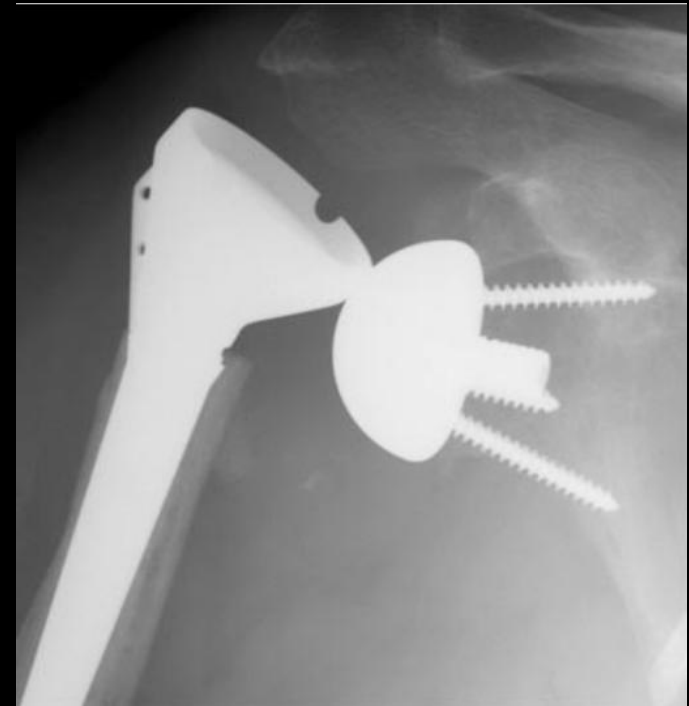


Normal positioning which change of center of articulation to allow for mechanical advantage for deltoid muscles to abduct shoulder past horizontal

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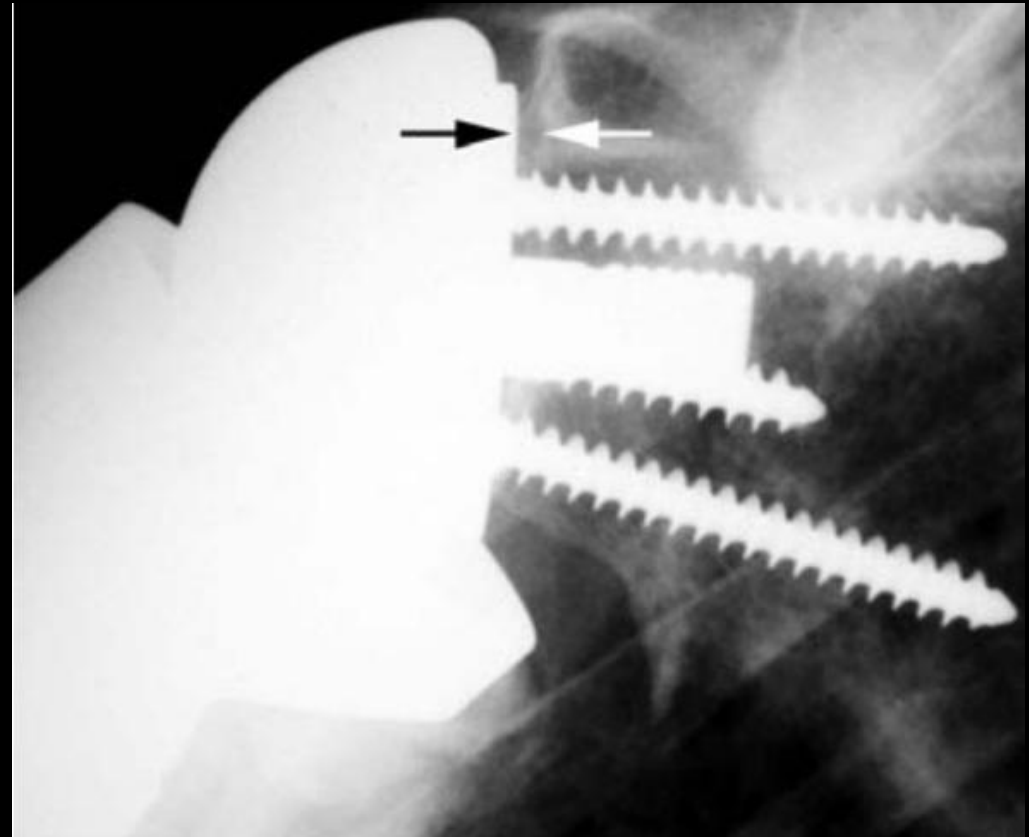


Anterior superior displacement of humeral component because of deltoid pull

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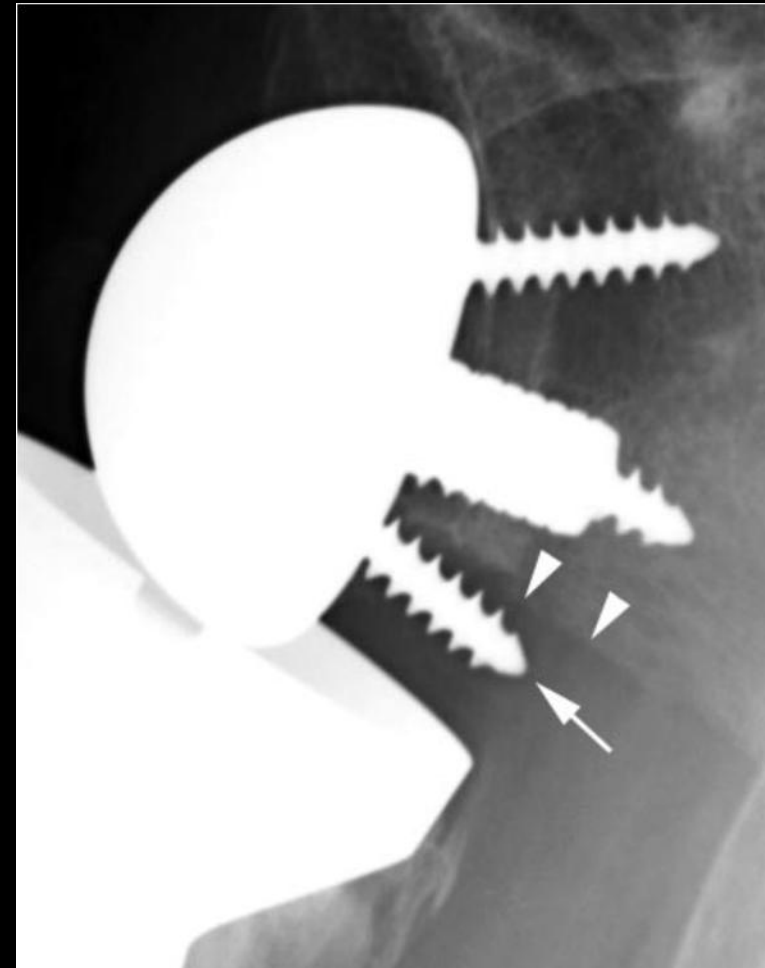


Lucency around metaglene (not flush)

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Metaglene inferior screw breaches scapular cortex

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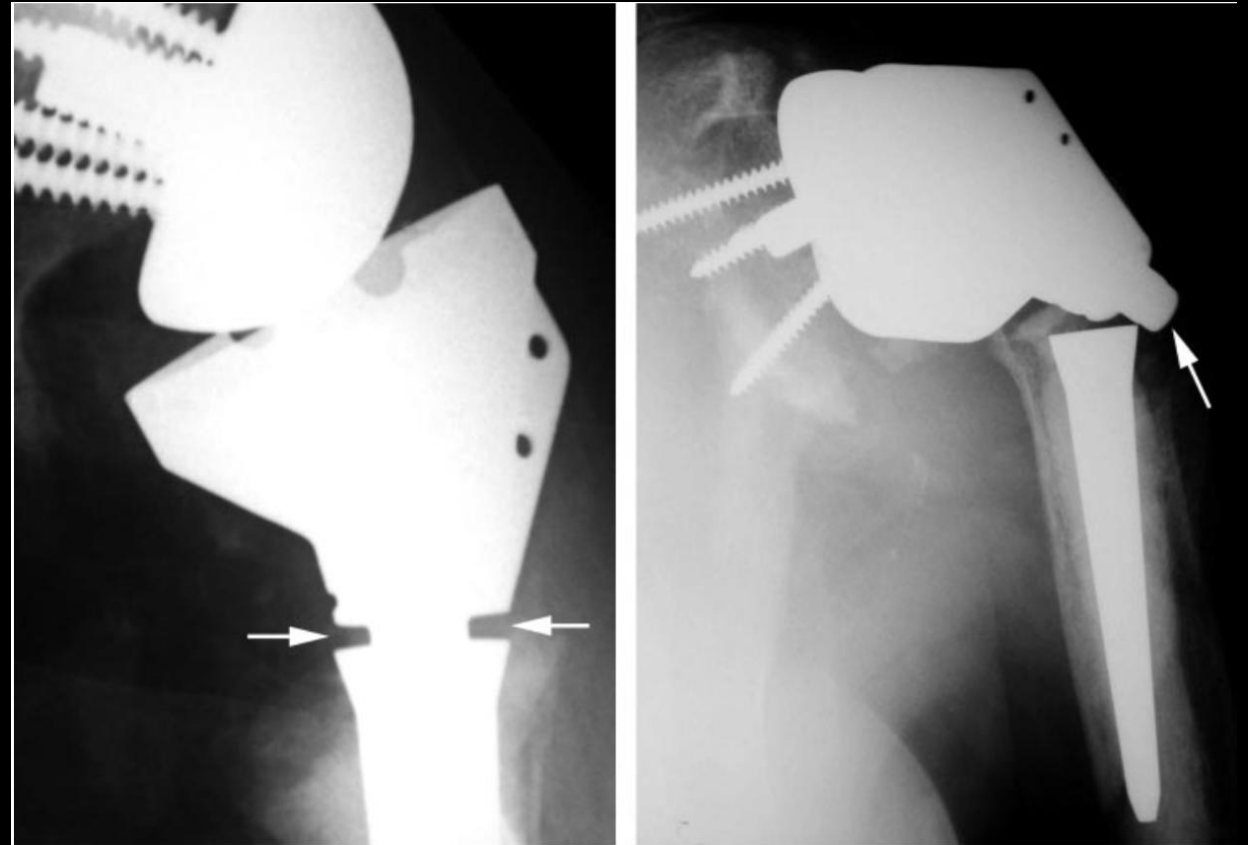


Lucency at bone cement interface around humeral component

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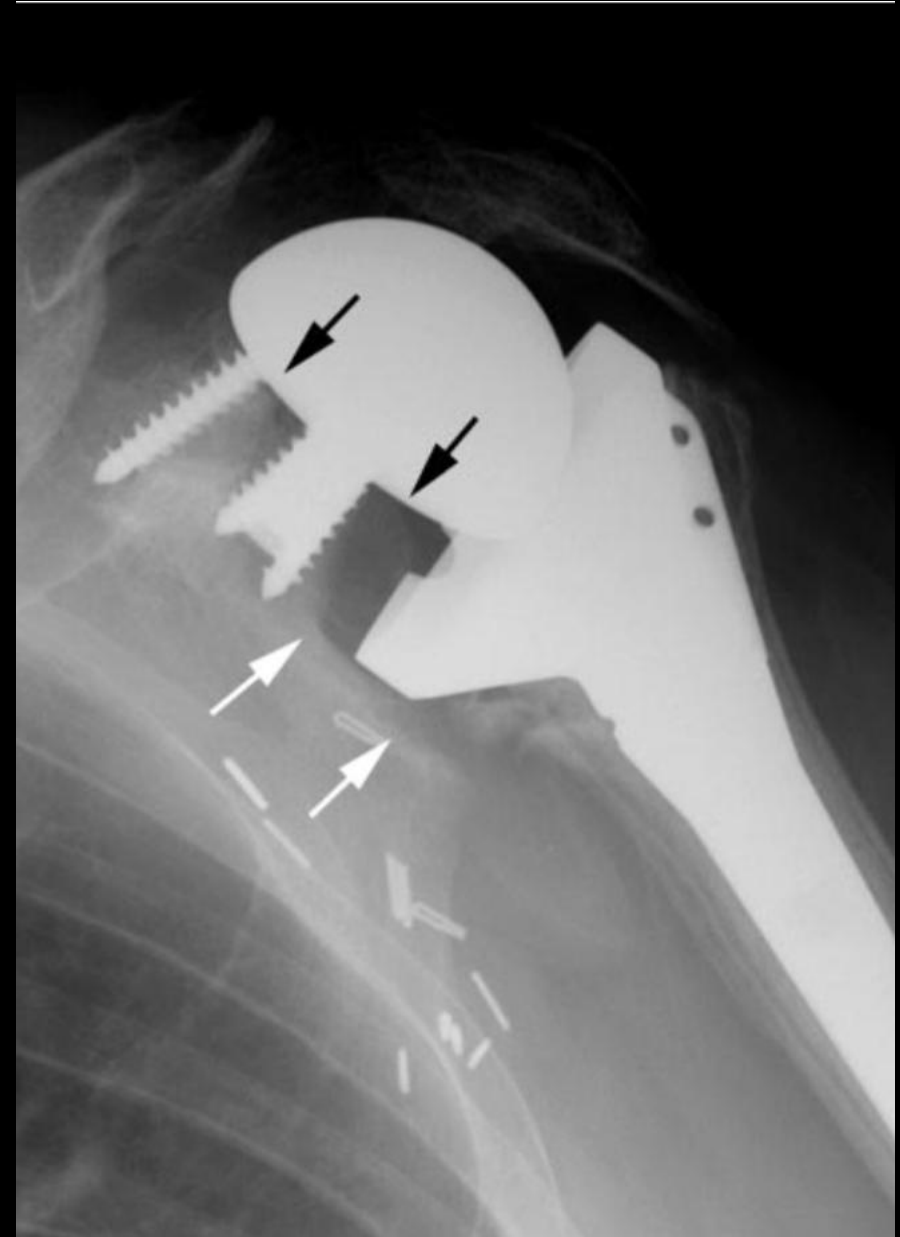


Separation of humeral stem components

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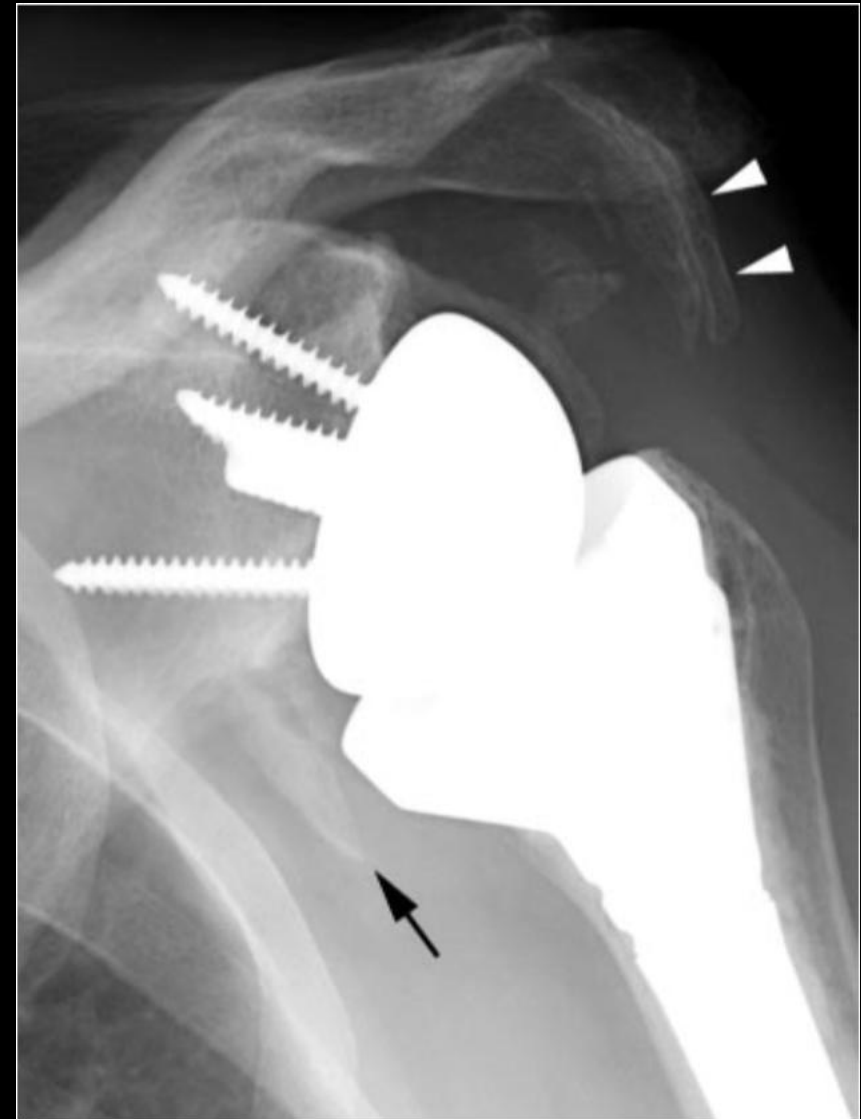
Inferior scapular border impingement and erosion



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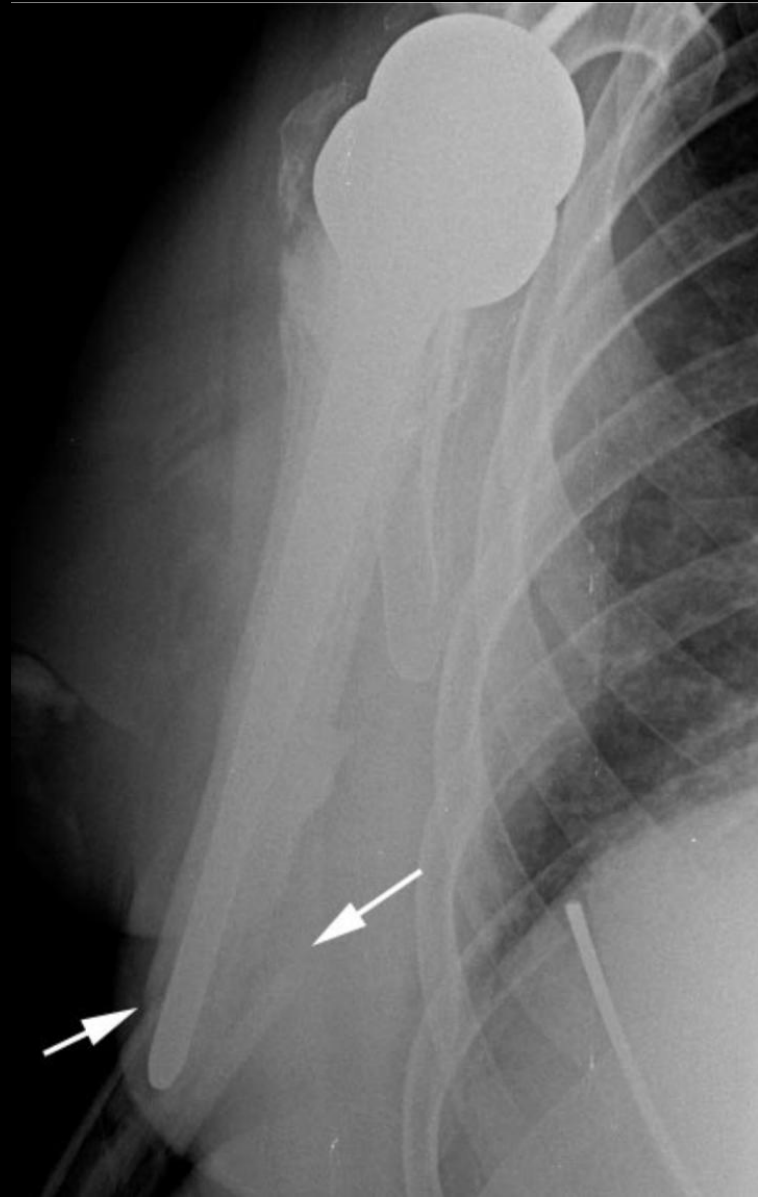


Heterotopic ossification developing around arthroplasty

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Periprosthetic fracture of humeral diaphysis