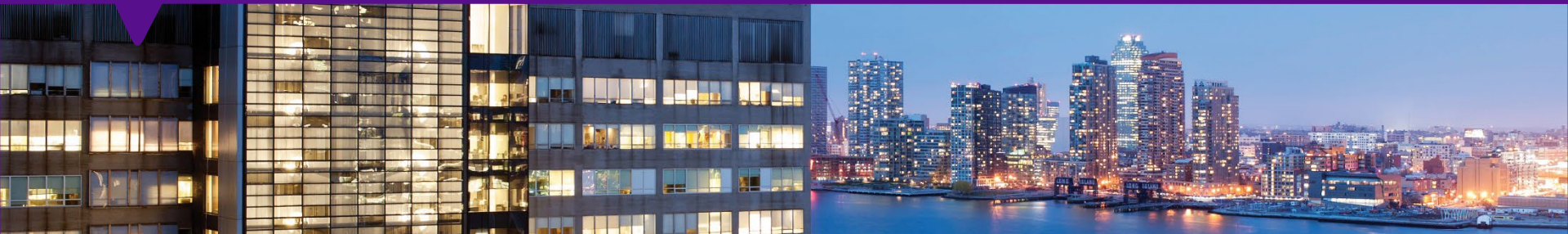


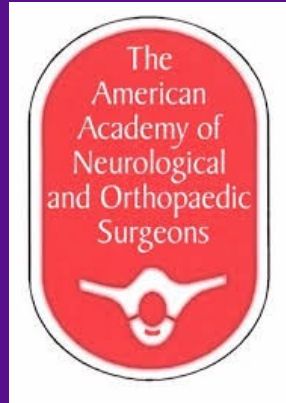
Osteonecrosis of the Humeral Head 3 Years Following Fracture Fixation of a 4-Part Proximal Humerus Fracture: A Case Report

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Presented by: **Luke B Schwartz BS**



**I (and/or my co-authors)
have nothing to disclose.**



Introduction

- What is osteonecrosis (ON) ?
 - Avascular necrosis (AVN), or osteonecrosis refers to bone death due to disrupted blood supply
 - It leads to structural collapse, joint dysfunction and pain
- Pathophysiology of ON
 - Interruption of vascular supply → bone ischemia → necrosis → collapse of articular cartilage → Joint dysfunction



Case Overview

- Patient Demographics
 - 70 year old female, active, no major comorbidities.
- Injury Description
 - Mechanism: Fall onto an outstretched hand.
 - Fracture Type: 4-part valgus-impacted proximal humerus fracture (per Neer classification).
 - Challenges: High risk of vascular disruption due to fracture complexity

Initial Management

- Treatment Plan
 - Open Reduction Internal Fixation (ORIF).
 - Use of a locking plate to stabilize fragments.
 - Calcium phosphate cement augmentation for additional support.
- Short-term outcome
 - At 1-year follow-up, the patient had near-complete functional recovery.

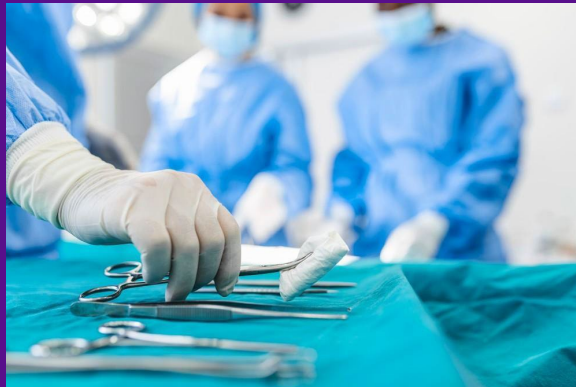
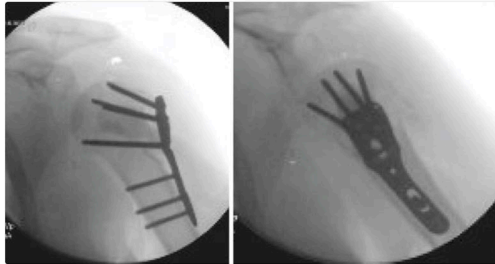


Figure 1.



Initial X-rays AP, Y and axillary views of proximal humerus demonstrated a 4-part valgus impacted fracture.

Figure 2.



Immediate post-operative fluoroscopy, a. AP in external rotation and b. AP in internal rotation.

Figure 3.



X-rays, AP, Y, and axillary views at 12-month follow-up demonstrate fracture healing with no evidence of ON.

Development of Osteonecrosis

- Onset of Symptoms (3 years post-surgery)
 - Sudden onset of shoulder pain
 - Progressive stiffness and reduced range of motion
- Diagnostic Findings
 - X-ray: Humeral head collapse, sclerosis
 - MRI: Confirms ischemic changes, subchondral collapse

Figure 4.



X-ray, AP, Y, and axillary views at 3 years post-operative demonstrate an incongruous glenohumeral joint with flattening of the humeral head.

Potential Contributing Factors

- Post-traumatic ON
 - Occurs when vascular supply is compromised after fractures.
- Corticosteroid Exposure
 - Patient had a 3-month course of prasterone (steroid), a possible risk factor for ON.

The “Double Hit” Hypothesis

- First Hit: Fracture disrupts humeral head blood supply.
- Second Hit: Corticosteroids impair bone remodeling, exacerbating ischemia.



Clinical Implications

- Extended follow-up for high-risk patients
- Caution when utilizing corticosteroids in orthopedic patients
- Early recognition may allow joint-preserving interventions

Conclusion

- ON can occur years after fracture fixation
- Multifactorial risk assessment is essential
- Prolonged follow-up may improve detection and management

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By the Numbers



EDUCATION

