

# Arthroscopic Reconstruction of Comminuted Glenoid Fractures Using Distal Tibia Allograft Results in Excellent Post-Operative Outcomes

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# Disclosures

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## Dr. Jose Castillo de la Peña:

- Nothing to disclose.

## Dr. Ivan Wong:

### *Speakers Bureau*

- Smith and Nephew, DePuy Synthes Mitek Sports Medicine, Linvatec, Bioventus

### *Research Support*

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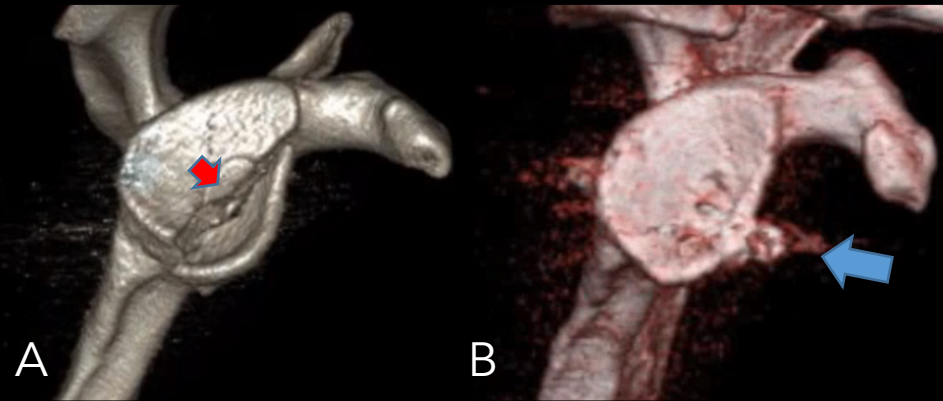
# Glenoid Fracture Management

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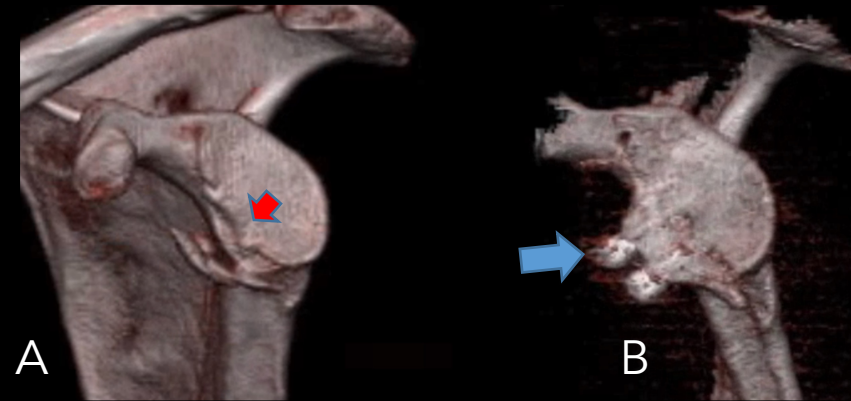
- Glenoid fractures occur in two main settings, instability and high energy trauma.<sup>1</sup>
  - can lead to recurrent dislocations, mal-union, persistent pain, and early onset of osteoarthritis.<sup>2</sup>
- Ideberg-Goss Type Ia are fractures involving the anterior glenoid with out extension to the neck or scapular body.<sup>3</sup>
- Non-operative management has a limited role in these injuries.<sup>4</sup>
- Open and arthroscopic techniques have been described to treat these fractures but there is no consensus in the literature on the gold standard.<sup>1</sup>
- Open surgery has been linked to higher complication rate.<sup>5</sup>
- Fracture fixation with suture anchors has good outcomes, but concerns exist regarding cartilage damage that may cause increased progression to arthritis.<sup>6,7</sup>
- Arthroscopic Anatomic Glenoid Reconstruction (AAGR) with distal tibia allograft is a safe procedure and it is a reliable alternative in certain fracture patterns.<sup>8,9</sup>

# Primary Objective

- To analyze and compare the radiographic and clinic outcomes of arthroscopic fracture fixation (AFF) vs. AAGR with allograft for Type Ia glenoid fractures (Red arrow).



Before (A) and after (B) fracture fixation with suture button (Blue arrow)



Before (A) and after (B) fracture fixation with AAGR and screws (Blue arrow)

# Patient Selection

Assessed for  
eligibility (n=41)

Type Ia glenoid fractures treated surgically between 2013 and 2021.

Excluded  
(n=3)

Patients treated with open surgery.

AFF (n=12)

Primary Outcome: Radiographic outcome (glenoid width, fracture pattern, and healing) using axial CT scans.

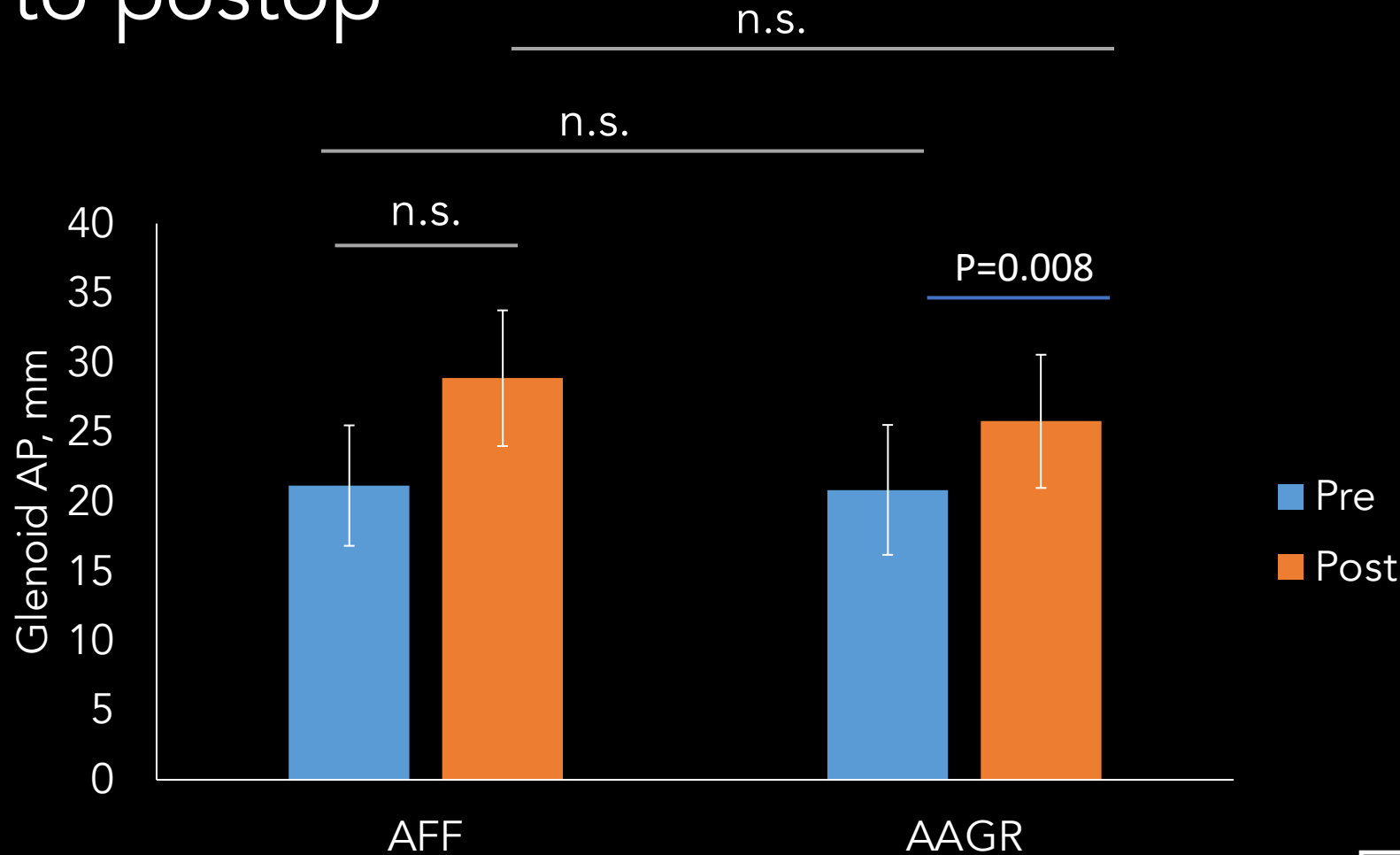
AAGR (n=26)

Secondary Outcome: Patient-reported outcomes (PROs) as measured using the Western Ontario Shoulder Instability (WOSI) score.

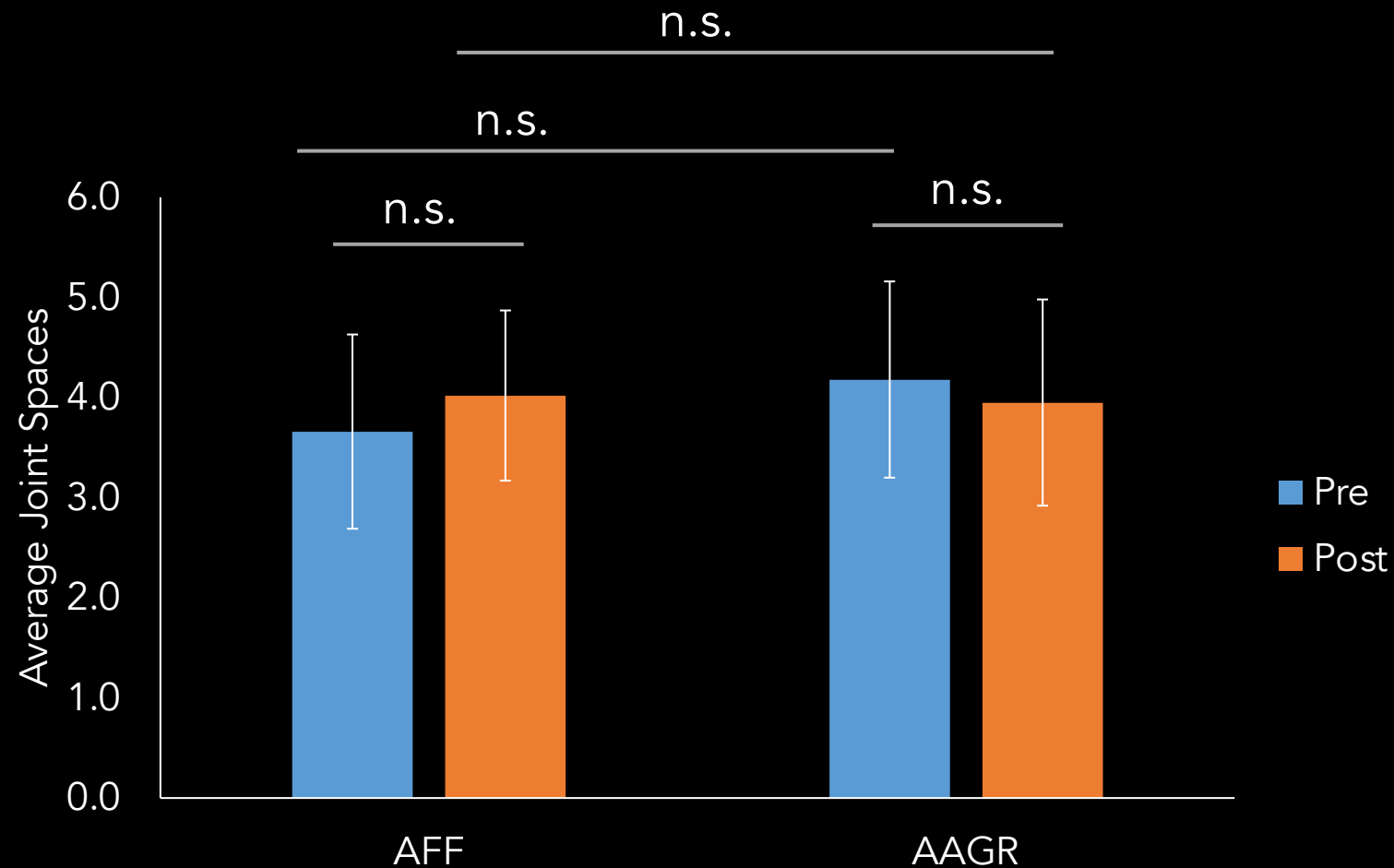
# Demographics

Variables	AFF	AAGR	P values
Age (years)	54.82±9.49	50.72±16.59	0.341
BMI (kg/m <sup>2</sup> )	29.43±6.81	29.32±6.11	0.962
Gender – Male (N)	10 (83.3%)	16 (61.5%)	0.268
Post CT time (years)	1.27±1.53	0.77±0.43	0.439
Time from fracture to surgery (days)	17.25±15.31	33.69±32.51	0.106
Comminution, n (%)	4 (33.3%)	16 (69.6%)	<b>0.040</b>
Glenoid bone loss (%)	32.90±11.63	32.54±13.37	0.938

AAGR had comparable post-op glenoid AP dimensions and a significant improvement from preop to postop

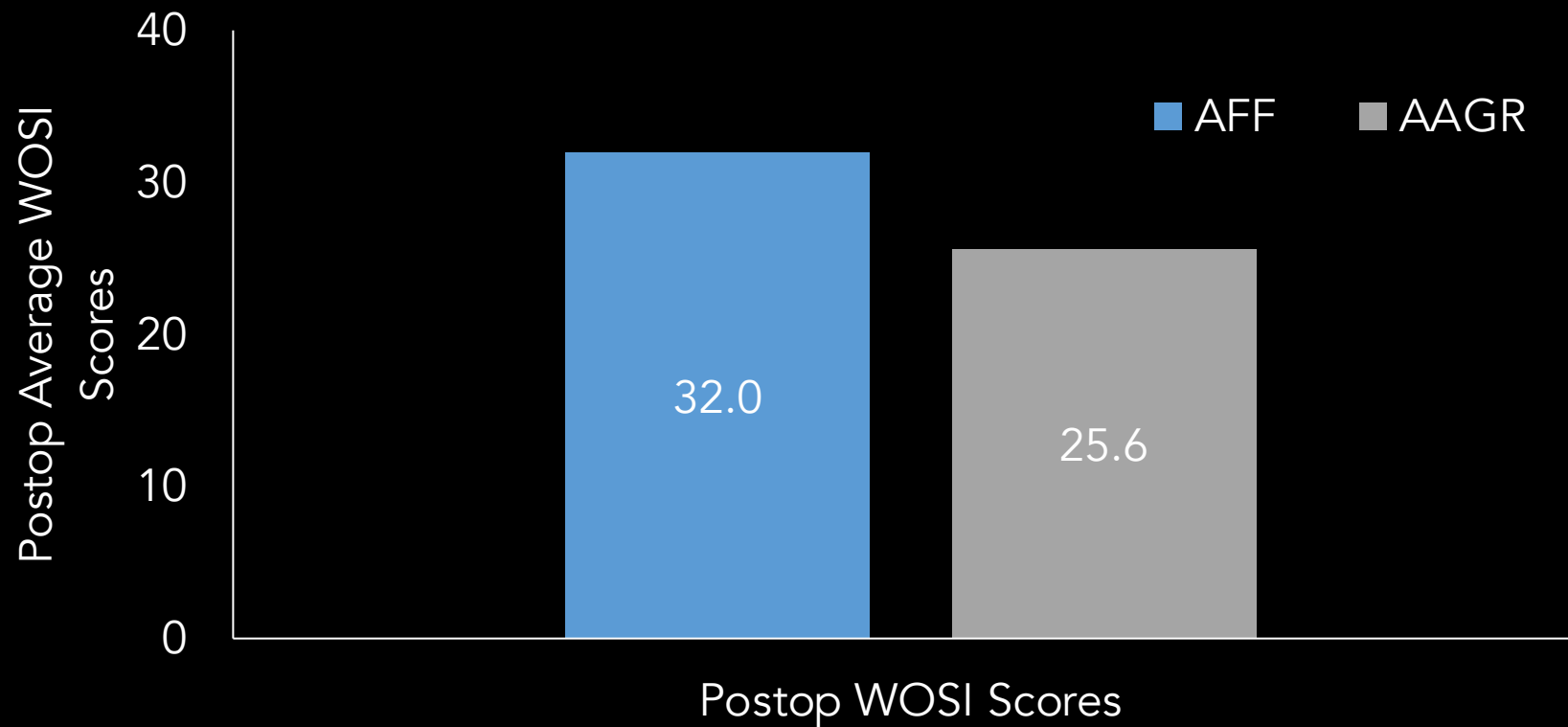


# AAGR had comparable postop joint spaces as compared to AFF



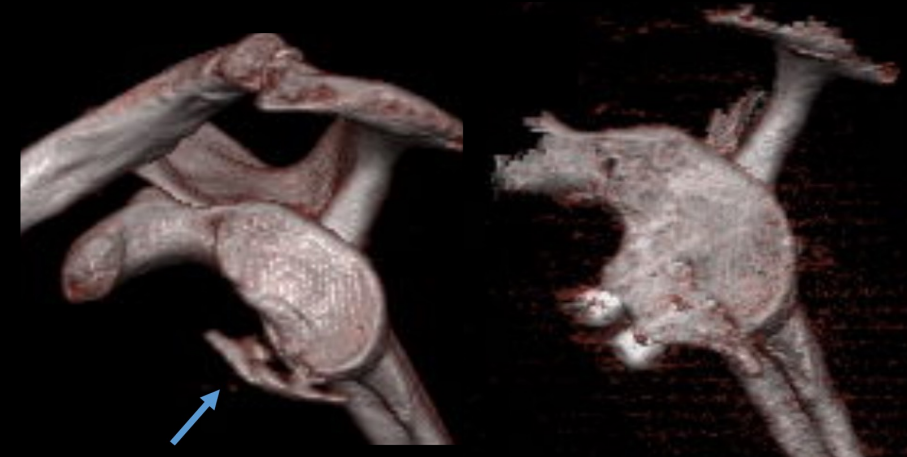


# Similar PROs in both groups with no significant difference in WOSI score at the end of the follow-up



# Both AAGR and AFF successfully restored the glenoid

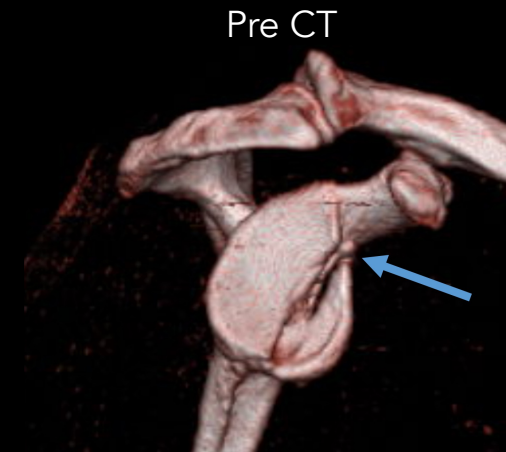
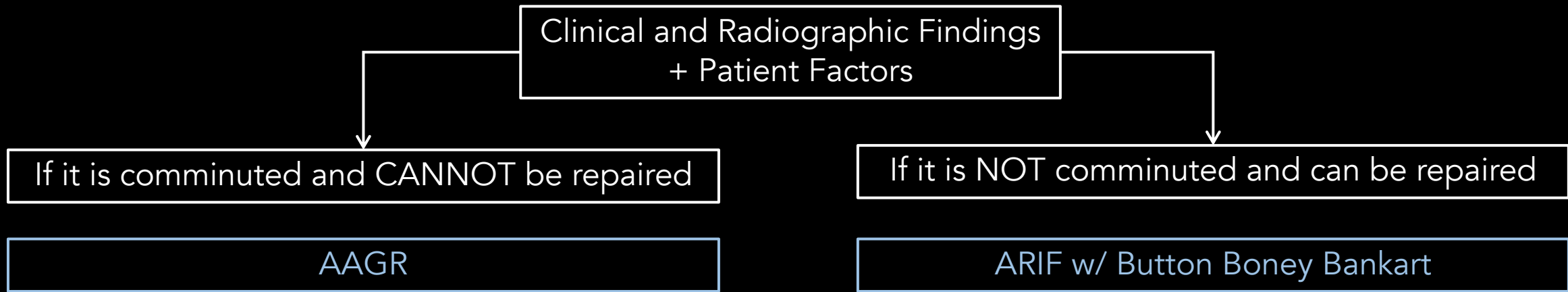
- **AFF and AAGR have comparable promising radiographic and PROs**
  - There was an increase in glenoid AP dimensions from pre to post
  - Both AAGR and AFF preserved joint spaces even though AAGR had a slight average increase while AFF showed a slight decrease
  - They had comparable WOSI scores at the latest follow-up appointment
- A significant difference between groups was found in comminution and medial-lateral distance of the fragment but comparable post-op results of AFF and AAGR indicate that:
  - Complex, comminuted fracture patterns are suitable for replacement with distal tibia allograft, expecting similar result to those who undergo AFF.



Glenoid fracture with comminuted pattern

Postop AAGR

# Due to comparable results, comminution should be a key consideration for surgical planning:



# Summary

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## AAGR vs AFF:

- Similar restored glenoid dimensions
- Similar PROs
- Low complication rates
- Preserved joint spaces

Surgical decision is based on if it is comminuted and if it can be repaired vs needed to be reconstructed



Post XR - AAGR



Post XR - Button

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