

Distal Clavicle Bone Augmentation for Shoulder Instability Case Series



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Background

Glenoid bone loss remains one of the most significant risk factors for recurrent instability following surgical management of glenohumeral instability. Controversy exists regarding the optimal procedure for reconstructing glenoid bone loss to address recurrent glenohumeral instability. The distal clavicle autograft (DCA) bone block procedure has garnered increasing popularity as an easier, more cost-effective, and safer alternative to traditional procedures such as the Latarjet.

This study aims to report the clinical outcomes of a single-surgeon case series of patients managed with arthroscopic DCA for glenoid bone loss with suture button fixation at a minimum follow-up of one year.

Methods

- A retrospective review was performed of all cases of recurrent anterior glenohumeral instability treated with DCA by a single surgeon between January 2020 and December 2023.
- Patients were included if DCA was performed arthroscopically and secured to the glenoid with two suture buttons for fixation.
- All patients had a minimum follow-up of one year.
- Exclusion criteria included: full-thickness rotator cuff tears at the time of injury, concomitant proximal humerus fractures other than a Hill-Sachs defect, neuromuscular disorders, lack of advanced imaging (CT, MRI), or underwent DCA with screw fixation.

Methods

- All patients underwent a computed tomography (CT) scan with a 3-dimensional (3D) reconstruction of the glenoid to characterize the bone loss.
- Glenoid bone loss, measurement of the Hill-Sachs interval, and characterization of the Hill-Sachs lesion as on-track or off-track were performed for all patients based on the 3D reconstruction and best-fit circle method (Figure 1).
- The length, width, and thickness of the coracoid and distal clavicle for each patient were measured on the CT scans.

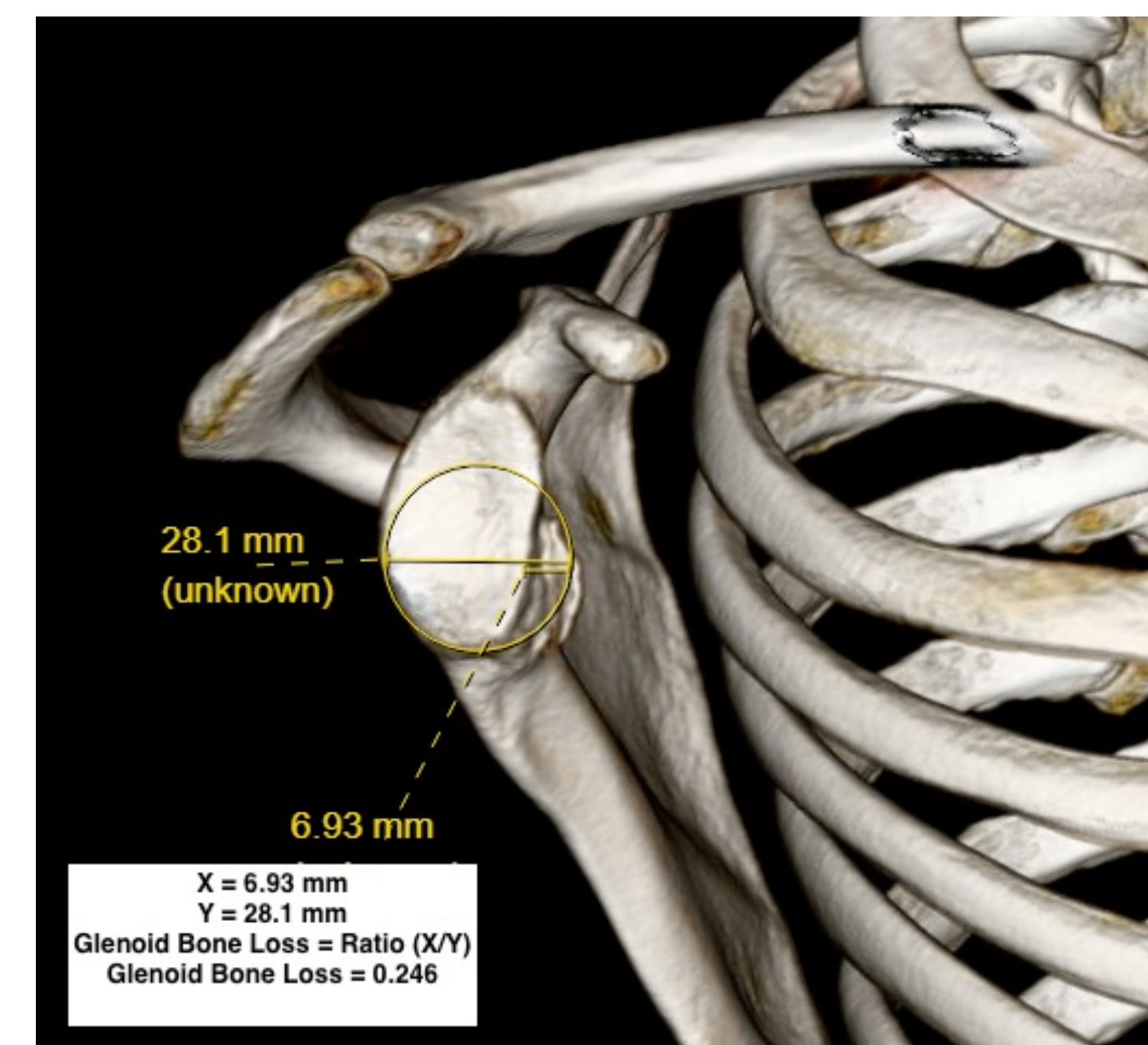


Figure 1. Three-dimensional computed tomography (CT) reconstruction of the glenoid demonstrating 24.6% glenoid bone loss.

Results

- A total of seven arthroscopic DCA fixed with suture buttons were performed between 2020 and 2023 and met all inclusion criteria. The mean follow-up time was 28 months (range, 14-39 months). Six patients were males (85.7%) with a mean age of 33.6 years (range, 20-53 years).
- All patients sustained multiple traumatic dislocations and were treated conservatively prior to surgical intervention.
- At the time of surgery, the mean glenoid bone loss was 26.8%, and, at harvest, the average length, thickness, and width of the distal clavicle autograft were 22.8mm, 11.9mm, and 10mm, respectively (Table 1).

Results

- On pre-operative CT evaluation, all patients were found to have a Hill-Sachs deformity, three of seven (42.9%) had on-track lesions, and five of seven (71.4%) had bony Bankart lesions, with the remaining having only soft-tissue Bankart lesions (Table 1).
- At the latest follow-up, no patients had evidence of recurrent instability or transient neurological deficits. One patient had a loose posterior extracapsular button noted on radiographs without clinical complication.

Table 1. Pre-operative CT measurements and evaluations

Patient	Coracoid			Distal Clavicle		Glenoid Bone Loss (%)	Hill-Sachs Interval (mm)	Hill-Sachs (Y/N)	Bony Bankart (Y/N)	On-track/Off-track
	Length (mm)	Width (mm)	Thickness (mm)	Length (mm)	Thickness (mm)					
1	19.7	11.6	9.87	23.6	11.2	34	17.5	Y	Y	Off-track
2	20.1	8.57	11.3	19.5	12.2	32	11.8	Y	N	On-track
3	31.7	12.5	12.8	21.1	13.7	21	26.5	Y	Y	Off-track
4	19.4	10.8	11.2	22.5	13.4	39	18.3	Y	Y	Off-track
5	20	11	9.53	19.8	11.7	25	13.5	Y	Y	On-track
6	23.5	10.6	10.8	27	10.6	29	18.7	Y	Y	Off-track
7	30.8	13.2	15.2	27.3	10.3	15	16.3	Y	N	On-track
Average	24.2 [19.9-27.2]	11.1±1.4	11.8±1.9	22.8±3.1	11.9±1.3	26.8±8.1	17.5±4.7			

Y, yes; N, no; mm, millimeters

Conclusions

- The use of a distal clavicle autograft with suture button fixation arthroscopically is a promising solution for managing patients with recurrent glenohumeral instability associated with glenoid bone loss.
- Future directions would be pertinent to include patient-reported outcomes and utilizing post-operative CT imaging to evaluate for remodeling.