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The Coraco-Gleno-Scapular Line - A Simple Diagnostic Tool for assessing critical glenoid bone loss

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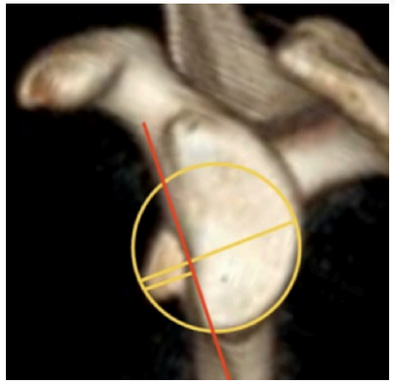
Faculty Disclosure Information

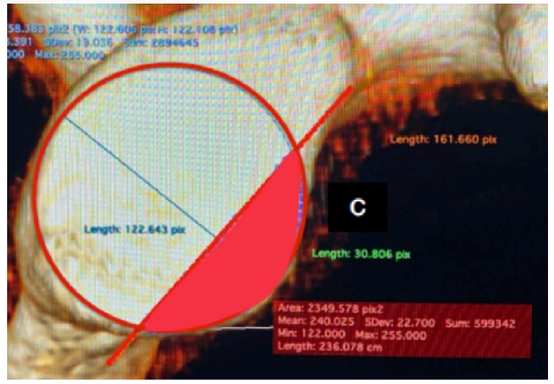
- No Disclosures

BACKGROUND

CURRENT METHODS OF ASSESSING GLENOID BONE LOSS



GLENOID INDEX



SURFACE AREA PICO METHOD

Based on BEST fit circle - Underestimate/Overestimate

Does not consider the Anterinferior region of glenoid - main region to be involved in dislocation

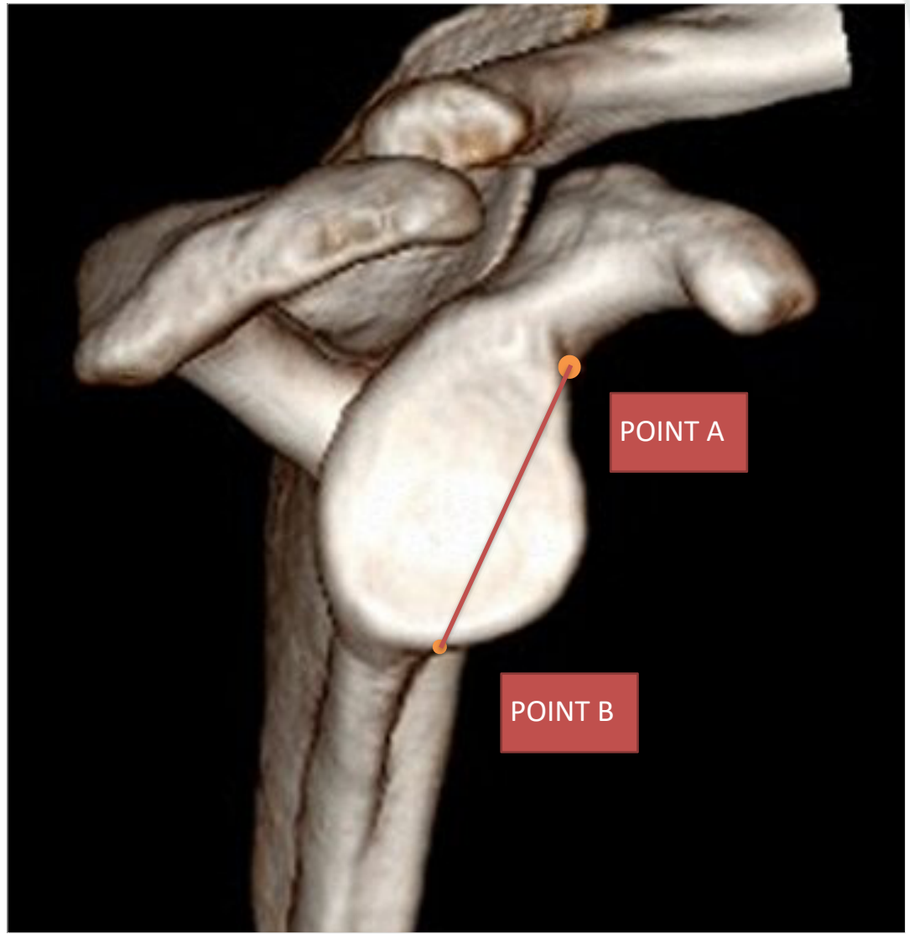
INTRODUCING

Coraco-Gleno-Scapular Line

The CGS line is a radiological line drawn on glenoid enface view by connecting two points:

Point A - Anteroinferior base of the coracoid process

Point B - Anterior border of the Scapula meeting on glenoid



Coraco-Gleno-Scapular Line

- Based on our study, it is shown that the mean glenoid area anterior to the CGS line ranges from **22% to 27%.**

Defects that cross the CGS line - represents critical glenoid bone loss - i.e >20%

Methodology

OBJECTIVE OF THE STUDY

To validate CGS line as a diagnostic tool to assess critical glenoid bone defects

STUDY DESIGN

Prospective Observational study

SAMPLE SIZE

50 Pathological shoulders

Inclusion criteria	Exclusion criteria
Patients with Recurrent shoulder Dislocation	Prior shoulder surgery
Glenoid bone loss > 10%	

Study Protocol

3DCT was obtained for cases of shoulder instability

↓

Glenoid defect > 10% was selected

↓

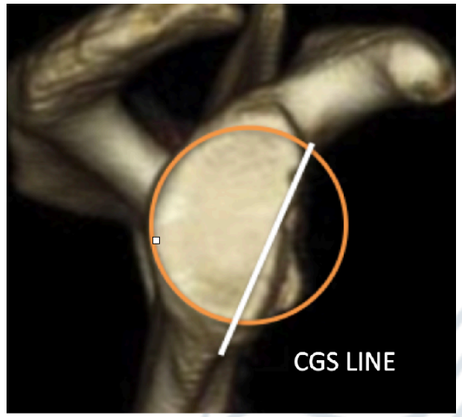
The shoulder enface view was obtained

↓

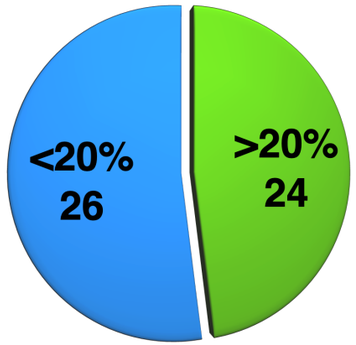
Best fit circle and CGS line was drawn

↓

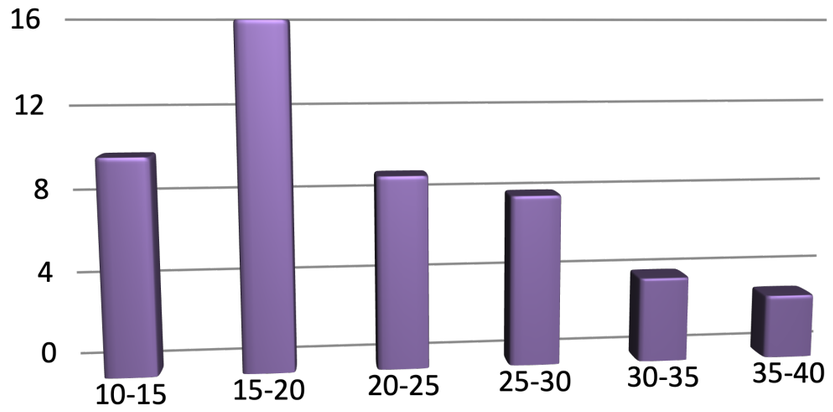
The Glenoid defect area was calculated using both PICO and CGS line method



Results - PICO method



Out of 50 shoulders, 24 shoulders had glenoid defect more than 20%



The percentage of the bone loss as measured using the PICO method ranged from 14.4% to 35.7%, with a mean of 22.1% (SD-3.34).

Results - CGS line method

GLENOID BONE DEFECT	CGS line crossed	CGS line not crossed	Total
> 20 % Defect	23	1	24
< 20 % Defect	1	25	26

Sensitivity - 95.8 %

Specificity - 100

Specificity - 96.1 %

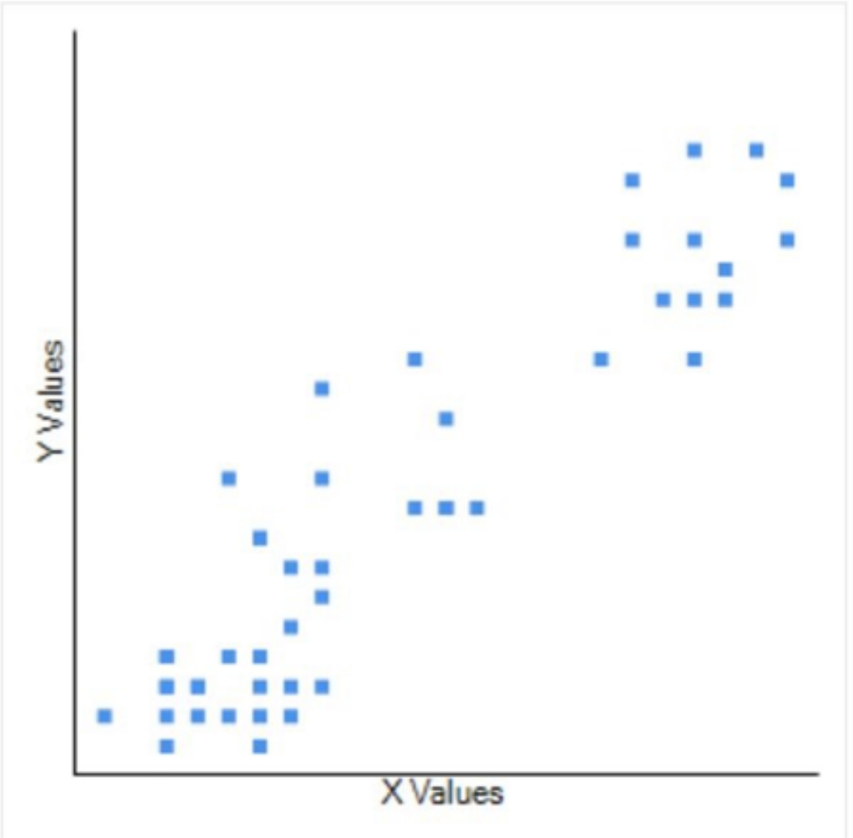
Results

- The Pearson correlation test demonstrated a **high level of correlation between the PICO method and the CGS line method.**

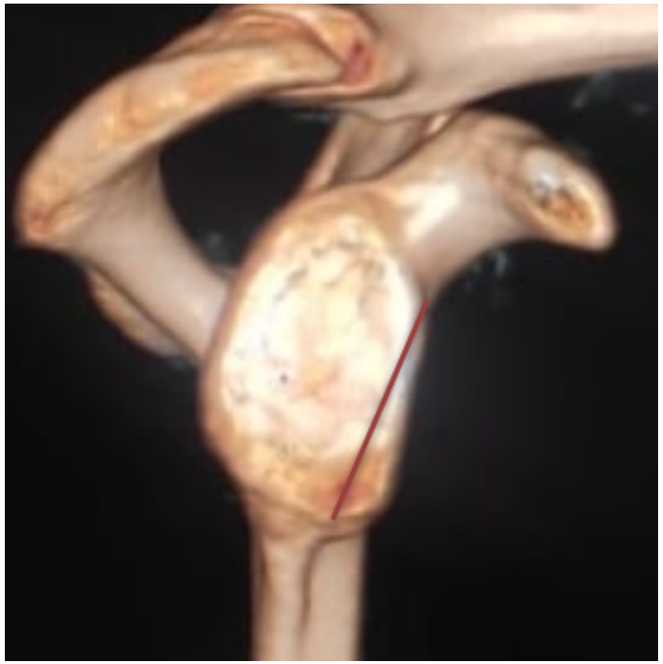
  (Pearson coeeficient 0.92 and **p value 0.0002)**

- Interobserver reliability, evaluated using ICCs, indicated **a strong level of agreement.**

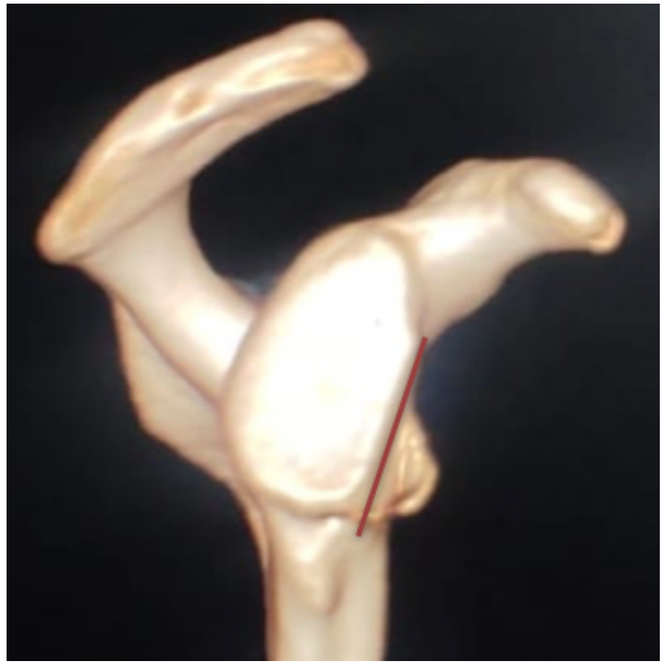
  (ICC¼ 0.87, 95% confidence interval: 0.70–0.93).



Case examples



Glenoid defect - 16%
CGS line not crossed



Glenoid defect - 24%
CGS line crossed

Glenoid defect - 27%
CGS line crossed

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CONCLUSION

- The findings of this study demonstrate that the CGS line can be effectively used as a **screening tool for identifying critical bone loss**

- Patient with a Glenoid bone defect that crosses beyond the CGS line should be considered **Bony procedure**.

- The CGS line method can be implemented in daily clinical practice without any **additional software requirements**

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