

INFERIOR GLENOHUMERAL VERTICAL DISTANCE: A NOVEL RADIOGRAPHIC MARKER BETTER SUITED FOR DETECTION OF ROTATOR CUFF TEARS INVOLVING THE INFRASPINATUS TENDON



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ABSTRACT

Background: Many non-pathological radiological factors can decrease acromiohumeral distance (AH), and increase the false positive rate of radiographic sign of rotator cuff tears (RCT). Our goal to evaluate the association between the radiographically determined inferior glenohumeral vertical distance (IGH) and RCT involving the infraspinatus (IS) tendon; and compare the sensitivity and specificity of AH and IGH for RCT involving IS tendon.

Methods: 140 patients with MRI proven full thickness rotator cuff tear were included after they met the inclusion and exclusion criteria. Patients were divided into two groups, Group A: patients with RCT involving full or partial IS tears, and Group B: RCT not involving IS. Shoulders MRI were evaluated by board certified musculoskeletal radiologists. Radiographs were analyzed blinded to MRI findings. IGH determined by measuring vertical distance from anatomical neck to inferior glenoid level in anteroposterior (AP) view; distance of more than 2mm was considered positive. AH was assessed by measuring vertical interval between inferior border of acromion process and humeral head in (AP) view; distance less than 7 mm was considered positive. The correlation between increased IGH and presence of IS involvement was assessed. Sensitivity, specificity, PPV and NPV were compared between IGH and AH in assessing IS tendon tear. Further subgroup analysis of Group A separating full and partial IS tears were performed.

Results: Group A included 89 patients and Group B involved 51 patients. A strong association was found between IGH and rotator cuff tears involving infraspinatus tendon ($p < 0.001$). IGH was found to have increased sensitivity, PPV and NPV (66%, 92%, 60%, respectively) compared to AH (20%, 85%, 40% respectively). The specificity of both was comparable (90% for IGH and 94% for AH). Subgroup analysis included 54 patients with full thickness infraspinatus tear and 35 patients with partial infraspinatus tear. No statistically significant difference between these two groups in terms of IGHVD was found.

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Conclusion: There is a strong association between IGH and RCT involving infraspinatus and is more sensitive than AH.

