

Scapulothoracic Alignment in B Glenoids. An in Vivo Dynamic Analysis

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Background:

Glenohumeral osteoarthritis (OA) with B glenoid is initiated by progressive posterior static humeral head subluxation. The exact cause of this static posterior translation is not yet elucidated. It has certainly been associated with glenoid version and humeral torsion. It could also simply be the result of bone adaptation resulting from other causes such as unbalanced muscle activity. The scapula is held in place and positioned to axial skeleton only via acromioclavicular joint and 17 muscular attachments. Changes of kinematic of the scapula may influence the relative position of the glenoid fossa and, consequently, glenohumeral joint. As the relationship of the scapula to the thorax varies between individuals, such variability may be another factor in the development of various erosion patterns. As such, the aim of this study was to evaluate and to compare the position of scapula in normal and B glenoids. We hypothesized that different scapular positioning could be observed between normal and pathological sides. This information may improve our understanding of glenohumeral pathoanatomy and posterior glenoid erosion patterns and assist with AO prevention.

Methods:

Using a patient-specific 3D measurement technique coupling medical imaging (CT) and optical motion capture, we compared scapulothoracic alignment in 7 patients with pathologic B0 and healthy contralateral sides.

Results:

The mean superior scapulothoracic distance was 74.6 mm \pm 14.9 mm (range, 62.5 to 103.5 mm) and 77.7 mm \pm 10.7 mm (range, 62.9 to 95.7 mm) for pathologic and control sides, respectively (P=0.5769). The mean inferior scapulothoracic distance was 102.1 mm \pm 18.5 mm (range, 78.0 to 134.1 mm) and 107.9 mm \pm 12.3 mm (range, 82.1 to 119.6 mm) for pathologic and control sides, respectively (P=0.4439). Maximal amplitudes were limited in the pathologic side compared to the healthy one.

Conclusion:

A pathologic positioning of the scapula on the thorax did not seem to explain the development of B glenoid.