

The Critical Shoulder Angle is Associated with Osteoarthritis in the Shoulder but Not Rotator Cuff Tears. A Retrospective Case Control Study

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Summary:

This study is the first study with a methodological strength (case-control study) that allows for vague causal claims concerning the association between CSA, RCT and OA. The results indicate that lateral acromioplasty might be harmful.

Abstract:

Background: In 2013 Moor et al introduced the concept of the critical shoulder angle (CSA) and suggested that an abnormal CSA was a leading factor in development of Rotator Cuff Tear (RCT) and Osteoarthritis of the shoulder (OA).

Purpose / Aim of Study: The purpose of the study was to test if the CSA was associated with RCT and OA. The study hypothesis being that people having a CSA > 35° were at increased risk of developing RCT and people with a CSA < 30° were at increased risk of developing OA.

Materials and Methods: The study was performed as a retrospective case- control study following the STROBE guidelines. 97 patients with RCT and 87 patients with OA constituted the two groups of cases. The controls were matched 3:1, by age and sex, from a population of 795 patients with humeral fractures. The CSA was measured as described by Moor et al. in 2013. Sample size calculation showed a need for 71 cases and 213 controls. Analysis of the relation with CSA for RCT and OA was done by logistic regression. Models were fitted separately for RCT and OA and used the controls matched to the respective cases.

Findings / Results: The mean CSA in the RCT group was 33.9° and in the matched control group 33.6°. The Odds Ratio for developing RCT for people with a CSA above 35° was 1.12 (p=.63). The mean CSA in the OA group was 31.1° and in the matched control group 33.3°. The Odds Ratio for developing OA for people with a CSA below 30° was 2.25 (p=.002).

Conclusions: This study is the first study with a methodological strength that allows for vague causal claims concerning the association between CSA, RCT and OA. No causal relationship was found between CSA and RCT but between CSA and OA with a 2.25 Odds Ratio of developing OA given the patient had a CSA below 30°. The results does not support the suggested praxis of lateral acromioplasty as it might increase the risk of developing OA without decreasing the risk of developing RCT.