

#153 - Oral

Scapula Morphological Parameters And MRI Findings To Explain Variability Of The Constant Score Of Patients With A Supraspinatus Tear.

Shoulder / Shoulder - Rotator Cuff

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Aim

Which morphological and clinical parameters influence the shoulder function in patients with a supraspinatus tear?

Background

RCT affects a large part of the population and leads to pain. Tear size, fatty infiltration and muscle atrophy are only weakly related to pain (Reyes et al., 2017). Literature points out that unfavorable shape of the scapula could explain, at least in part, reduced functional status (Nyffeler et al. 2017). To our knowledge, no study ever used 3D scapula reconstructions and MRI findings to establish a correlation with shoulder function and supraspinatus tear.

Methods

Shoulder function was measured by the Constant score (Constant et al. 2008) adjusted for age and gender. 52 symptomatic patients were included in this study (20 women, 32 men, mean age: 56 (+/- 6)). 3D personalized geometric models of scapula and humerus were constructed. 14 morphological parameters were measured on each 3D model (Ex. glenoid version and inclination, critical shoulder angle (CSA), etc.).

A multiple regression analysis was conducted (R software, R Core Team, 2013). Adjusted Constant score was the dependent variable; independent variables were the 14 morphological parameters as well as five radiological parameters: atrophy grade, extension and retraction of the supraspinatus tear, fatty infiltration of the supra- and infraspinatus as measured by IRM.

Results

A multiple regression analysis proves that 61% of the variability of the adjusted Constant score can be explained by a set of 14 variables of which eight have a significant impact ($p < 0.05$): Length and width of the glenoid, glenoid inclination, CSA, distance between acromion and greater tuberosity, supraspinatus extension and fatty infiltration and infraspinatus fatty infiltration.

Conclusions

Several scapula morphological and radiological findings have a significant impact on the Constant score of patients with a supraspinatus tear. Further analysis with our model could reveal critical values as risk factors for poor function.