Acromioclavicular and coracoclavicular PDS augmentation for complete AC joint dislocation showed insufficient properties in a cadaver model.

Abstract:
Optimal surgical treatment of high-grade acromioclavicular joint dislocations is still controversially discussed. The purpose of the present controlled laboratory study was to evaluate whether a polydioxansulfate (PDS®) cord augmentation with separate reconstruction of the coracoclavicular (CC) ligaments and the acromioclavicular (AC) complex provides sufficient vertical stability in a biomechanical cadaver model. Twenty-four shoulders of fresh-frozen cadaveric specimen were tested. Cyclic loading and load to failure protocol was performed in vertical direction on 12 native AC joints and repeated after reconstruction. The reconstruction of the coracoclavicular ligament was performed using two CC PDS cerclages and an additional AC PDS cerclage. In static load testing for vertical force, the native AC joint complex measured 590.1 N (±95.8 N), elongation 13.4 mm (±2.1 mm) and stiffness 48.7 N/mm (±12.0 N/mm). The mean maximum load to failure in the reconstructed joints was 569.9 N (±97.9 N), elongation 18.8 mm (±4.7 mm) and stiffness 37.9 N/mm (±8.0 N/mm). During dynamic testing of the reconstructed AC joints, all specimens reached the critical elongation of 12.0 mm, defined as clinical failure between 200 and 300 N. The mean amount of
repetitions at clinical failure was 305. A plastic deformation of the reconstructed specimens throughout cyclic loading could not be detected. The AC joint reconstruction with acromioclavicular and coracoclavicular PDS cord cerclages did not provide the aspired vertical stability in a cadaver model. Basic Science Study.

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