Biomechanical evaluation of knotless anterior and posterior Bankart repairs.

Abstract:
The value of modern tape-like suture materials and the influence of the number of anchors inserted for arthroscopic Bankart repairs compared to the intact state have yet to be investigated. It was hypothesised: (1) suture-tape repairs will show higher biomechanical strength than common suture repairs, (2) four anchors will be stronger than three, and (3) the strength of the native capsulolabral complex will be greater than repairs. Six matched-paired cadaveric shoulders received Bankart lesions/reconstructions and three underwent intact state testing. Anteroinferior repairs compared suture and suture-tape repairs using three anchors, while posteroinferior repairs compared three and four suture anchors using common sutures. An established testing protocol was run for biomechanical testing. There was no significant difference in the maximum loads, loads at 2 mm displacement, stiffness or energy between repair groups or between repairs and the intact state (n.s.). However, failure modes were different: 16/24 (66.7%) of the repair groups showed glenoid labrum detachment compared to 2/12 (16.7%) within the intact state group ($P = 0.012$). While biomechanical parameters of repairs and intact states showed equivalence, failure-mode analysis reaffirms previous findings that capsulolabrum complex refixation is weaker than the native attachment. Therefore, in daily clinical practice, type of suture is
secondary and insertion of a fourth anchor will be unlikely to add strength but may confer additional risk and cost.