**Introduction:** The Bankart eponym is the ‘essential lesion’ in anterior instability of the shoulder1, 2. Repair of the Bankart lesion has evolved with changing technology, although the principle remains the same—to re-attach the capsulolabral complex back to the glenoid rim. Open repair was at first the gold standard and later numerous workers have shown equal results with Arthroscopic repair3-6. Arthroscopic techniques have evolved through bioabsorbable staples, transglenoid repair and metal and bioabsorbable suture anchors3,4. In most series, staples and transglenoid repair have been found to be inferior when compared to suture anchor repairs, but the efficacy between arthroscopic versus open techniques still remains controversial6,7,8.

The newest arthroscopic technique of repairing Bankart lesions involves bioabsorbable (made of poly-L-Lactic acid) knotless suture anchors. Introduced in 2001,9 these anchors are designed to capture tissue in a double loop and embed themselves securely in bone, creating a repair with a pull out strength markedly improved over conventional suture anchors10. These anchors eliminate the step of arthscopic knot tying with its difficulties and pitfalls and are easy to deploy and adjust, once the technique is mastered. The elimination of knots saves considerable time that can be translated into benefits from shorter surgical and anesthesia time, and no knot complications or slippage.

There is limited data concerning the reliability or the biomechanical behaviour of the Bioknotless suture anchor when used for the Bankart repair. This study is an effort to compare the biomechanical properties of a knotless and a conventional knotted suture anchor in an arthroscopic Bankart repair model.

**Materials and Methods:** Eight paired matched cadaveric shoulders were used in an in vitro biomechanical study. The Bankart lesion was created arthroscopically and fixed using either two Bioknotless suture anchors (Mitek, Depuy Westwood, MA) or two Biosuturetak suture anchors (Arthrex, Naples, FL) with a locking arthoscopic knot. The shoulders were tested in an in vitro biomechanical study. The Bankart lesion was created arthroscopically and fixed using either two Bioknotless suture anchors (Mitek, Depuy Westwood, MA) or two Biosuturetak suture anchors (Arthrex, Naples, FL) with a locking arthoscopic knot. The shoulders were tested in an in vitro biomechanical study.

**Results:** No significant difference were found between knot fixation (Biosuturetak) and knotless anchors (the BioKnotless) in terms of ultimate load to failure (mean = 125.3 vs. 96.9, p > .40), stiffness (20.9 vs 19.8, p > .74), creep (2.7 vs. 1.7, p > .07), and deformation (2.5 vs. 1.9, p > .56). The modes of failure included suture-tissue interface (3 knot and 6 knotless) and anchor-bone interface (5 knot, 2 knotless). 5 specimens failed during cyclic loading of these 4 were knotless and only 1 was knotted. There were no significant differences between pull-through and anchor pull-out groups (p > .87 for ultimate load; p > .55 for stiffness). There was also no significant differences in creep or deformation between pull-through and anchor pull-out groups (p > .63 for creep, p > .96 for deformation).

**Discussion:** Although knotless anchor fixation appears weaker and had more failures during cyclic loading, no statistical difference could be found. As such, clinicians performing arthroscopic shoulder stabilization can use either knotted or knotless suture anchor techniques with equivalent biomechanical properties according to our time-zero, cadaveric model.

**References:**

**Materials and Methods:** Eight paired matched cadaveric shoulders were used in an in vitro biomechanical study. The Bankart lesion was created arthroscopically and fixed using either two Bioknotless suture anchors (Mitek, Depuy Westwood, MA) or two Biosuturetak suture anchors (Arthrex, Naples, FL) with a locking arthoscopic knot. The shoulders were tested in an Arthroscopic Bankart repair model.

**Results:** No significant difference were found between knot fixation (Biosuturetak) and knotless anchors (the BioKnotless) in terms of ultimate load to failure (mean = 125.3 vs. 96.9, p > .40), stiffness (20.9 vs 19.8, p > .74), creep (2.7 vs. 1.7, p > .07), and deformation (2.5 vs. 1.9, p > .56). The modes of failure included suture-tissue interface (3 knot and 6 knotless) and anchor-bone interface (5 knot, 2 knotless). 5 specimens failed during cyclic loading of these 4 were knotless and only 1 was knotted. There were no significant differences between pull-through and anchor pull-out groups (p > .87 for ultimate load; p > .55 for stiffness). There was also no significant differences in creep or deformation between pull-through and anchor pull-out groups (p > .63 for creep, p > .96 for deformation).

**Discussion:** Although knotless anchor fixation appears weaker and had more failures during cyclic loading, no statistical difference could be found. As such, clinicians performing arthroscopic shoulder stabilization can use either knotted or knotless suture anchor techniques with equivalent biomechanical properties according to our time-zero, cadaveric model.

**References:**