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Joint Preservation

EVIDENCE MATTERS
RESEARCH BULLETIN

Stryker® 4.5 and 5.5 ReelX STT® Knotless Anchors Exhibit Market-Leading Fixation Strength

TOP-LEVEL SUMMARY:

The fixation strength of the 4.5 and 5.5 ReelX STT anchors was compared to seven competitive knotless anchors. Both the 4.5 and 5.5 **ReelX STT anchors were found to reach the highest ultimate loads at failure**.[1,2]

METHODS:

Foam blocks (12.5 pcf cellular rigid polyurethane foam with a 20 pcf solid polyurethane cortical shell, Sawbones) were used as bone analogues to complete pullout testing of 4.5 and 5.5 ReelX STT (Stryker), 4.5 PushLock (Arthrex), VERSALOK (DePuy Mitek), Opus Magnum PI (Arthrocare), 4.5 and 5.5 FOOTPRINT PK (Smith & Nephew), 4.5 PopLok (ConMed) and 5.5 ALLThread Knotless (Biomet). All anchors were inserted according to the manufacturer's protocol with instruments and high-strength suture from each manufacturer. The 4.5 ReelX STT and 4.5 FOOTPRINT anchors were loaded with two sutures, 4 limbs, while all others were loaded with a single suture, 2 limbs. Anchors were tested at a 70° angle with respect to insertion angle, load and displacement were measured, and failure mode was noted.

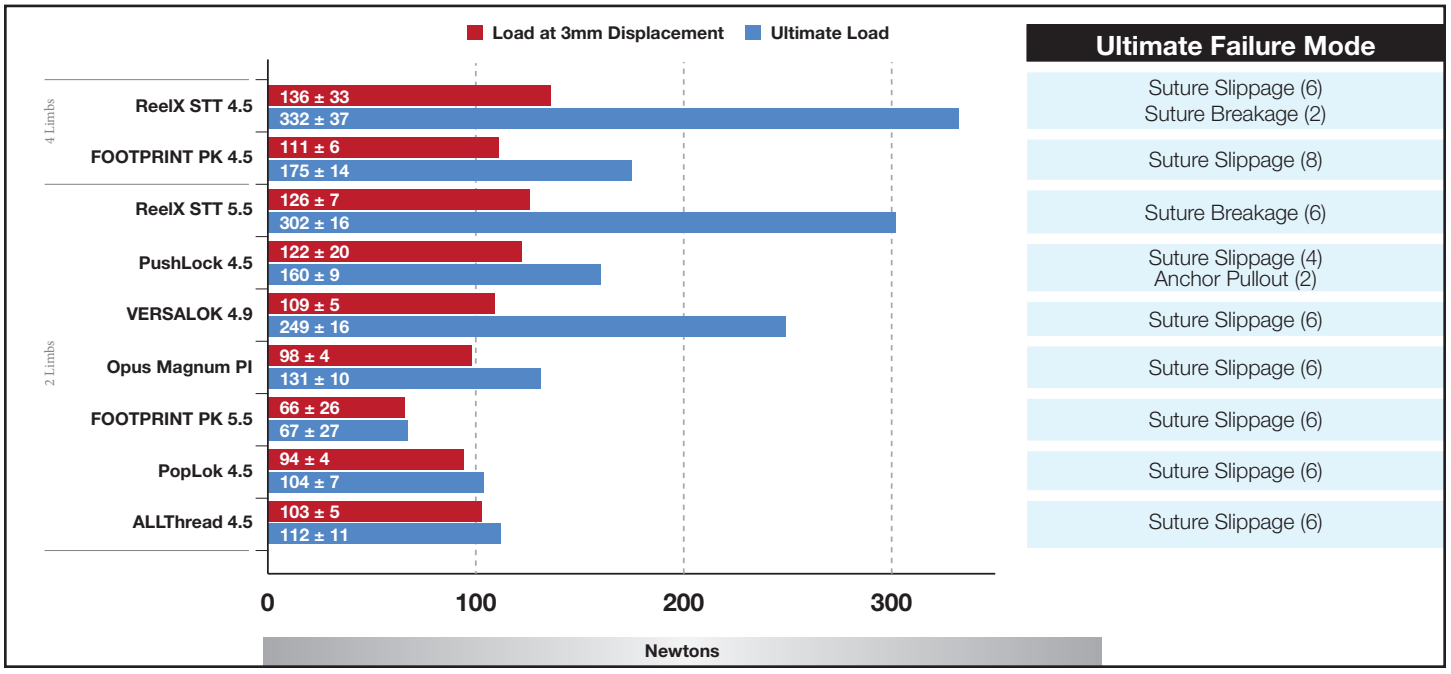
RESULTS:

The 4.5 and 5.5 ReelX STT suture anchors exhibited 136 N (30.2 lbf)* and 126 N (28.4 lbf)* mean load respectively at 3 mm of displacement which has been defined as clinical failure.[3] They reached 332 N (73.9 lbf)* and 302 N (67.8 lbf)* mean ultimate failure load respectively, both higher than all other knotless anchors tested. All anchors failed by suture slippage except two 4.5 ReelX STT and all 5.5 ReelX STT, which ultimately failed by suture breakage and two PushLocks which failed by anchor pullout.

CLINICAL RELEVANCE:

The ReelX STT knotless anchors have been shown to support greater ultimate loads than all the competitors tested. The anchors also have several unique features, including specific tissue tensioning which allows surgeons to apply adjustable tension to the cuff, and the expandable PEEK outer shell which is designed to expand during tensioning to provide enhanced fixation.

Pullout results for the anchors tested is shown as Ave ± SD with N=6-8.



** One pound-force is approximately equal to 4.5 Newtons.*

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References:
1. Tech Report #RD-10-036
2. Tech Report #RD-14-006
3. Burkhart et al. "Knot Security in Simple Sliding Knots and Its Relationship to Rotator Cuff Repair: How Secure Must the Knot Be?" *Arthroscopy*: 16(2)202–207, 2000.

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