

SUMMARY OF PEER-REVIEWED LITERATURE

Cyclic Loading Comparison of Single-Loaded All-Suture Anchors in Cancellous Bone Environment

Overview

Following is a review of cyclic loading test results for all-suture anchors in a decorticated (i.e. purely cancellous) environment as reported in the Journal of Arthroscopy in 2013 [1]. All-Suture Anchors studied in this publication include the Y-Knot® All-Suture Anchor (ConMed Linvatec), Iconix anchors (Stryker), and Juggerknot anchors (Biomet). These are benchmarked here against the commonly used Gryphon PEEK and Gryphon BR anchors (Depuy-Mitek), which were also tested in this study. A cortical layer typically exists in glenoid labrum repair procedures, so this is indicative of performance in adverse conditions or a decorticated hip environment.

Methods

Ten (10) of each anchor were implanted in distal metaphyses of fresh adult porcine femurs in a cancellous bone trough created by decortication. A cyclic load between 10 and 100N was applied at 0.5Hz for 200 cycles or until failure.

Results

90% of Y-Knot anchors successfully completed the cyclic testing at 100N, as compared to 50% of the Gryphon BR anchors and 50% of the Gryphon PEEK anchors[1, 2]. Both the Juggerknot 1.5mm all-suture anchor and the 1.4mm Iconix 1 all-suture anchor were a part of the overall study, but omitted from testing in a decorticated environment for undisclosed reasons.

Also of note, in testing performed with the cortex in place, 100% of the all-suture anchors (Y-Knot, Juggerknot, and Iconix) passed cyclic testing using this same protocol, compared to only 55% of the Gryphon anchors.

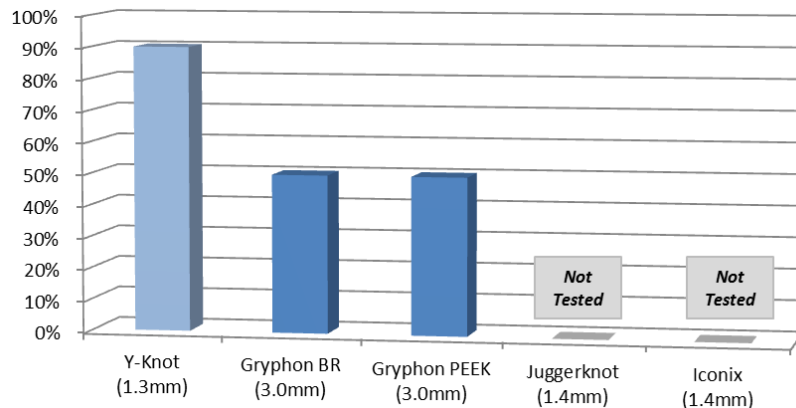


Figure 1: Percentage of anchors that passed cyclic testing of 200 cycles at 100N in a cancellous bone environment

References

- ¹ Barber, FA. et al. Cyclic Loading Biomechanical Analysis of the Pullout Strengths of Rotator Cuff and Glenoid Anchors: 2013 Update. Arthroscopy. 2013; 29:832-844.
- ² Additional detail on cyclic testing results in cortical bone compared to cancellous bone provided by Dr. Barber