SUMMARY OF PEER-REVIEWED LITERATURE

Fixation Strength Comparison of Rotator Cuff Anchors in Porcine Bone

Overview

Following is a summary of the ultimate load-to-failure results as reported in the Journal of Arthroscopy in May 2013 and July 2011 for select 5.5mm rotator cuff knot-tying anchors.

Anchor	Manufacturer	Anchor Material	Sutures*	Size
CrossFT™ (PK)	ConMed Linvatec	PEEK	#2 Hi-Fi®	5.5mm
TwinFix (HA)	Smith & Nephew	Biocomposite (HA/PLLA)	#2 Ultrabraid	5.5mm
TwinFix (PK)	Smith & Nephew	PEEK	#2 Ultrabraid	5.5mm
Healicoil (PK)	Smith & Nephew	PEEK	#2 Ultrabraid	5.5mm
Healix (BR)	DePuy Mitek	Biocomposite (TCP/PLGA)	#2 OrthoCord	5.5mm
Healix (PK)	DePuy Mitek	PEEK	#2 OrthoCord	5.5mm
ALLthread (PK)	Biomet	PEEK	#2 MaxBraid	5.5mm

Table 1: *Rotator cuff anchor properties*

Methods

Anchors were implanted in porcine metaphyseal femoral cortex and tensile loads were applied parallel to axis of insertion at 12.5mm/s until failure. Mean failure loads are compared for anchors listed in Table 1.

Results

The CrossFT™ (PK) suture anchor exhibited 569.5 ± 139.1 N[1] mean ultimate failure load, which was higher than any non-metallic anchor of any size in either study. The comparable size PEEK anchors exhibited the following failure loads: ALLthread (PK) (476.5 ± 22.2 N)[1], TwinFix (PK) (469.4 ± 48.7 N)[2], Healix (PK) (404.3 ± 24.4 N)[2], and Healicoil (PK) (298.7 ± 37.4 N)[2]. The comparable size biocomposite anchors exhibited the following failure loads: TwinFix (HA) (382.6 ± 38.2 N)[2] and Healix (BR) (312.1 ± 31.0 N)[2].

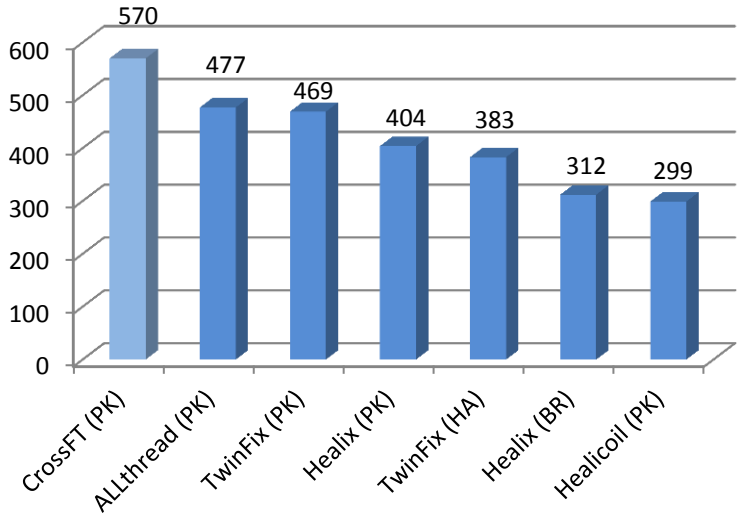

Figure 1: *Cortical loads-to-failure (N) in porcine bone for 5.5mm non-metallic anchors.*[1,2]

Clinical Relevance

The CrossFT (PK) anchor had 20% higher pullout than the next highest anchor, ALLthread (PK), and may help reduce the risk of anchor pullout postoperatively.[3]

References

1. Barber FA, et al. Biomechanical Analysis of Pullout Strengths of Rotator Cuff and Glenoid Anchors: 2011 Update. *Arthroscopy* 2011; 27:895-905.
2. 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.
3. Tashjian RZ, et al. Initial Fixation Strength of Massive Rotator Cuff Tears: In Vitro Comparison of Single-Row Suture Anchor and Transosseous Tunnel Constructs. *Arthroscopy* 2007; 23:710-716

* Anchors contained 2 or 3 sutures. Publication does not specify number of sutures on each anchor tested.