

POSTER PRESENTATION

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In vitro testing of titanium knot fastener used in cardiac and general surgery with pull apart force

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Background

To test 2-0 B. Braun PremiCron Suture Knot Pull Apart Force of Two Suture Lots fastened with Titanium fastener Cor Knot[®] and compare them with USP Class I Min. Avg. 2-0 Suture Knot-Pull Tensile Strength (Doubled for Loop Test) – (USP).

Methods

Two Suture Lots of 2-0 B. Braun PremiCron Suture: Lot # 1-9364 (24 sutures) and Lot # 110095 (24 sutures) were used and fastened with titanium fastener Cor Knot[®]. The pull apart force was measured for both of the suture lots.

Results

The USP Class I Min. Avg. 2-0 Suture Knot-Pull Tensile Strength (Doubled for Loop Test) is defined as 2.88 kgf. The Tensile Strength of Lot # 1-9364 was $4,7761 \pm 0,2005$ kgf (mean \pm std dev) - min 4.2282, max 5.2289, and for Lot # 1-9364 was $5,5151 \pm 0,2625$ kgf (mean \pm std dev) - min 4,0044, max 5,1356, respectively. There were no statistically significant differences between the both lots (F- test, $p = 0,102$). Comparing tensile strength for both lots fastened with Cor Knot[®] with USP tensile strength, knots fastened with Cor Knot[®] showed higher tensile strengths for all the 48 knots. The minimal tensile strength was in the lot 2-0 PremiCron P/N M0027845, Lot # 110095, and was 4,0044 kgf, which is 1 kgf above the recommended USP strength.

Conclusion

Titanium fastened 2-0 B. Braun PremiCron Sutures of two tested lots showed much higher Knot Pull Apart Force compared with recommended minimal average USP Class I Min. Avg. 2-0 Suture Knot-Pull Tensile

Strength (Doubled for Loop Test). The use of Cor Knot[®] is safe, fast and strong and may be recommended as a routine knot fastener for general and cardiovascular surgery, especially in combination with endoscopic surgery.

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