

Knotless SpeedFix Rip-Stop versus Knotted Triple-Loaded Anchor for Single Row Rotator Cuff Repair

Arthrex Research and Development

Objective

The purpose of this matched pair cadaveric study was to compare two single row rotator cuff repairs in gap formation and ultimate load: knotless SpeedFix Rip-Stop versus knotted triple-loaded anchor.

Methods and Materials

The constructs used cadaver supraspinatus tendon and 10 lb/ft³ polyurethane foam block with 2 mm thick 20 lb/ft³ laminate layer. Tendons were cut in half after repairs were completed. Comparisons were made between the two different repairs used for the same sectioned tendon.

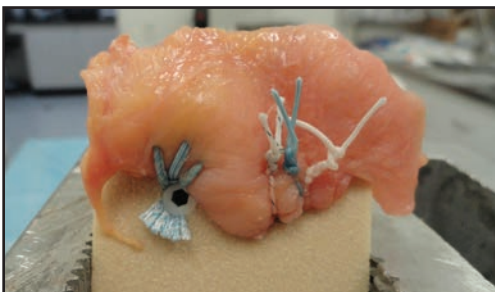
The low profile SpeedFix Rip-Stop construct consisted of a FiberTape passed in an inverted mattress configuration, a FiberLink cinch stitch passed medially around the FiberTape with all sutures fixed with a single, knotless, 5.5 mm SwiveLock (Figure 1).

Figure 1: SpeedFix Rip-Stop



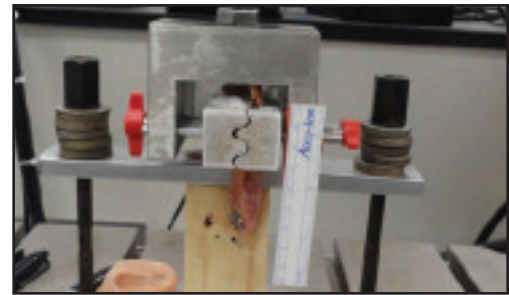
The triple-loaded anchor repairs were completed using a 5.5 mm Corkscrew FT with all three sutures passed and tied in a simple stitch configuration. Figure 2 demonstrates the completed repairs for both groups.

Figure 2: Knotless SpeedFix with Rip-Stop (left) versus knotted triple-loaded anchor (right)



Repair type was alternated for each of the seven matched pair of tendons. The samples were clamped to the base of an Instron testing system (Instron, Canton, MA), and the tendons were held firmly in a cryo-grip (Figure 3). A cyclic load from 10 N – 100 N was applied for 100 cycles at a rate of 1 Hz, followed by a tensile load at a rate of 33 mm/sec. A digital video camera and markers placed on the foam block and tendon were used to record cyclic displacement of the tendon.

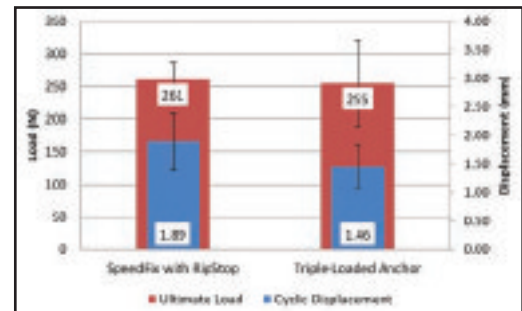
Figure 3: Foam Block Set-up



Results

The knotless SpeedFix Rip-Stop cyclic displacement and ultimate load of 1.89 ± 0.50 mm and 261 ± 26 N, respectively, was statistically equivalent to the knotted, triple-loaded anchor cyclic displacement and ultimate load of 1.46 ± 0.38 mm and 255 ± 67 N, respectively ($p = 0.222$ and $p = 0.909$, respectively) (Figure 4).

Figure 4: Foam Block Set-up



Conclusion

There is no significant difference between the knotless SpeedFix Rip-Stop repair and the knotted triple-loaded anchor repair for both cyclic displacement and ultimate load.