**Arthrex InternalBrace™ Ligament Augmentation Procedure Versus Smith & Nephew Knotless Constructs for Lateral Ankle Repairs**

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**Objective**

Determine the biomechanical differences on lateral ankle repair between an Arthrex InternalBrace ligament augmentation procedure and a Smith & Nephew construct.

**Methods and Materials**

Five matched pairs of cadaver ankles were used for this testing (average age = 57 years; all male). The specimens were dissected to expose the lateral ankle joint. The tibias were removed, and an 8 mm hole was drilled through the fibula, proximal to the lateral malleolus.

All repairs were performed by Troy Watson, MD. Group 1 repairs were performed using SwiveLock® anchors, FiberTape®, and instrumentation contained in Arthrex’s InternalBrace Repair Kit (AR-1688-CP). Group 2 repairs were performed with Smith & Nephew’s Healicoil and Bioraptor™ anchors, Ultratape, and instrumentation. The implants for all groups were inserted according to published surgical techniques with the recommended instrumentation. All other soft tissue connecting the fibula to the talus was transected.

Mechanical testing was performed using an Instron® machine with a 10 kN load cell. Samples were mounted on custom jigs designed to hold the foot in 20° of inversion and 10° of plantar flexion. A dowel pin was inserted through the 8 mm fibular hole to allow for superiorly directed loads to be applied to the repair, as shown in Figure 1. Samples were loaded to failure in tension at 20 mm/min.

**Results**

The ultimate load of the construct created using the InternalBrace procedure was 249 ± 47 N, and the ultimate load of the Smith & Nephew constructs was 90 ± 17 N. A paired t test was performed to compare differences between the 2 sample groups. The ultimate load of the InternalBrace repair was significantly greater than that of the Smith & Nephew construct (P = .001). The results are shown in Figure 2.

**Conclusions**

We conclude that the Arthrex InternalBrace procedure produces a biomechanically superior repair compared to the Smith & Nephew construct. At time zero, the Smith & Nephew construct offers significantly less strength than that of the native ATFL and Arthrex InternalBrace repair, 154 N and 250 N, respectively. The lack of strength of the Smith & Nephew repair draws into question its validity as a solution to lateral ankle instability.

The InternalBrace surgical technique is intended only to augment the primary repair/reconstruction by expanding the area of tissue approximation during the healing period and is not intended as a replacement for the native ligament. The InternalBrace technique is for use during soft tissue-to-bone fixation procedures and is not cleared for bone-to-bone fixation.

**References**


Figure 1. Sample prepared for mechanical testing

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