

Lateral Ankle Stabilization with FORCEWEB™ Synthetic Ligament Augmentation



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ABSTRACT

Chronic lateral ankle instability is a common pathology and Brostrom lateral ligament reconstruction is frequently utilized as a surgical solution. Primary repair of the ligaments can be complicated by poor tissue quality and inadequate repair. Surgical augmentation systems have been used for several years to strengthen and reinforce the primary repair. In this case series, FORCEWEB (Medline), a novel synthetic surgical augment, was used in addition to primary ligament reconstruction during Brostrom lateral ligament reconstruction.

METHODS

This retrospective case series evaluates the first nine patients in whom the surgeon implanted the FORCEWEB surgical augment device as part of lateral ligament stabilization. Each patient was contacted and asked to answer the following questions:

1. Have you returned to your pre-operative level of activity?
2. Have you sprained or had an instability event in your operative ankle since surgery?
3. Is the range of motion in your operative ankle the same, better, or worse when compared to your other ankle?
4. Have you had any complications, subsequent operations or major injury to your operative ankle since your surgery?

Seven patients answered the survey; the other two patients could not be contacted despite several attempts and different methods of communications.

The patients averaged 24.8 years old at the time of surgery. There were three men and four women. Patients responded to a survey at an average of 11.2 months after surgery (range 7–14 months). Indications for surgery were a diagnosis of chronic lateral instability that had failed non-operative management for at least six months.

OPERATIVE TECHNIQUE

Patients are placed into a supine position with a bump under the operative hip. A calf tourniquet is used and an ankle block is done by the surgeon. Ankle arthroscopy was done as an adjunct procedure in all seven cases. Once the arthroscopy was completed, a curvi-linear incision is made starting 2 cm proximal to the tip of the fibula and is carried down over the lateral process of the talus. The lateral process of the talus is dissected without disrupting the lateral ligamentous complex. A $\varnothing 2.0$ mm wire from the FORCEWEB kit is placed into the tip of the lateral process and the orientation is checked on fluoroscopy. The $\varnothing 3.6$ mm cannulated drill is used to over-drill and then the $\varnothing 4.5$ mm tap is used. The $\varnothing 4.5$ mm knotless anchor with the pre-loaded FORCEWEB is secured into the talus. The lateral ligamentous complex is then peeled off of the distal fibula. Two $\varnothing 3.3$ mm suture anchors were placed into the distal fibula and the repair was done with four horizontal mattress sutures. A K-wire from the kit is again placed into the distal fibula and over drilled with the $\varnothing 3.6$ mm drill and then tapped with

the Ø4.5 mm tap. A freer elevator is placed under the FORCEWEB to properly tension it while the Ø4.5 mm anchor is placed into fibula, securing the device in place. During this step, the ankle is held in dorsiflexion, eversion and posterior translation. Tension and range of motion is again checked. Tourniquet is let down at this point and closure is done with 2-0 Vicryl and 3-0 nylon. A well-padded bulky Jones type splint is placed.

POST-OPERATIVE PROTOCOL

All patients were non-weight bearing in the bulky Jones type splint until the first post-operative appointment on POD 6-11. They were then placed into a weight bearing cast for two weeks. At the next appointment (about three weeks post-operative), all patients were transitioned into a walking boot and prescribed physical therapy. Patients began to wean from the walking boot into a lace-up ankle brace starting post-op week 7-8. At final, in-office follow up (avg-11 weeks) all patients had successfully transitioned to the lace-up brace and were finishing up physical therapy.

RESULTS

There were no surgical complications, postoperative wound infections, or mechanical failures. No patients underwent a repeat surgical procedure. All patients were out of their walking boot and into a lace-up brace by an average of 11 weeks post-surgery. With respect to the specific questions on the survey:

5/7 patients

reported that they had returned to their pre-operative level of activity,

including two college athletes who had returned to their sport. Of the two that had not returned, one reported being “85% of the way there” and a second reported being “95% back.”

6/7 patients

reported no instability events/ repeat sprains since surgery.

One patient reported that she stepped into a hole and inverted her foot, but that the ankle did not “give out” as she recalled it did before her surgery.

2 patients reported that the range of motion in their operative ankle was better than their non-operative ankle.

3 patients rated the range of motion of their two ankles to be the same.

2 patients reported that the range of motion in the operative ankle was worse than the contralateral (non-operative side), although one admitted that it has always been worse.

CONCLUSION

This series demonstrated that the FORCEWEB device is a safe, effective surgical augment for use in Brostrom lateral ligament reconstruction. These early outcomes are encouraging and should lead to future study including larger and prospective studies.



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