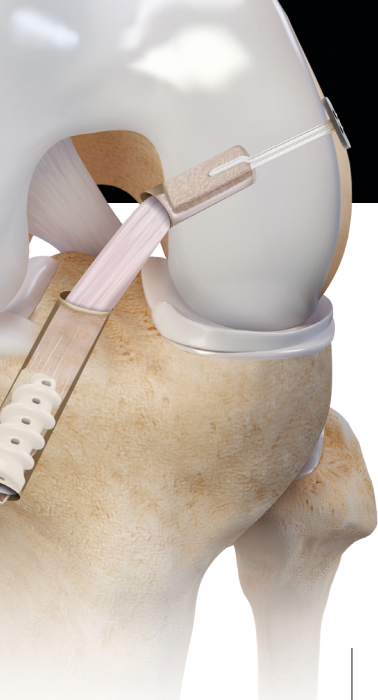


BTB TightRope® Implant Scientific Update



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The BTB TightRope implant uses the same adjustable, 4-point locking system as the ACL TightRope RT implant but allows placement through a small drill hole in the cortical bone block of the BTB or Achilles graft. The TightRope button facilitates dependable, cortical fixation and the adjustable loop allows the graft to be pulled into the femoral socket as deeply as needed for ideal graft tunnel-matching. The BTB TightRope implant also allows fixation of BTB/Achilles grafts into anatomic femoral sockets that can be difficult to reach with traditional interference screws.

The BTB TightRope allows for circumferential graft-to-bone healing as there is no interference screw placed between the bone block and socket wall.

In Vivo Studies: Clinical Outcomes

[Excellent bone plug–socket integration at 8 weeks after anterior cruciate ligament reconstruction using an adjustable-length loop cortical fixation device. *J ISAKOS*. 2019;4:9-14. doi:10.1136/jisakos-2018-000244.](#)

- Evaluated bone plug–socket integration in ACL-R with an ALCFD (adjustable-length loop cortical fixation device) to determine safety and practicality as a fixation device with BTB grafts.
- Twenty consecutive patients underwent primary ACL-R with a BTB graft using a BTB TightRope implant for fixation. The knees were evaluated by CT at 4 weeks and 8 weeks postoperatively. The bone plug–socket union was assessed on 30 evaluation planes. Four patients were removed from long-term follow-up.
- Authors observed excellent bone plug–socket integration at 8 weeks using an adjustable loop device. The bone plug–socket integration was regarded as “equivalent to the integration provided by an interference screw previously reported.” Clinically, all patients who could be contacted rated their knee as “normal” or “nearly normal,” and a mean side-to-side difference in anterior laxity of 0.2 ± 0.3 mm was observed.

[Loop length change of an adjustable-length femoral cortical suspension device in anatomic rectangular tunnel anterior cruciate ligament reconstruction with a bone–patellar tendon–bone graft and associated clinical outcomes. *Arthroscopy*. 2018;34\(11\):3063-3070. doi:10.1016/j.arthro.2018.06.034.](#)

- Evaluated loop-length changes of an adjustable cortical fixation device (BTB TightRope implant) at 1- and 12-week intervals. Authors also assessed clinical results at 2 years postoperatively.
- The mean individual loop length change was 0.04 ± 0.13 mm (25.77 ± 3.88 mm at 1 week and 25.81 ± 3.89 mm at 12 weeks). The authors determined that all individual loop-length changes were within the measurement error range.
- The loop-length change of an adjustable cortical fixation device was negligible after ACL-R with a BTB graft. Ninety-eight percent of patients were graded as “normal” or “nearly normal” according to IKDC assessment at 2 years postoperatively. Authors concluded that adjustable cortical fixation devices can safely provide sufficient stability for ACL-R.

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In Vitro Studies: Biomechanical Validation

Adjustable-loop femoral cortical suspensory fixation for patellar tendon anterior cruciate ligament reconstruction: a time zero biomechanical comparison with interference screw fixation. *Am J Sports Med.* 2018;46(8):1857-1862. doi:10.1177/0363546518771365.

- Authors compared time zero biomechanical properties between metallic interference screws and ALCFD for femoral fixation of bone-tendon-bone grafts in ACL-R.
- The ALCFD and interference screws were divided into two groups (8 samples each) and human bone-tendon-bone allografts were fixated in porcine distal femurs. The constructs were preconditioned and subjected to cyclic loading before being pulled to failure.
- The load to failure (mean \pm SD, 700 ± 256 N vs 688 ± 215 N, $P = .92$) and linear stiffness (219 ± 48 N/mm vs 218 ± 49 N/mm, $P = .97$) were not significantly different between the ALCFD and interference screw groups, respectively. The authors concluded that adjustable-loop devices are acceptable alternatives to an interference screw for femoral fixation during ACL-R with BTB grafts.