

# Tissue rip-through protection technology

## ZipE® Knotless Tissue Repair Devices



Most arthroscopic surgical constructs rely on a direct suture-tendon interface repair method. High mechanical stress concentrations around the suture zone may lead to progressive tissue damage causing early rip-through failure. Present devices are permanent sutures in a closed loop system. It has been reported that rotator cuff repairs can have re-tear rates as high as 57% after 6 months<sup>1</sup>.

ZipE® Knotless Tissue Repair devices function as a protective system against rip-through, by distributing the same surgical construct forces in a much larger tissue interface area (33 mm<sup>2</sup> for ZipE® vs 0.19 mm<sup>2</sup> using a single USP class 2 surgical suture). The larger area of ZipE® reduces the stress concentration significantly, and thus protects the tissue against progressive damage. Lower stress concentration not only diminishes the probability of a rip-through failure but also helps the tissue healing process by not restricting blood perfusion around the repair area due to a lower compressive and shear stress concentration. Finally, the lower stress concentration is helpful when repairing weak, damaged or degenerated tissue, which is often friable.

A series of in-vitro mechanical tests were conducted to compare the different surgical constructs using UHMWPE suture for rip-through performance. Overall, ZipE® proves to be a knotless surgical repair technology that protects the tissue against the shearing effect of standalone suture by preventing direct suture-tendon contact while also distributing the force into a larger contact area, thus reducing the stress concentration. The ZipE® device provides for a stronger construct designed to resist rip-through better than common device suture configurations.



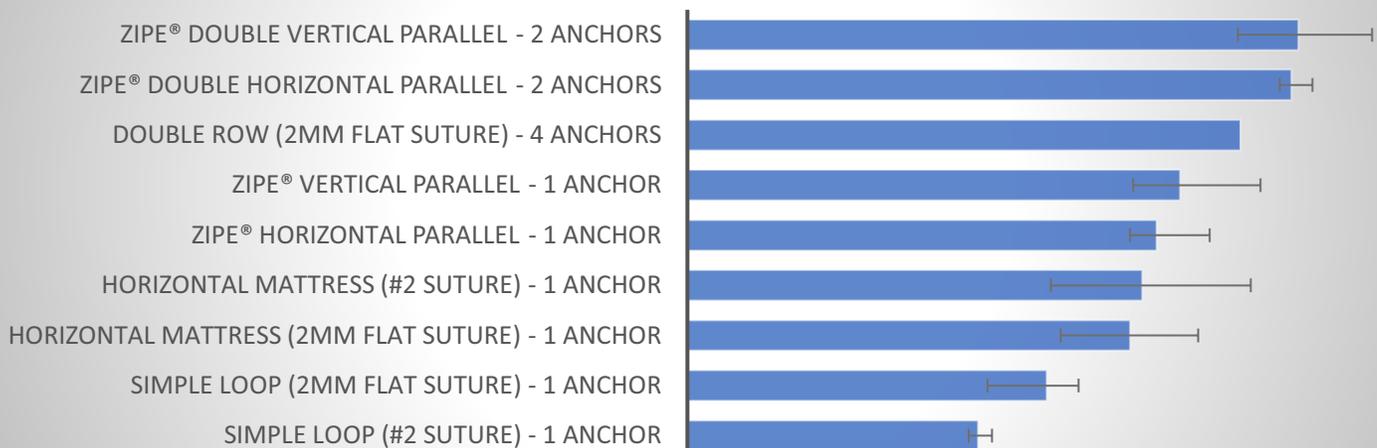
Simple Loop configuration (#2 suture with 1 anchor) vs ZipE® Vertical Parallel construct (#2 suture with 1 anchor)



Double Row configuration (Flat Tape Like suture with 4 anchors) vs ZipE® Double Parallel construct (#2 suture with 2 anchors)

### Average maximum force before rip-through failure

Higher is better



1. Shin YK, Ryu KN, Park JS, Jin W, Park SY, Yoon YC. Predictive Factors of Retear in Patients with Repaired Rotator Cuff Tear on Shoulder MRI. American Journal of Roentgenology 2018 210:1, 134-141

For more information please visit [www.ziptekglobal.com](http://www.ziptekglobal.com)