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CORR Insights®: Do Needleless Knots have Similar Strength as the Krackow Suture? An In Vitro Porcine Tendon Study

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Where Are We Now?

Graft fixation is the weak link of the fixation graft construct [1]. Soft-tissue graft harvest is increasingly performed for knee ligament reconstruction, shoulder reconstruction, and even hip labral

reconstruction. Some of these procedures are quite complex, and involved lengthy surgical times. Since its inception, the Krackow stitch has been the standard approach for soft-tissue grasping stitches [4]. Unfortunately, tendon penetration with a needle and suture weakens the tendon, which may compromise its use in reconstructive techniques. Current graft-preparation techniques frequently involve removing the Krackow or whipstitch used to harvest the graft. The use of needleless techniques for graft harvest may result in less tendon damage and time savings both for placement and removal of the Krackow stitch.

The work of Hong and colleagues addresses the issue with a biomechanical investigation, comparing the rolling hitch and the modified rolling hitch to the Krackow stitch. In a

porcine model, the rolling hitch and the modified rolling hitch performed similarly for elongation after cyclical loading and ultimate failure load to the Krackow stitch. However, the rolling hitch failed at a greater rate than the modified rolling hitch and the Krackow stitch. Porcine tendons, while perhaps not ideal, are a reasonable substitute for human tissue. The authors did not evaluate all needleless suture grasping techniques. Rather, as others have noted [2, 3], needleless suture grasping techniques have been shown to be comparable to the modified rolling hitch.

Where Do We Need To Go?

Addressing a practical matter that is used frequently in ligament reconstruction is an excellent starting point, and can be used as an opportunity to explore some of the untested grasping sutures, such as the modified Prusik or the Wittstein suture loop. Perhaps our specialty will propose alternatives now that the authors have identified this as

This CORR Insights® is a commentary on the article "Do Needleless Knots have Similar Strength as the Krackow Suture? An In Vitro Porcine Tendon Study" by Hong and colleagues available at: DOI: 10.1007/s11999-016-5153-0.

The author certifies that he, or a member of his immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

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This *CORR Insights*® comment refers to the article available at DOI: 10.1007/s11999-016-5153-0.

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a knowledge gap or an opportunity for improvement.

How Do We Get There?

As with all biomechanical research, the transition from the bench to the operating room is a heavy lift. Comparative trials are a reasonable means to determine whether a suture holds superiority. While Level I investigations provide a higher level of evidence, they are expensive, time consuming, and frequently, the results are not definitive enough to change practice. Perhaps a well-performed Level III investigation with a

comparison between different surgeons, as well as clinical results and operating times that will guide the use of further soft-tissue grasping stitches may provide meaningful information. A measurable variable like operating times, for example, would be indicate whether the technique is faster than traditional suture techniques such as the Krakow or whipstitch. Comparative investigations will determine whether this is a more efficacious and efficient means of graft security and preparation or simply, an alternative method.

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