

# Editorial Commentary: Who Needs Knots Anyway?



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**Abstract:** The arthroscopic knotless suture bridge technique is a common procedure used for rotator cuff repair. The ease of use, the versatility of this type of repair for most tears, and good outcomes make it a must for orthopaedic surgeons to have in their clinical toolbox.

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**A**lthough I am well into my practice, I can tell you that I still have my struggles with arthroscopic knots. Like all orthopaedic surgeons, I want my surgical procedures to look effortless. I want every motion in surgery to have a purpose and flow with no wasted energy or time in surgery. Then, I reach the tying of an arthroscopic knot. I know most surgeons have perfected this orthopaedic art, but this may be my Achilles heel and I may always struggle with these knots. Whether it is fumbling with the hemostat or maybe poor visualization of the knot going down to the soft tissue, a pesky piece of soft tissue that comes out of nowhere to sabotage knot security, or remembering on which throw to flip the post, I can tell you that many times, I am not that graceful or flowing. The job gets done and the suture knot holds . . . um, I think.

Looking back at my fellowship, I remember fondly the first couple of months learning the art and skill of tying an arthroscopic knot. I was so intimidated by all the different knot types and uses for each knot. One of my fellowship directors was Dr. F. Alan Barber. I used to call him the “King of the Knot and the Anchor” because he has performed multiple biomechanical studies on different knot types and anchors.<sup>1,2</sup> I even went as far as building my own arthroscopic knot simulator with a cannula and knot pusher, on which I practiced my knot tying at home.

Then, once out of my fellowship, I discovered the knotless suture bridge technique. This solved my

problems because there was no longer a need to look clumsy when tying knots and the repair was solid. As with any new technique, outcomes are vital to measure the success or failure of a procedure. When I reviewed “Arthroscopic Rotator Cuff Repair With a Knotless Suture Bridge Technique: Functional and Radiological Outcomes After a Minimum Follow-Up of 5 Years” by Dukan, Ledinot, Donadio, and Boyer,<sup>3</sup> I was pleased to see that one of my standard procedures for rotator cuff repair was showing good midrange follow-up outcomes.

No matter the brand, type of anchor, or use of suture versus tape, the suture bridge is a reliable way to repair the rotator cuff. There are many indications for this type of repair. Typically, I use it with most tears that are greater than 1 cm because I find it challenging to obtain space for multiple anchors in a medial row with less than 1 cm. If you are a medial-row type of surgeon and want medial compression, this can be achieved fairly easily and with minimal effort. If, after placing the medial sutures, you find a “dog ear,” this is easily correctible with a simple looped, locking suture added to the closer lateral-row anchor. Also, if there is a massive tear, consideration can be made to add additional medial-row and lateral-row anchors.

Along with the versatility of the suture bridge, good clinical results have been reported in the literature, which also echo the article by Dukan et al.<sup>3</sup> Mihata et al.<sup>4</sup> reported that the suture bridge technique showed lower retear rates for large to massive rotator cuff tears in comparison with single-row and standard double-row techniques. A meta-analysis published in *Arthroscopy* in 2015, consisting of 32 eligible studies, showed that double-row and suture bridge techniques have lower retear rates than single-row techniques in most tear size groups after 1 year of radiographic follow-up.<sup>5</sup> In addition, a very recent meta-analysis by Xu et al.<sup>6</sup>

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concluded that suture bridge repairs might be the best choice to improve the postoperative recovery of function and decrease the retear rate.

One of the drawbacks that I see with this technique is cost. Four anchors are needed to perform the repair. There has been a recent trend in evaluating the cost-effectiveness of multiple operations, and the rotator cuff repair is a common procedure studied. The mean cost of a suture anchor was \$403 in a 2016 study,<sup>7</sup> and this does not include all the other disposable items such as suture passers and cannulas. Other concomitant procedures may increase the cost, such as subscapularis repair and biceps tenodesis.<sup>8</sup> Nonetheless, removing the need for knot tying may speed up the surgical case, thus reducing overall time in the operating room and time under anesthesia, which can be cost saving. In addition, with lower retear rates using the suture bridge technique, the initial increased cost may be offset by the reduced likelihood that a patient may need to return for a failed primary repair.

Curtis<sup>9</sup> put it best in another editorial commentary stating, "the final determination of anchor number and placement in a rotator cuff repair should be based on 4 factors: minimizing cost, avoiding complications, using appropriate technique, and proper restoration of anatomy." Ultimately, as with all treatments, we should always do what is in the best interest of the patient and individualize care to what is most appropriate and the best technique that we believe will provide lasting results for the patient. The suture bridge technique provides a quick, versatile, and proven method for repair of torn rotator cuffs and should be in any shoulder arthroscopist's toolbox.

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