

## Editorial Commentary: Stay Tuned: Broadening Our Scope of Knee Meniscus Radial Tear Repairs



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**Abstract:** Repair of knee meniscus radial tears can result in clinical success. More precise and well-defined indications, surgical techniques, and outcomes are needed.

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Meniscal repair indications, techniques, and outcomes were described more than 30 years ago yet there still remains a paucity of powered published studies precisely defining our approaches.<sup>1</sup> More recent reports indicate that meniscal resection procedures far outweigh repairs. Clarity over which tears are repairable and can heal is improving but we are not there yet.<sup>2,3</sup> Moulton et al.'s article "Surgical techniques and outcomes of repairing meniscal radial tears: A systematic review"<sup>4</sup> addresses a gap in our knowledge of where we are and where we need to go.

Their published work is a welcome and focused effort reviewing the existing literature dedicated to a specific tear pattern going back to 1980. The definitive studies, at least those reporting on radial tear repairs, remain incomplete and limited and for some the song remains the same. Using the Cochrane Database of Systematic Reviews and Cochrane Central Registry and appropriately rigid study inclusion and exclusion criteria, the systematic review results in a report of only 6 studies of 55 patients. Those studies cite 5 different surgical techniques and a wide range of follow-up. Rehabilitation protocols are not well described. The systematic review reports on studies that conclude that satisfactory clinical results can be achieved after radial tear repairs that are by definition in part white-on-white tear patterns.<sup>5</sup> Most importantly, the authors cite the literature that supports that radial tear repairs can heal and without significant complications.

We are limited at this time by our interpretation of low levels of evidence provided by Level IV studies and case reports. Nonetheless, meniscal pathology, meniscal

attrition natural history, and current repair methods tell us that radial tear repairs are feasible and can reduce the adverse biomechanical impact to the joint caused by resection. The biomechanical consequences of near full thickness radial tears that violate the circumferential band result in substantial changes in joint loading.<sup>6,7</sup>

The authors conclude that clinical success can be achieved by properly indicated radial tear repairs. Can we do better? Yes. More studies are needed, particularly those with larger data sets and consistent surgical techniques associated with longer follow-up. Performance bias can be introduced with great variability in techniques and heterogeneous methodology. Suture configurations and constructs may be even more significant and the literature continues to reflect lack of agreement on how to surgically approach radial tears.

Radial tear patterns can vary depending on which third of the meniscus they are found in and relative to their proximity to the posterior horn. In addition, radial tears can affect the medial meniscus differently than the lateral meniscus.<sup>8,9</sup>

When assessing outcomes after meniscus repair, the length of follow-up must be longer term when interpreting durable functional success. Although 24-month minimal follow-up is important, many studies report repair failure that can occur around the 2-year time point. Follow-up beyond 24 months is likely to result in more accurate outcome data in meniscal repair studies.<sup>10</sup>

The authors are clear to point that out. Agreement on what defines healing can be debated. Clinical functional examination, second looks, and biomechanical and structural integrity have all been cited.

Associated anterior cruciate ligament reconstruction most certainly remains a confounder, and so as it is a concomitant procedure, reviews must compare apples and oranges. These methodology considerations must all be taken into account when interpreting isolated

repairs from those repairs performed in association with ACL reconstruction.<sup>11</sup>

This calls for more reported cases and more precisely defined surgical techniques including rehabilitation and longer follow-up. The authors should be commended for pointing us in the right direction. Their systematic review is an important contribution to our understanding of where we are and where we need to go in addressing clinically significant radial tears of the meniscus. Stay tuned for more to come.

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### References

1. Lynch M, Henning C, Glick C. Long-term follow up of meniscus tear treatment in stable anterior cruciate ligament reconstructions. *Clin Orthop* 1983;172:148-153.
2. Ra HJ, Ha JK, Jang SH, Lee DW, Kim JG. Arthroscopic inside-out repair of complete radial tears of the meniscus with fibrin clot. *Knee Surg Sports Traumatol Arthrosc* 2013;21:2126-2130.
3. Beamer BS, Masoudi A, Walley KC, et al. Analysis of a new all-inside versus inside-out technique for repairing radial meniscal tears. *Arthroscopy* 2015;31:293-298.
4. Moulton SG, Bhatia S, Civitaresse DM, Frank RM, Dean CS, LaPrade RF. Surgical techniques and outcomes of repairing meniscal radial tears: A systematic review. *Arthroscopy* 2016;32:1919-1925.
5. Rubman MH, Noyes FR, Barber-Westin SD. Arthroscopic repair of meniscal tears that extend into the avascular zone. A review of 198 single and complex tears. *Am J Sports Med* 1998;26:87-95.
6. Branch EA, Milchtein C, Aspey BS, Liu W, Saliman JD, Anz AW. Biomechanical comparison of arthroscopic repair constructs for radial tears of the meniscus. *Am J Sports Med* 2015;43:2270-2276.
7. Ode GE, Van Thiel GS, McArthur SA, et al. Effects of serial sectioning and repair of radial tears in the lateral meniscus. *Am J Sports Med* 2012;40:1863-1870.
8. Choi NH, Kim TH, Son KM, Victoroff BN. Meniscal repair for radial tears of the midbody of the lateral meniscus. *Am J Sports Med* 2010;38:2472-2476.
9. Van Trommel MF, Simonian PT, Potter HG, Wickiewicz TL. Arthroscopic meniscal repair with fibrin clot of complete radial tears of the lateral meniscus in the avascular zone. *Arthroscopy* 1998;14:360-365.
10. Lee GP, Diduch DR. Deteriorating outcomes after meniscal repair using the Meniscus Arrow in knees undergoing concurrent anterior cruciate ligament reconstruction: Increased failure rate with long-term follow-up. *Am J Sports Med* 2005;33:1138-1141.
11. Billante MJ, Diduch DR, Lunardini DJ, Treme GP, Miller MD, Hart JM. Meniscus repair using an all-inside rapidly absorbing flexible tensionable device. *Arthroscopy* 2008;24:779-785.