

## KEY PROCEDURES

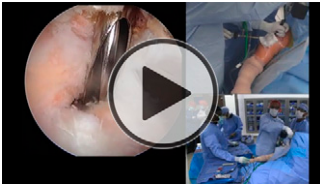
## ANCHORLESS ARTHROSCOPIC TRANSOSSEOUS ROTATOR CUFF REPAIR

Eddie Y. Lo, MD, Alvin Ouseph, MS, Raffaele Garofalo, MD, Sumant G. Krishnan, MD

Published outcomes of this procedure can be found at: *Int J Shoulder Surg.* 2016 Jan-Mar; 10(1):3-9, *Clin Orthop Relat Res.* 2020 Jun;478(6):1295-303, and *J Shoulder Elbow Surg.* 2019 Apr; 28(4):706-14.

*Investigation performed at Baylor University Medical Center, Baylor Scott & White Health, Dallas, Texas*

COPYRIGHT © 2024 BY THE JOURNAL OF BONE AND JOINT SURGERY, INCORPORATED



Click the arrow above or go to [surgicaltechniques.jbjs.org](http://surgicaltechniques.jbjs.org) to view the video article described in this summary.

**Abstract**

**Background:** Rotator cuff repair techniques have evolved over time. The original techniques were open procedures, then surgeons adopted arthroscopic repair procedures with anchors and implants. Today, rotator cuff repair has evolved to be performed as an arthroscopic transosseous technique that is again performed without the use of anchors.

**Description:** In this video, the 5 essential steps of arthroscopic transosseous repair will be demonstrated. (1) Position the patient in either the beach chair or lateral decubitus position. (2) Utilize 4-portal arthroscopy, which allows a consistent vantage point while having 3 other portals for instrumentation. (3) Perform just enough bursectomy to expose the rotator cuff. (4) Anatomically reduce the rotator cuff anatomy where possible. (5) Triple-load the transosseous tunnels with high-strength sutures in order to maximize the biomechanical strength of the repair.

**Alternatives:** Alternative surgical techniques include open rotator cuff repair and single and double-row rotator cuff repair using anchors.

**Rationale:** The goal of any rotator cuff repair is to anatomically restore the rotator cuff. The fundamental principles include a strong initial biomechanical fixation, cuff footprint anatomy restoration, and maximization of biological factors to promote healing of the rotator cuff. Rotator cuff repair was originally performed as an open procedure, which allows for direct visualization of the tear and repair; however, open repair requires some level of deltoid splitting, which can potentially affect postoperative early mobilization. Single-row and double-row cuff repairs can both be performed arthroscopically. Proponents of the double-row procedure prefer that technique for its footprint restoration and stronger biomechanical fixation; however, the double-row procedure can result in overtensioning of the repair and can lead to medial-based rotator cuff failures. Proponents of the single-row procedure prefer that technique for its ease of operation, fewer implants, lower cost, and low repair tension; however, the single-row procedure fixes the tendon at a single point, limiting the repaired footprint, and can be associated with lower fixation strength. The arthroscopic transosseous rotator cuff repair achieves all of the above goals as it provides strong initial fixation and anatomic footprint restoration, which allows maximal patient biology for healing.

**Disclosure:** The **Disclosure of Potential Conflicts of Interest** forms are provided with the online version of the article (<http://links.lww.com/JBJS/ST/A464>).

**Expected Outcomes:** There are numerous studies that can attest to the success of arthroscopic transosseous repair. Some of the benefits include decreased health-care costs and postoperative pain levels. In a 2016 study of 109 patients undergoing arthroscopic transosseous rotator cuff repair, Flanagan et al. reported a mean American Shoulder and Elbow Surgeons (ASES) score of 95 and a failure rate of 3.7% at mid-term follow-up<sup>1</sup>. Similarly, in a study comparing transosseous repair to transosseous equivalent repair, Srikumaran et al. reported that patients undergoing transosseous repair had a mean ASES score of 92 and a failure rate of 14%, with no significant differences between treatment groups<sup>2</sup>. Finally, in a study assessing the results of arthroscopic transosseous rotator cuff repair at >10 years postoperatively, Plachel et al. reported a mean ASES score of 92 and a failure rate of 27%<sup>3</sup>.

**Important Tips:**

- Compared with conventional rotator cuff with anchors, the transosseous cuff repair can lead to cut-out of the repair sutures from the bone.
- Use a 4-portal arthroscopy technique, which will help the surgeon visualize all tear configurations while instrumenting them.
- Perform just enough bursectomy, in order to preserve the growth factors for cuff healing.
- Take care to minimize tuberosity trauma as a result of burring.
- Prepare the transosseous tunnels with a wide bone bridge.
- Load each tunnel with 3 high-strength sutures in order to maximize repair strength.
- Restore the rotator cuff footprint to facilitate tissue healing.

**Acronyms and Abbreviations:**

- ASES = American Shoulder and Elbow Surgeons
- RCR = rotator cuff repair
- ATRCR = arthroscopic transosseous rotator cuff repair
- ARCR = arthroscopic rotator cuff repair
- PDS = polydioxanone suture
- ROM = range of motion
- SSV = Subjective Shoulder Value
- FF = forward flexion
- OR = operating room
- FU = follow-up

Eddie Y. Lo, MD<sup>1,2</sup>

Alvin Ouseph, MS<sup>1,2</sup>

Raffaele Garofalo, MD<sup>3</sup>

Sumant G. Krishnan, MD<sup>1,2</sup>

<sup>1</sup>The Shoulder Center, Baylor Scott & White Research Institute, Dallas, Texas

<sup>2</sup>Baylor University Medical Center, Baylor Scott & White Health, Dallas, Texas

<sup>3</sup>Upper Limb Unit, F Miulli Hospital, Acquaviva Delle Fonti BA, Italy

Email for corresponding author: Eddie.Lo@BSWHealth.org

## References

1. Flanagan BA, Garofalo R, Lo EY, Feher L, Castagna A, Qin H, Krishnan SG. Midterm clinical outcomes following arthroscopic transosseous rotator cuff repair. *Int J Shoulder Surg.* 2016 Jan-Mar;10(1):3-9.
2. Srikumaran U, Huish EG Jr, Shi BY, Hannan CV, Ali I, Kilcoyne KG. Anchorless Arthroscopic Transosseous and Anchored Arthroscopic Transosseous Equivalent Rotator Cuff Repair Show No Differences in Structural Integrity or Patient-reported Outcomes in a Matched Cohort. *Clin Orthop Relat Res.* 2020 Jun;478(6):1295-303.
3. Plachel F, Traweger A, Vasvary I, Schanda JE, Resch H, Moroder P. Long-term results after arthroscopic transosseous rotator cuff repair. *J Shoulder Elbow Surg.* 2019 Apr;28(4):706-14.