

Comparing Knotted versus Knotless Fixation for Posterior Labrum Repair

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INTRODUCTION: Injuries to the superior and anterior labrum occur more frequently, however posterior labral injuries have become increasingly recognized clinically. Posterior labral tears may result from acute incident, but they are more often insidious in onset and related to repetitive microtrauma and capsular contracture. Surgical treatment with arthroscopic labral repair has been successful in restoring stability and athletic function in the absence of glenoid bone loss. Advances in anchor design have allowed for knotless fixation of the labrum. Studies thus far have suggested that there are no significant differences in the clinical outcomes or return to play (RTP) of knotted versus knotless anchoring for any location of labrum repair. The purpose of this study is to further compare the surgical failure rates, rates for RTP, and abduction, and external range of motion (ROM) between knotted and knotless posterior labral repair.

METHODS: After institutional review board approval, a single-centered retrospective chart review analyzing the outcomes and complications of labral repairs for adult and adolescent patients between 2017 and 2022 were performed. Patients were excluded if they did not undergo either a knotted or knotless posterior labral repair. Demographic and surgical data were collected including age, sex, race, laterality, characterization of the labral tear, number of anchors, and anchor location. Patient participation in sport, if any, ability to RTP, and operative times were also collected. Data analysis was completed using software via a non-parametric Mann-Whitney-U test and a Chi-Squared test with an alpha level of <0.05 set prior to the study.

RESULTS: The average ages of patients with knotted (n=14) and knotless (n=10) fixation of the posterior labrum repair was 20.7 (± 8.0) and 22.7 (± 8.2), respectively (Table 1). There were no significant differences in the number of revisions required or ability to return to play (RTP) following surgery (p>0.999, p>0.999). Further, there were no significant differences in external rotation or abduction range of motion (ROM) preoperatively or 6-, 12-, 24-weeks postoperatively (Table 2). However, knotted fixation of the posterior labrum required a significantly longer operative time than knotless fixation (106 ± 27 vs. 79.8 ± 20.0, respectively, p=0.013).

DISCUSSION AND CONCLUSION: Patients who underwent knotted vs. knotless fixation for posterior labrum instability did not have a difference in ROM in abduction or extension at any of the timepoints collected. Patients also did not have any difference in the ability to return to sports. However, patients who underwent knotless fixation had less operative time, leading to less time under anesthesia, and potentially fewer intraoperative and postoperative complications. This adds to the limited current literature comparing knotless and knotted fixation for posterior instability, demonstrating no preference for long-term functionality and RTP. This serves as a baseline to compare other potential outcomes that could stem from lower operative times and to determine if this influences patient outcomes.

Table 1. Demographics

Variable (Avg ± St. Dev.)	Knotted (n=14)	Knotless (n=10)
Age (years)	20.7 ± 8.0	22.7 ± 8.2
M/F	11/3	6/4
Race (White/Black/Other)	10/2/2	8/0/2
BMI (kg/m ²)	25.7 ± 4.7	24.5 ± 5.5
Follow up (months)	31.9 ± 31.6	11.1 ± 5.1
Laterality (R/L)	8/6	7/3
Anchors (#)	3.3 ± 0.6	3.6 ± 1.8
Remplissage (Y/N)	0/4	0/10

Table 2. Range of motion (ROM) for patients undergoing knotted and knotless fixation of posterior labrum repair.

Variable (Avg ± St. Dev.)	Knotted (n=14)	Knotless (n=10)	P-value
Operative Time (Min)	106 ± 27	79.8 ± 20.0	0.013*
Revisions required (Y/N)	0/14	0/10	>0.999
Able To return to Sport (Y/N)	6/2	5/3	>0.999
External rotation ROM (°)			
Pre-operation	90 ± 1	73 ± 26	0.161
6-weeks Post-operation	50 ± 22	66 ± 25	0.209
12-weeks Post-operation	72 ± 19	75 ± 13	0.862
24-weeks Post-operation	81 ± 21	80 ± 15	>0.999
Abduction ROM (°)			
Pre-operation	179 ± 4	169 ± 20	0.161
6-weeks Post-operation	109 ± 41	118 ± 42	0.653
12-weeks Post-operation	156 ± 30	157 ± 25	0.946
24-weeks Post-operation	167 ± 19	178 ± 4	0.167