

# Demographic and Clinical Risk Factors for Failure Following Primary Arthroscopic Posterior Instability Stabilization

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## INTRODUCTION:

Posterior glenohumeral instability is becoming an increasingly recognized cause of shoulder pain. Despite overall high rates of success and favorable results following primary arthroscopic posterior stabilization, failure rates have been reported to be as high as 14%.<sup>1</sup> Unlike the anterior instability literature, there is a lack of robustly defined risk factors for failure following primary arthroscopic posterior stabilization. Therefore, the purpose of this study was to evaluate for preoperative demographic and clinical risk factors for failure following primary arthroscopic stabilization, not only in athletes, but also civilian patients with chronic posterior instability and/or pain.

## METHODS:

This was a retrospective cohort study of consecutive patients who underwent arthroscopic posterior stabilization by a single surgeon (the senior author) between 2017-2022 with minimum 2-year follow-up. Data collected included patient demographics, injury characteristics, preoperative physical exams, PROMs, MRI imaging, and procedures performed. PROMs included PROMIS-10 Mental and Physical Health Scores, ASES, Brophy Shoulder Score, SSV, and VAS. Failure was defined as persistent postoperative shoulder pain, subjective postoperative instability, need for revision surgery, or failure to meet previously defined MCID for ASES after posterior stabilization.<sup>2</sup> Patients were divided into two cohorts: no failure (controls) or failure (cases). Descriptive statistics were performed on all collected variables and compared between groups. Any preoperative variables found to be significant ( $p < 0.05$ ) or marginally significant ( $p < 0.20$ ) were used to perform univariate analysis via logistic regression. Similarly, any variables deemed significant or marginally significant from the univariate analysis were used for multivariate analysis. Only the variables with  $p$ -values  $\leq 0.05$  in the final multivariate analysis were concluded to be significant risk factors.

**RESULTS:** 65 patients were included for analysis. Using our broad definition of failure, 46 patients (70.1%) had no failure while 19 patients (29.9%) had a failure postoperatively. **Table 1** shows the demographic variables analyzed, with no significant differences between groups. **Tables 2** show further testing with univariate and multivariate analyses. Notably, posterior and superior labral tears, SLAP repair, positive preoperative sulcus sign, and preoperative posterior load shift were approaching statistical significance with a  $\alpha$  significance level of 0.05. Furthermore, when evaluating these risk factors in a multivariate fashion, a positive preoperative sulcus sign and weakened forward flexion were ultimately included in our final multivariate model.

## DISCUSSION AND CONCLUSION:

Overall, this study contributes to the growing literature of posterior shoulder instability, detailing clinically relevant risk factors in the setting of arthroscopic stabilization surgery. Shoulder surgeons should consider these preoperative physical exam findings, given their potential correlation with increased odds of failure.

**Table 1. Patient demographics and injury characteristics**

	All Patients (n=65)	Controls (n=46)	Failure Postoperatively (n=19)	p-value
Sex				0.58
Male	42	29	17	
Female	22	13	5	
Age at Surgery (yrs)	29.1 ± 11.1	29.0 ± 9.9	29.4 ± 13.8	0.94
BMI	27.8 ± 6.2	28.4 ± 6.2	26.4 ± 6.1	0.25
Dominant Sided Instability, n (%)	38 (58.5%)	27 (71.1%)	11 (28.9%)	1.00
Chronic Instability, n(%)	12 (18.5%)	7 (58.3%)	5 (41.6%)	0.30
Instability from an Acute Trauma	16 (14.7%)	9 (11.8%)	7 (21.2%)	0.24
Instability from Sport	24 (36.9%)	18 (75.0%)	6 (25.0%)	0.78
Contact Sport	11 (16.9%)	9 (81.2%)	2 (18.8%)	0.71
Overhead Sport	21 (32.3%)	15 (71.4%)	6 (28.6%)	1.00

**Table 2. Univariate & Multivariate Analysis**

Predictor Variable	Coef.	SE	z	P> z	95% CI Lower	CI Upper
<b>Univariate Analysis</b>						
SLAP Repair	1.451	0.811	1.790	<b>0.074</b>	-0.139	3.041
Posterior Labral Tear	1.552	1.089	1.430	<b>0.154</b>	-0.583	3.687
Superior Labral Tear	1.625	0.598	2.720	<b>0.007</b>	0.453	2.796
Preop Sulcus Sign	1.259	0.683	1.840	<b>0.065</b>	-0.079	2.597
Preop Posterior Load Shift	0.850	0.526	1.620	<b>0.106</b>	-0.180	1.880
Instability Secondary to Acute Trauma	0.114	0.265	0.430	0.669	-0.405	0.632
Number of Suture Anchors	0.220	0.147	1.500	<b>0.136</b>	-0.068	0.508
Preop Active FF	-0.042	0.035	-1.210	0.225	-0.110	0.026
Preop Strength with FF	-1.099	0.772	-1.420	<b>0.154</b>	-2.611	0.414
Collision Injury	1.435	0.961	1.490	<b>0.136</b>	-0.449	3.319
Type of Instability Events	-0.308	0.325	-0.950	0.344	-0.945	0.330
<b>Multivariate Analysis</b>						
Preop Sulcus Sign	1.429	0.774	1.84	0.065	-0.089	2.948
Preop Strength with FF	-1.747	1.351	-1.29	0.196	-4.395	0.901