Treatment of Paralabral Cysts via Ultrasound-Guided Aspiration: Patient-Reported Outcomes and Incidence of Conversion to Surgical Intervention at Mid-Term Follow-Up

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Introduction

Paralabral cysts of the shoulder may cause significant pain and/or weakness due to nerve compression. While traditionally treated with surgical decompression and labral repair, ultrasound-guided aspiration may be a minimally invasive alternative. The purpose of this study was to investigate the efficacy, recurrence rates, and patient reported outcomes (PROs) associated with ultrasound-guided aspiration of paralabral cysts.

Methods

A retrospective review of 10 patients at our institution who underwent ultrasound-guided aspiration of a paralabral cyst was performed. Minimum follow-up was 6 months. Inclusion criteria were age >18. Demographics, MRI characteristics, conversion to surgery after aspiration, and PROS (PROMIS interference, PROMIS UE, PROMIS Intensity) were collected.

Results

The average age was 44 ± 12 years, with an average BMI of 26.3 ± 3.9 kg/m^2, and 90% of the cohort were male (Table 1). The mean follow-up duration was 4 ± 3 years.

Paralabral cysts were most commonly located in the spinoglenoid notch (60%), followed by the suprascapular notch (20%) and superior glenoid (20%). Most patients (80%) had labral tears identified on MRI, with 90% of tears occurring in the posterosuperior location and 10% in the direct superior location. Goutallier grading revealed Grade 1 supraspinatus fatty infiltration in one patient (10%) and mild teres minor Grade 1 changes in four patients (40%), while all other evaluated musculature had Grade 0 changes. Denervation edema was observed in the supraspinatus (10%), infraspinatus (20%), and teres minor (40%).

Only one patient (10%) required conversion to arthroscopic decompression and labral repair at 4.9 months due to a recurrent symptomatic cyst. Two additional patients underwent follow-up imaging for persistent pain, but neither had evidence of cyst recurrence.

There was significant improvement in PROMIS Pain Intensity scores, from 47.2 ±7.8 preoperatively to 55.8 ± 8.3 postoperatively ($p < 0.05$; Table 2). Although PROMIS Pain Interference (58.4 ± 9.5 to 62.3 ± 8.9; p=0.344; Table 2) and PROMIS Upper Extremity Function (45.9 ± 13.5 to 50.4 ± 9.1; p=0.3911; Table 2) trended toward improvement, these changes were not statistically significant. At the most recent follow-up, patients reported excellent outcomes, with an average ASES score of 89 ± 13 and an Oxford Shoulder Score of 44 ± 4, along with minimal pain reported on the VAS scale 1.6 ± 1.9.

Conclusion

Ultrasound-guided aspiration of paralabral cysts demonstrated favorable mid-term outcomes, with significant improvement in pain intensity and high patient-reported satisfaction. Rates of additional imaging or surgical intervention were low. Minimally invasive techniques such as ultrasound-guided aspiration show promise as a low risk, convenient alternative to treatment of these cysts. Further prospective research is needed to establish long-term efficacy and optimize patient selection criteria.

Table 1. Patient Demographics and Paralabral Cyst Characteristics.

Variable	Value
Follow-up (Years, SD)	3.7 ± 3.3
Age (Years; Mean, SD)	44.4 ± 12.1
Male (%)	9 (90%)
BMI (kg/m^2; Mean, SD)	26.3 ± 3.9
Paralabral Cyst Location	
Spinoglenoid Notch (%)	8 (80%)
Suprascapular Notch (%)	1 (10%)
Superior Glenoid (%)	1 (10%)
Goutallier Grading	
Supraspinatus, Grade 0 (%)	9 (90%)
Supraspinatus, Grade 1 (%)	1 (10%)
Infraspinatus, Grade 0 (%)	10 (100%)
Teres minor, Grade 1 (%)	9 (90%)
Teres minor, Grade 1 (%)	1 (10%)
Denervation Edema	
Supraspinatus (%)	1 (10%)
Infraspinatus (%)	2 (20%)
Teres minor (%)	4 (40%)
Conversion to Surgery (%)	1 (10%)

SD = standard deviation; BMI = body mass index

Table 2. Patient Reported Outcome Scores

PROM	Pre-operative	Post-operative	p-value
PROMIS – Pain Intensity (Mean, SD)	47.17 ±7.84	55.8 ±8.32	**< 0.05**
PROMIS – Pain Interference (Mean, SD)	58.35 ± 9.46	62.33 ± 8.86	0.344
PROMIS – Upper Extremity Function (Mean, SD)	45.88 ± 13.46	50.38 ± 9.06	.391

SD = standard deviation; PROM = Patient Reported Outcome Measure; PROMIS = Patient-Reported Outcomes Measurement Information System