Effectiveness of Non-operative Treatment in Patients with Glenohumeral Osteoarthritis: A Prospective Cohort Study

Favian Su¹, Hayden Marcus Sampson, Christopher Anigwe, ChunBong Benjamin Ma², Drew Lansdown, Brian T Feeley ¹UC San Francisco, ²UCSF Med Ctr

INTRODUCTION:

There is limited evidence supporting the use of non-operative strategies in the treatment of glenohumeral osteoarthritis (GHOA). Recent AAOS clinical practice guidelines have stated that it is unclear whether non-operative management of GHOA would produce a clinically important difference in pain or function. Therefore, the purpose of this study was to determine the effects of non-operative treatment on patient-reported outcomes (PROs) and to identify factors that could predict which patients would undergo total shoulder arthroplasty (TSA).

62 patients with primary GHOA were recruited. Patients could choose to receive or refuse different non-operative modalities, including physical therapy (PT) and corticosteroid injections, based on their preference. American Shoulder and Elbow Score (ASES) were administered at baseline, 3-, 6-, and 12-months to evaluate treatment response. Demographic, clinical, and radiographic characteristics were compared between patients who failed and did not fail non-operative management. Failure was defined as having undergone TSA.

RESULTS: 14 (23%) patients who initially attempted non operative management underwent TSA at a mean follow-up of 7.7 months (range, 1.6 - 25.2 months). In patients who continued non-operative management, only 19 (31%) patients met the minimum clinical important difference and 26 (42%) patients achieved patient acceptable symptom state. There was no significant difference in the change in American Shoulder and Elbow Score (ASES) between patients who did and did not undergo physical therapy (p = 0.524) (Table 1). A lack of belief in PT [HR = 33.6 (95% CI: 5.26 - 214), p < 0.001], decrease in ASES score [HR = 6.25 (95% CI: 2.04 - 20.0), p = 0.001], female sex [HR = 5.38 (95% CI: 1.31 - 22.1), p = 0.020], and lower resilience [HR = 7.14 (95% CI: 1.78 - 33.3), p = 0.006] were independently associated with failure of non-operative treatment (Figure 1). Patients who received at least one glenohumeral corticosteroid injection [HR = 0.16 (95% CI: 0.04 - 0.67), p = 0.012] or had more joint space remaining [HR = 0.22 (95% CI: 0.06 - 0.80), p = 0.021] had a decreased risk of failure.

DISCUSSION AND CONCLUSION:

Non-operative treatment of GHOA can meaningfully improve symptoms in approximately 30% of patients. Despite this, patients elect to undergo TSA less than 25% of the time. PT is not beneficial in the treatment of GHOA. Screening questionnaires that evaluate a patient's belief in PT and resilience could potentially be used to identify which patients will fail non-operative treatment.



Table 1. Change in ASES Scores with Non-operative Treatment Change Baseline Final Follow-up p-value^a Failure < 0.001 Yes 51.5 ± 16.2 47.6 ± 15.3 -5.2 ± 8.4 No 62.2 ± 17.1 67.7 ± 17.3 5.6 ± 15.0 Sex 0.511 Male 61.6 ± 16.9 63.5 ± 18.4 1.9 ± 14.2 Female 57.5 ± 18.0 $\mathbf{61.9} \pm \mathbf{19.8}$ $\textbf{4.4} \pm \textbf{14.9}$ PT 0.524 Yes 3.9 ± 15.5 59.1 ± 17.4 63.0 ± 19.0 No 60.9 ± 17.5 62.5 ± 19.0 1.6 ± 12.9 Corticosteroid Injection 0.669 Yes 55.6 ± 17.9 $\mathbf{59.6} \pm \mathbf{19.3}$ $\textbf{4.0} \pm \textbf{16.2}$ No $\textbf{2.3} \pm \textbf{13.4}$ $\mathbf{62.5} \pm \mathbf{16.7}$ $\mathbf{64.8} \pm \mathbf{18.5}$ Joint Space Remaining 0.970 0 to < 1 mm 57.0±16.7 59.7 ± 17.8 2.7 ± 15.8 1 to < 2 mm 66.5 ± 17.4 70.6±21.1 4.1 ± 10.8 >2 mm 70.0 ± 17.5 73.1 ± 18.9 3.1 ± 9.1 ASES, American Shoulder and Elbow Score; PT, physical therapy **Bold** denotes significance ^aComparison between change in ASES score

Figure 1. Kaplan-Meier survival curves for failure of non-operative treatment stratified by (A) joint space remaining (mm), (B) PT, and (C) belief in PT.