What Influences Elective Shoulder Surgery Cancellations? A Retrospective Comparison of Patient Specific Risk Factors

Benjamin T. Johnson, BS[1], Idris Hanidu, B.S[1], Apurva Choubey M.D.[2], Brett Drake, BS[2], Gautam Malhotra, M.D[2], Benjamin Goldberg, M.D[2]
[1] University of Illinois College of Medicine at Chicago, Chicago, IL, [2] University of Illinois Hospital, Department of Orthopaedics, Chicago, IL
Email of Presenting Author: bjohn52@uic.edu

Disclosures: Benjamin Johnson (6-BCBS), Idris Hanidu (6-BCBS), Apurva Choubey (N), Brett Drake (N), Gautam Malhotra (N), Benjamin Goldberg (N)

INTRODUCTION: Orthopaedic elective surgery cancellations can have a significant negative impact on patient quality of life and loss of revenue. Current estimates of elective surgery cancellation rates vary widely and can reach as high as 40%.[1] Despite there being evidence of the detrimental impact cancellations have on patients and hospitals, few studies have investigated the reasons for cancelling shoulder surgery. With this in mind, this study sought to retrospectively identify patient specific risk factors for cancellations of primary elective shoulder surgery.

METHODS: Patients scheduled for primary shoulder surgery between February 2019 and November 2022 at an urban, academic tertiary medical center were retrospectively analyzed. Each subject's medical chart was reviewed for patient demographic information, procedural information, and stated reason for cancellation. Initial diagnosis date was defined as the moment the patient's pathology was officially confirmed via imaging and evaluated in the orthopaedic clinic. Cohorts were compared using Fisher's Exact Test and Wilcoxon Rank Sum Test.

RESULTS SECTION: A total of 266 patients were included in the final analysis with 175 completing their surgery without cancellation and 76 having either cancelled completely without rescheduling in our analysis period or postponed their surgery to a later date within the time criteria. Patients who cancelled lived farther away in kilometers (31.5 ± 43.9 vs 19.9 ±24.8) (p=0.007) (95% CI [3.2, 20.0]), waited more days between time from their official diagnosis to date of originally scheduled surgery (142.6 ± 132.6 vs 62.9 ± 53.4) (p=<0.001) (95% CI 57.3 to 102.1), were supposed to undergo an open procedure (42% vs 59%) (p=0.013), and have at least one cancelled appointment within 1 year of their surgery date (84% vs 68%) (p=0.009) when compared to patients who never cancelled or postponed (Table 1). The three most common reasons for surgery cancellation were patient refusal (45%), another medical condition (25%), and economic burden (17%).

DISCUSSION: Increased length of time from initial diagnosis to scheduled date of elective shoulder surgery enhances risk of cancellation or postponement. Additionally, patients who cancelled or postponed their surgery were more likely to be scheduled for an open procedure, potentially indicating hesitation around a larger procedure. Using this information in conjunction with the most commonly reported reasons for cancellations may help orthopaedic surgeons and their teams formulate effective countermeasures.

SIGNIFICANCE/CLINICAL RELEVANCE: Identification of patient specific risk factors associated with cancellation can allow surgeons to formulate and implement mitigation strategies.

REFERENCES: 1: Demilew BC, Yisak H, Terefe AA. Magnitude and causes of cancelation for elective surgical procedures in Debre Tabor General hospital: A cross-sectional study. *SAGE Open Med*. 2021;9:20503121211003357. Published 2021 Mar 17. doi:10.1177/20503121211003357

Characteristic	Cancelled / Postponed, N = 76[1]	Never Cancelled, N = 190[1]	p-value[2]
Sex			P=0.587
Male	41 (54%)	94 (49%)	
Female	35 (46%)	96 (51%)	
Age at Surgery	55.0 (±15.6)	53.4 (±13.9)	P=0.414
Race/Ethnicity			P=0.931
White/Caucasian	20 (26%)	41 (22%)	
Black/African American	34 (45%)	87 (46%)	
Hispanic/Latinx	18 (24%)	49 (26%)	
Asian	1 (1.3%)	3 (1.6%)	
Other	3 (4.0%)	10 (5.3%)	
Insurance type			P=0.142
Medicare	18 (24%)	40 (21%)	
Medicaid	37 (49%)	67 (35%)	
Private/Commercial	18 (24%)	67 (35%)	
Workers Comp	3 (4.0%)	15 (7.9%)	
Other	0 (0%)	1 (5.3%)	
Distance to hospital (Km)	31.5 (±43.9)	19.9 (±24.8)	**P=0.007**
National ADI	57.5 (±22.5)	57.0 (±21.7)	P=0.867
BMI	30.6 (±6.8)	31.4 (±7.1)	P=0.402
Cardiovascular Disease	21 (28%)	34 (18%)	P=0.078
COPD	7 (9.2%)	8 (4.2%)	P=0.111
Diabetes	21 (28%)	48 (25%)	P=0.687
History of Anxiety or Depression	19 (25%)	36 (19%)	P=0.268
Smoking Status			P=0.990
Active	19 (25%)	46 (24%)	
Former	17 (22%)	43 (23%)	
Never	40 (53%)	101 (53%)	
History of cancelled appointments within last year	64 (84%)	130 (68%)	**P=0.009**

[1]n (%); Mean (SD)
[2]Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test

Table 1: Patient demographic information in those who canelled vs those who did not.

Characteristic	Cancelled / Postponed, N = 76[1]	Never Cancelled, N = 190[1]	p-value[2]
Diagnosis			P=0.422
Rotator Cuff Tear	37 (49%)	103 (54%)	
Arthritis	19 (25%)	33 (17%)	
Labrum Tear	8 (11%)	28 (15%)	
Other	12 (16%)	26 (14%)	
Scheduled Primary Procedure			P=0.070
Rotator Cuff Repair	25 (33%)	80 (42%)	
Total Shoulder Arthroplasty	5 (6.6%)	12 (6.3%)	
Reverse Shoulder Arthroplasty	29 (38%)	39 (21%)	
Bankart Repair	6 (7.9%)	14 (7.4%)	
Labral Repair	3 (4.0%)	9 (4.7%)	
Other	8 (11%)	36 (19%)	
Days Between Diagnosis and Scheduled Surgery	142.8 (±132.6)	62.9 (±53.4)	**P=<0.001**
Arthroscopic	32 (42%)	112 (59%)	**P=0.013**
Laterality			P=0.892
Right	44 (58%)	108 (57%)	
Left	32 (42%)	82 (43%)	

[1]n (%); Mean (SD)
[2]Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test

Table 2: Perioperative information in patients who cancelled vs those who did not.

Reason for cancellation	N = 76
Patient refusal for surgery (change of mind)	34 (45%)
Transportation	0 (0%)
Economic burden	13 (17%)
Another medical condition	19 (25%)
Surgeon unavailable	0 (0%)
Patient requires further medical workup	5 (6.6%)
Emergency scheduling	0 (0%)
Over scheduling of the OR	0 (0%)
Equipment / OR not available	1 (1.3%)
Unavailable post-operative hospital bed	0 (0%)
Patient is unfit for anesthesia	2 (2.6%)
Abnormal lab result	0 (0%)
Patient did not complete preoperative requirements	2 (2.6%)

Table 3: Reasons for shoulder surgery cancellation.