Impact of Anxiety and Depression on TKA Postoperative Outcomes

Mathew Mendoza[1], Dallas F Bennett[1], Joshua H Taylor[2], Bryce Palumbo[2,3], Ugonna N Ihekweazu MD[2], Corey F Hryc PhD[2]

[1]Tilman J. Fertitta Family College of Medicine, University of Houston. Houston, TX, USA.
[2]Fondren Orthopedic Research Institute, Fondren Orthopedic Group, Texas Orthopedic Hospital. Houston, TX, USA.
[3]Texas A&M University. College Station, TX, USA.
Joshua.Taylor@fondren.com

INTRODUCTION: The effect of mental health illness on arthroplasty procedures is an emerging area of study given the concurrent rise of mental health disorders and total knee arthroplasty (TKA) alike. While TKA has been proven to relieve knee pain effectively, some patients experience prolonged discomfort, potentially linked to mental health conditions like anxiety and depression (A&D). This retrospective study investigates the relationship between A&D and TKA outcomes, comparing patient-reported outcome measures (PROM) with and without these psychiatric diagnoses.

METHODS: Cohorts were identified through an electronic medical record, categorizing patients based on anxiety, depression, both, or neither. Demographics were supplemented with perioperative data, as well as PROMs for analysis. Descriptive statistics were calculated for all variables. Continuous variables were compared using t-tests and one-way ANOVA, while categorical variables were analyzed using Fisher's exact test and Chi-square tests. Statistical significance was set at $p<.05$. A sub analysis (not shown) was also performed where patients were separated based on PROMIS-10 mental health scores.

RESULTS: A total of 624 patients were analyzed, comprising 226 males (36.2%) and 398 females (63.8%). The A&D cohort (n=309) had longer hospital stays after TKA (1.03 days) compared to the no A&D cohort (n=315) (0.90 days) (p=0.0359). Additionally, the A&D group required more post-operative opioids (52.60 MME vs. 41.07 MME; p=0.0274), though pain levels at discharge were similar between groups (5.30 vs. 4.99; p= 0.0971). KOOS JR scores indicated that both cohorts experienced improved knee function with no statistical difference at 1-year (73.38±17.82 vs 76.05±14.25; p=0.2694). PROMIS-10 scores plateaued at 3-months for the A&D cohort, while the no A&D cohort showed continued improvement over time.

DISCUSSION: A&D diagnoses are associated with increased early postoperative burden following TKA; however, PROMIS-10 mental health scores more effectively capture variation in recovery. These results affirm the need to consider A&D as a factor in TKA recovery to ensure holistic care and optimize patient outcomes. Early identification and targeted interventions, such as pre-operative counseling and integrated mental health support may improve recovery.

SIGNIFICANCE/CLINICAL RELEVANCE: These findings suggest that mental health impacts recovery on a continuum, rather than as a binary diagnosis alone. Incorporating routine PROMIS-10 assessment may support more personalized care and improve outcomes.

TABLES:

Table 1. PROMs of Patients in Two Cohort

Interval	Anxiety and Depression	No Anxiety and Depression	P Value
KOOS, JR.			
Preop	47.40 ± 12.16 (n = 272)	50.61 ± 11.85 (n = 286)	**0.001556201**
3 months	67.55 ± 14.08 (n = 238)	69.82 ± 13.49 (n = 249)	0.070102536
6 months	69.96 ± 15.47 (n =183)	73.14 ± 15.40 (n = 196)	**0.045780331**
12 months	73.38 ± 17.82 (n = 85)	76.05 ± 14.25 (n = 91)	0.269388495
PROMIS-10 Physical			
Preop	38.66 ± 6.73 (n = 272)	42.29 ± 6.64 (n = 276)	**p < 0.0001**
3 months	44.44 ± 7.80 (n = 228)	47.72 ± 7.52 (n = 244)	**p < 0.0001**
6 months	44.21 ± 8.42 (n =177)	48.71 ± 7.95 (n = 193)	**p < 0.0001**
12 months	43.97 ± 9.64 (n = 78)	49.86 ± 8.10 (n = 88)	**p < 0.0001**
PROMIS-10 Mental			
Preop	44.85 ± 8.02 (n = 272)	52.22 ± 8.48 (n = 276)	**p < 0.0001**
3 months	46.57 ± 8.07 (n = 228)	53.55 ± 8.21 (n = 244)	**p < 0.0001**
6 months	45.89 ± 8.48 (n = 177)	53.96 ± 8.31 (n = 193)	**p < 0.0001**
12 months	46.32 ± 9.36 (n = 78)	55.28 ± 7.86 (n = 88)	**p < 0.0001**

Table 2. Univariate Comparison of Immediate Postsurgical Pain and Opioid Use Among the Two Cohorts

Variable	Anxiety and Depression Group n=309	No Anxiety and Depression Group n=315	P Value
Preoperative Opioid Use	n=292	n=305	.3906
Yes (%)	104 (35.62)	119 (39.02)	
No (%)	188 (64.38)	186 (60.98)	
Total MMEs	52.60 ± 51.34 (45; n=295)	41.07 ± 72.57 (39; n=284)	**0.0273758**
Pain at 2 hours	5.98 ± 2.44 (3; n=306)	5.22 ± 2.76 (4; n=314)	**0.000301745**
Pain at discharge	5.30 ± 2.20 (3; n=307)	4.99 ± 2.43 (4; n=314)	0.097166018

MME= morphine milligram equivalent
CURRENT Display: Average ± Stdev (Interquartile Range; Count)
Pain scores range from 0 to 10, with 0 indicative of no pain