

The Impact of Major Depressive Disorder on Psychiatric and Somatic Outcomes Following Total Knee Arthroplasty

Muaz Wahid, Zuhair Zaidi, Elias Nasser, Clarissa Andrea Meza, ANTONIA F CHEN

INTRODUCTION:

Major depressive disorder (MDD) is among the most common psychiatric disorders affecting surgical patients, especially in orthopaedic populations undergoing total knee arthroplasty (TKA). While TKA is generally effective for pain relief and functional improvement, approximately one-third of patients continue to report dissatisfaction or persistent postoperative symptoms. Prior studies have predominantly examined pain and functional recovery; however, there remains a significant gap regarding how MDD independently affects psychiatric morbidity and systemic complications following surgery. Given the projected increase in both depression prevalence and the number of patients undergoing TKA, a comprehensive understanding of the psychiatric and systemic risks associated with preexisting MDD is critical. Therefore, this study aimed to quantify whether patients with isolated MDD undergoing primary TKA experience higher risks of developing psychiatric complications, somatic symptoms, and mortality at both short-term (90 day) and long-term (one year) follow-up.

METHODS:

We conducted a retrospective cohort analysis using the TriNetX US Collaborative Network, a large-scale federated electronic health record platform. Adult patients who underwent primary TKA between 2015 to 2024 were included. Patients with prior knee pathology, revision surgeries, prosthetic complications, or any psychiatric or neurocognitive conditions other than MDD were excluded. The MDD cohort consisted of patients with a documented diagnosis of recurrent MDD within one year preceding surgery. We employed rigorous 1:1 propensity score matching to control for differences in demographics (age, sex, race), clinical comorbidities (hypertension, hyperlipidemia, diabetes mellitus, chronic kidney disease, cardiovascular disease, cerebrovascular disease, obesity, hypothyroidism, liver disease, polycystic ovarian syndrome, and nicotine dependence), medication use (opioids, antidepressants, antipsychotics, gabapentinoids, muscle relaxants, and non-steroidal anti-inflammatory drugs), and laboratory parameters (body mass index and glycated hemoglobin). Logistic regression models were used to calculate odds ratios (ORs) and 95% confidence intervals (CIs) for the occurrence of 14 postoperative psychiatric and somatic outcomes at both 90 day and one year intervals.

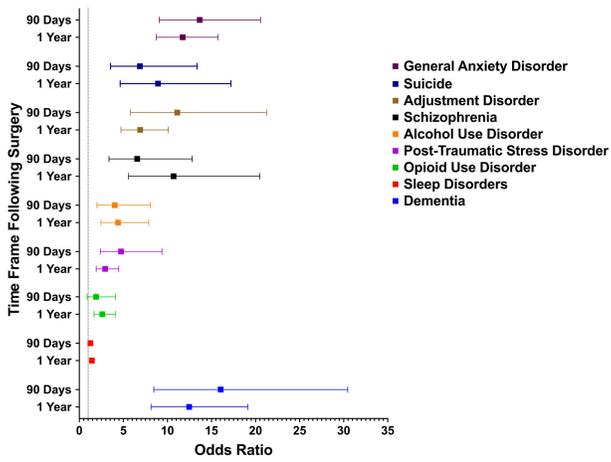
RESULTS:

After matching, 5,233 pairs of patients with and without MDD were analyzed. P-values were <0.0001 unless otherwise noted. MDD patients had markedly increased risks of new-onset psychiatric disorders compared to controls, including generalized anxiety disorder (OR_{90day} 13.66; OR_{1year} 11.73), adjustment disorder (OR_{90day} 11.11; OR_{1year} 6.91), post-traumatic stress disorder (OR_{90day} 6.57; OR_{1year} 10.70), schizophrenia (OR_{90day} 4.02, p=0.001; OR_{1year} 4.40), suicidal ideation or attempts (OR_{90day} 6.88; OR_{1year} 8.93), and dementia (OR_{90day} 16.05; OR_{1year} 12.47). Substance-related disorders were similarly elevated, notably alcohol use disorders (OR_{90day} 4.73, p=0.001; OR_{1year} 2.93, p=0.004) and opioid use disorders (OR_{90day} 1.90, p=0.001; OR_{1year} 2.61). Additionally, significant somatic complications were observed, including chest pain (OR_{90day} 1.87; OR_{1year} 1.26, p=0.006), dizziness (OR_{90day} 1.43, p=0.002; OR_{1year} 1.53), and shortness of breath (OR_{90day} 1.66; OR_{1year} 1.42). The risk of all-cause mortality was notably higher in the MDD cohort at both follow-up intervals (OR_{90day} 4.33, p=0.002; OR_{1year} 3.39, p=0.002). Furthermore, emergency department utilization significantly increased at the one year follow-up (OR 1.22, p=0.002).

DISCUSSION AND CONCLUSION:

This study demonstrates that preexisting MDD is independently associated with increased psychiatric and systemic complications following primary TKA. The elevated rates of new-onset anxiety, adjustment disorder, sleep disturbance, and dementia suggest that the perioperative period may act as a physiological and psychological stressor, unmasking latent psychiatric conditions or exacerbating subclinical disease. These complications influence recovery trajectory, prolong opioid dependence, and increase overall healthcare utilization. The significant rise in somatic events such as chest pain, shortness of breath, and emergency department utilization highlights the complex interplay between mental health and physical symptom perception. These findings suggest that altered stress response, impaired adherence to rehabilitation, and heightened pain sensitivity may mediate the observed outcomes. Mortality outcomes reflect all-cause death were not limited to procedure-related events, underscoring the broader systemic vulnerability associated with MDD. These results challenge the traditional orthopaedic paradigm that views surgical recovery through a primarily mechanical lens. Instead, they emphasize the biopsychosocial complexity of perioperative outcomes and support the need for integrated care pathways. This study highlights the importance of routine mental health screening, timely psychiatric referral, and proactive symptom monitoring as essential components of surgical care. Addressing mental health in the perioperative setting may be critical to optimizing recovery and reducing long-term morbidity in patients with MDD.

Psychiatric Complications Following Total Knee Arthroplasty:
90-Day and 1-Year Risk Assessment



Somatic Complications Following Total Knee Arthroplasty:
90-Day and 1-Year Risk Assessment

