The Impact of Depression on Total Knee Arthroplasty

Travis Mark Kotzur[1], Aaron Singh, Kathleen Fay Lundquist, Lindsey Noelle Peng, Ali Seifi, Chance C Moore
[1]University of Texas Health San Antonio

INTRODUCTION:

Depression is among the most common mental illnesses, with an estimated 8.1% of adults in the US living with it. Despite its prevalence, the impact of mental illness, including depression, on surgical outcomes is not well studied. The aim of this study is to assess the impact of diagnosed major depressive disorder on postoperative outcomes following total knee arthroplasty (TKA).

METHODS: This is a retrospective cohort study utilizing the National Readmissions Database, years 2016-2019. Patients undergoing TKA, with and without a diagnosis of depression, were identified via ICD-10 code. Multivariate regression was performed to assess outcomes between groups. Negative binomial regression was performed to assess 30-day readmission and reoperation. Patient demographics and comorbidities, measured via Elixhauser comorbidity index, were controlled for in our analysis.

RESULTS:

A total of 1,906,980 patients undergoing TKA, 302,853 (15.88%) with a diagnosis of depression, were included in our analysis. Those with depression were more likely to have both medical (Odds Ratio (OR) 1.023; p=0.004) and surgical complications (OR 1.378; p<0.001), including periprosthetic fracture (OR 2.161; p<0.001). Additionally, they had increased odds of 30-day readmission (OR 1.547; p<0.001) and reoperation (OR 1.662; p<0.001).

DISCUSSION AND CONCLUSION:

Depression is extremely common in the TKA population, with 15.88% of patients having a formal diagnosis at the time of surgery. Furthermore, these patients experience a greater risk of complications following surgery. They are also at greater risk of requiring readmission or reoperation. This study brings attention to the serious, deleterious impact of this common condition.

Adverse Event	OR	95% C.I Lower	95% C.I Upper	P
Medical Complication	1.023	1.007	1.039	0.004 *
Respiratory Failure	1.551	1.481	1.624	<0.001 *
Pulmonary Embolism	1.242	1.162	1.328	<0.001 *
Pneumonia	1.677	1.572	1.788	<0.001 *
Cardiac Arrest	1.079	0.880	1.314	0.449
Heart Failure	0.716	0.696	0.736	<0.001 *
Myocardial Infarction	1.251	1.152	1.358	<0.001 *
Deep Vein Thrombosis	1.23	1.146	1.319	<0.001 *
Acute Kidney Disease	1.06	1.024	1.097	0.001 *
Urological Infection	1.569	1.522	1.617	<0.001 *
Stroke	1.438	1.284	1.61	<0.001 *
Magna end paresos	1.101	1.102	1.468	<0.001 *
Osteomyelitis	1.445	1.205	1.733	<0.001 *
Sepsis	1.548	1.464	1.637	<0.001 *
Surgical Complication	1.378	1.334	1.423	<0.001 *
Wound Disruption	1.905	1.78	2.04	<0.001 *
Postoperative Infection	1.686	1.565	1.816	<0.001 *
Joint Infection	1.872	1.765	1.986	<0.001 *
Dislocation	2.162	1.904	2.454	<0.001 *
Periprosthetic Fracture	2.161	1.870	2.49	<0.001 *
Transfusion	1.223	1.165	1.285	<0.001 *
Postoperative Shock	0.771	0.698	0.852	<0.001 *
Postoperative Neurological Complication	0.99	0.736	1.331	0.947
Postoperative Vascular Complication	0.835	0.790	0.909	<0.001 *

Figure 1. Odds ratios indicating the increased occurrence of 30-day adverse events for patients with depression compared to those without.

Hospital	OR	95% C.I Lower	95% C.I Upper	P
Thirty day readmission	1.547	1.504	1.593	<0.001 *
Thirty day reoperation	1.622	1.526	1.725	<0.001 *
Mortality	0.478	0.264	0.804	0.006 *
Routine Discharge	0.987	0.971	1.002	0.095
Length of Stay	1.025	1.016	1.034	<0.001 *
Length of stay 3 days	1.074	1.061	1.087	<0.001 *
Length of stay 5 days	1.05	1.018	1.083	0.002 *
Length of stay 7 days	1.097	1.049	1.148	<0.001 *
Length of stay 10 days	1.165	1.106	1.228	<0.001 *
Total Charges	0.984	0.975	0.994	0.002 *
Readmission Total Charges	0.953	0.941	0.965	<0.001 *
Readmission Length of Stay	1.065	1.053	1.078	<0.001 *

Figure 2. Odds ratios indicating the increased occurrence of hospital metrics for patients with depression compared to those without.