

Total Knee Arthroplasty Complicated by Seizure and Epilepsy: A Case Report of Two Patients

Purpose/Hypothesis: Total knee arthroplasty (TKA) is a highly effective treatment for advanced osteoarthritis. Neurologic comorbidities such as epilepsy are associated with increased perioperative morbidity. Although seizure disorders are known risk factors in arthroplasty populations, new-onset postoperative seizures following TKA remain poorly characterized. The study aims to summarize available evidence on seizure-related complications in total joint arthroplasty (TJA) and present two cases of de novo tonic–clonic seizures occurring shortly after TKA.

Methods: A comprehensive review of the literature was conducted to identify seizure-associated complications in TJA, focusing on perioperative mechanisms, medication- and anesthesia-related risk factors, and orthopedic outcomes. Two postoperative TKA cases were examined, including clinical presentation, diagnostic evaluation, management strategies, and short-term outcomes.

Results: Patient A, 65-year-old male with chronic kidney disease and no seizure history, developed a seizure on postoperative day 1, likely triggered by tramadol accumulation. Subsequent imaging revealed hip and shoulder fractures requiring total hip arthroplasty and later complications including paradoxical embolism and stroke. Patient B, 62-year-old female with remote epilepsy, experienced a seizure on postoperative day one after hinged TKA. EEG confirmed generalized epileptiform activity, and valproic acid was initiated. No fractures occurred, and both pain and function improved with rehabilitation. Both recovered without residual weakness or seizure recurrence.

Conclusion: New-onset seizures after TKA, though rare, pose significant risks including traumatic fractures, systemic complications, and prolonged recovery. Seizures may precipitate severe orthopedic injuries, including periprosthetic fractures and implant instability. These findings highlight the need for careful perioperative medication selection, vigilant neurologic monitoring, and multidisciplinary management for patients with known or potential seizure vulnerabilities. Further research is needed to establish standardized protocols to reduce seizure risk in arthroplasty patients.