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CORR Insights

CORR Insights®: What Is the Timing of General Health Adverse Events That Occur After Total Joint Arthroplasty?

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Where Are We Now?

Postoperative adverse events, including life-threatening complications such as myocardial infarction and pulmonary embolism (PE) can occur in 1% to 4% of patients undergoing primary total joint arthroplasty (TJA) [2]. However, most data related to general health adverse events in patients who underwent TJA are collected in-hospital and there is a relative lack of identification and documentation of adverse events after discharge.

It would be important to learn more about this topic, because of the increasing popularity of fast-track recovery programs, progressively shortening hospital stays, and outpatient TJAs. On this topic, Courtney and colleagues [3] used the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP) database to compare all patients undergoing primary TKA or THA from 2011 to 2014. They found an overall complication rate of 8% and 16% for outpatient and inpatient groups, respectively, during the first 30 days after surgery, and saw no increased risk of readmission or reoperation following outpatient TJA.

This set the stage for the study by Bohl and colleagues. In their study, the authors analyzed 124,657 patients who underwent primary TJA between 2005 and 2013 from the ACS-NSQIP database to identify the timing of certain adverse events and the proportion of adverse events occurring after the patient has been discharged from the hospital. Though the type and incidence of such adverse events and complications after TJAs is well reported [3, 8], we lack specific timing and characterization of such events.

The authors found that the median time to many important, life-threatening complications—stroke, myocardial infarction, PE, and pneumonia—was 4 days, whereas other adverse events such as deep vein thrombosis (DVT), urinary tract infection, sepsis, and surgical site infection generally occurred later, at a median of 5 to 20 days after surgery. Additionally, the timing for PE and DVT was earlier in patients undergoing TKA compared to those undergoing THA. This earlier occurrence of thromboembolic events

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in TKA patients could be from the increased venous compression associated with tourniquet use and knee flexion during TKA.

Where Do We Need To Go?

The ACS-NSQIP database contains data only for the 30-day period after TJA. The incidence of life-threatening and serious adverse events like myocardial infarction, stroke, sepsis, and surgical-site infection beyond this 30-day postoperative period remains incompletely characterized. In addition, databases like ACS-NSQIP are prone to inaccurate coding for procedure and diagnosis and require frequent quality reviews in order to improve reliability of the data [6, 7]. Availability and access to a database like the ACS-NSQIP is restricted or nonexistent in many parts of the world. Remote areas need their own systems similar to ACS-NSQIP so that surgeons can better understand the general health adverse event trends after primary TJA in their local patient populations.

How Do We Get There?

Most general-health adverse events occur after the patient has been discharged following a primary TJA. This highlights the importance of caution in determining the time of discharge for patients undergoing TJA, particularly with the increasing trend of shorter hospital stays for such patients. Discharge protocols for this patient population need modified and individualized in order to prevent readmission and reduce the risk of postoperative morbidity. One possible method would be to develop a score for postoperative discharge similar to an American Society of Anaesthesiologists score, such that patients could be classified into those suitable for early discharge or delayed discharge with or without postoperative surveillance. Although joint registries are in use in several countries around the world, they lack reliable data on general health adverse events following TJA and focus primarily on the performance and survival of implants [4, 5]. Therefore, databases similar to ACS-NSQIP need to be reviewed and adapted more frequently and by a wider audience.

Although the type and timing of general-health adverse events after primary TJA is known, perioperative protocols for diagnosing them could still be refined. The timing, indication, and thresholds for obtaining postoperative investigations such as an echocardiogram or brain CT scan need to be formalized using multidisciplinary approaches involving the orthopaedic surgeon, physician, and the anaesthetist. For adverse events that occur much later after discharge, there could be scope for use of "smart" sensors and home health monitoring technology platforms in the future [1] which will help early diagnosis and treatment of adverse events in patients who are at risk. A robust patient-reported adverse event protocol during the first 3-month postoperative period will help reduce the incidence of such adverse events and morbidity and mortality in patients who undergo TJA.

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