

What's New in the Patient Safety World

January 2021

Operative Time and Postoperative TKA Complications

We've done several columns on the impact of surgical case duration on post-op complications and surgical outcomes (see the full list below). We've often cited a study ([Procter 2010](#)) that looked at a large database of general surgical procedures and demonstrated a linear relationship between duration of surgery and infectious complications. This relationship persisted even after adjustment for a variety of other risk factors for perioperative infections. The unadjusted infectious complication rate increased by 2.5% per half hour. Hospital length of stay (LOS) also increased geometrically by 6% per half hour. Logically, prolonged operative time would also be expected to increase pressure-related complications, such as decubiti and perioperative neuropathies. Longer duration also increases the likelihood of increased foot traffic into and out of the OR and the potential for distractions and interruptions, potentially contributing to errors.

A new study ([Chen 2020](#)) used data from the American College of Surgeons National Surgical Quality Improvement Program database on almost 15,000 patients who had undergone revision total knee arthroplasties (TKA's) between 2007 and 2016. After adjustment, each additional 15 minutes of operative time increased the likelihood of wound complications (odds ratio 1.023), postoperative blood transfusion (odds ratio 1.169), and extended hospital stay (odds ratio 1.060). Of course, from such database statistics one cannot determine the reason for the prolonged surgical durations. In some cases, whatever led to complications may have also prolonged the surgery. But, undoubtedly, in many cases the complications resulted from the long surgical durations.

We recommend hospitals and any facility performing surgical procedures have a system in place to remind all the OR staff of surgical duration. After a set amount of time (based upon the average or expected duration for each type of surgery), someone such as the anesthesiologist should verbally call out the case duration so all staff are aware. Such announcement should be repeated every 10-15 minutes. That may alert staff to the need to reposition the patient, administer a second course of prophylactic antibiotics, etc.

Our prior columns focusing on surgical case duration:

- March 10, 2009 “[Prolonged Surgical Duration and Time Awareness](#)”
- January 2010 “[Operative Duration and Infection](#)”
- July 21, 2012 “[Surgical Case Duration and Miscommunications](#)”
- August 26, 2014 “[Surgeons’ Perception of Intraoperative Time](#)”
- December 30, 2014 “[Data Accumulates on Impact of Long Surgical Duration](#)”
- November 24, 2015 “[Door Opening and Foot Traffic in the OR](#)”
- July 26, 2016 “[Confirmed: Keep Your OR Doors Closed](#)”
- November 7, 2017 “[Perioperative Neuropathies](#)”
- December 2017 “[A Fix for OR Foot Traffic?](#)”

References:

Procter LD, Davenport DL, Bernard AC, Zwischenberger JB. General Surgical Operative Duration Is Associated With Increased Risk-Adjusted Infectious Complication Rates and Length of Hospital Stay, Journal of the American College of Surgeons 2010; 210: 60-65
<https://www.journalacs.org/article/S1072-7515%2809%2901411-2/abstract>

Chen AZ, Gu, A, Wei C, et al. Increase in Operative Time Is Associated With Postoperative Complications in Revision Total Knee Arthroplasty. Orthopedics 2020; Orthopedics. 2021;44(1):xx-xx
Posted November 25, 2020
https://www.healio.com/orthopedics/journals/ortho/%7Bca32cfcc-4d79-4adf-b368-f48b7123bae5%7D/increase-in-operative-time-is-associated-with-postoperative-complications-in-revision-total-knee-arthroplasty?utm_source=selligent&utm_medium=email&utm_campaign=orthopedics%20journals&utm_bt=104167139480



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