Postoperative Length of Stay is Associated With Unplanned Readmission in a Broad Surgical Population

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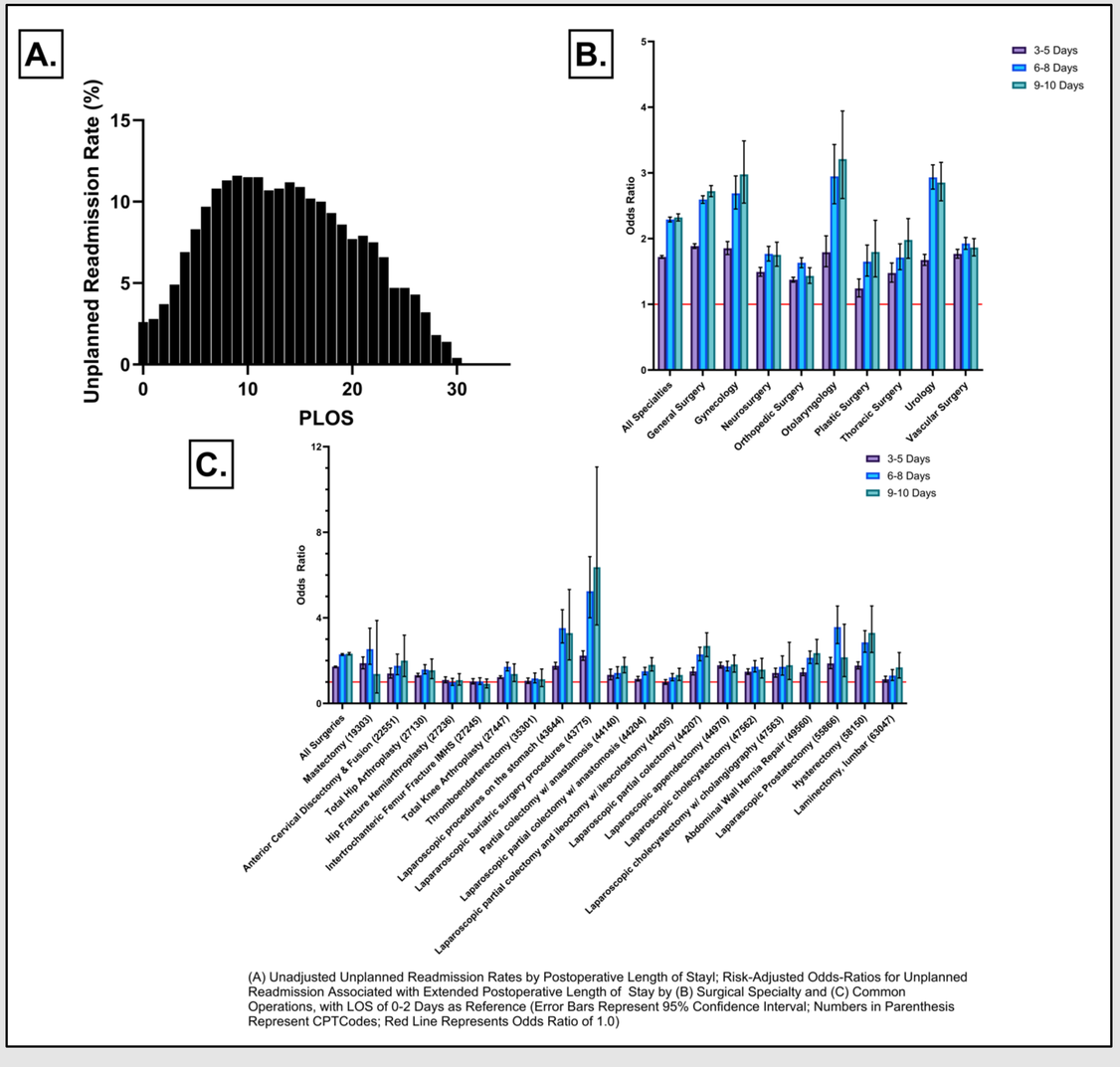
Background

- Reduction in postoperative length of stay (PLOS) improves financial and operational outcomes and is a target for quality improvement
- However, the relationship between PLOS and unplanned readmission, which may offset the system and patient gains of and early discharge, is not well-studied in a broad surgical population

Methods

- Retrospective cohort study using the prospectively collected American College of Surgeons National Surgical Quality Improvement Program participant use file (ACS-NSQIP PUF), 2012-2018
- Inclusion criteria included inpatients in nine surgical specialties
- Associations of patient preoperative characteristics, in-hospital postoperative complications, and PLOS intervals with readmission rates were tested
- Multiple linear regression analysis was performed with unplanned readmission as the dependent variable and postoperative length of stay as the independent variable
- Subgroup analyses were performed by surgical specialty and the 20 most common individual operations



(A) Unadjusted Unplanned Readmission Rates by Postoperative Length of Stayl; Risk-Adjusted Odds-Ratios for Unplanned Readmission Associated with Extended Postoperative Length of Stay by (B) Surgical Specialty and (C) Common Operations, with LOS of 0-2 Days as Reference (Error Bars Represent 95% Confidence Interval; Numbers in Parenthesis Represent CPTCodes; Red Line Represents Odds Ratio of 1.0)

Results

- Of 3,140,280 patients analyzed, the majority were female (56.9%), white (66.0%), ASA class II-III (88.5%), and underwent general or orthopedic procedures (68.8%)
- A total of 168,672 patients (5.4%) experienced an unplanned readmission in the 30-day window
- Unadjusted readmission rates increased with increased PLOS up to 10 days, but declined thereafter (Figure 1A)
- When compared to patients with PLOS of 0-2 days, risk-adjusted readmission was significantly increased for PLOS of 3-5 days (odds ratio=1.72, 95%CI 1.70-1.74), 6-8 days (OR=2.29, 2.25-2.33), and 9-10 days (OR=2.32, 2.27-2.38).
- This association was also observed for each individual surgical specialty and 17 of 20 different individual operations (Figure 1B-C)

Implications

These results suggest that prolonged hospital stay after surgery independently increases a patient's risk for readmission. This finding held true across a range of surgical specialties and operations, with variations in magnitude of effect. The largest effects were seen in otolaryngology procedures and in laparoscopic bariatric surgery procedures.

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