

Title: Evaluation of the association between 30-day post-operative infection types and change in operation room time among patients who underwent spinal fusion procedures

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Background/Intro

Prior research suggests operation room time (ORT) is associated with increases in post-operative infections among patients undergoing spinal surgery. Fusion is a common surgery among patients who have spinal pathologies; however, there is little research on the association between types of post-operative infection and incremental changes in ORT among patients who underwent fusions.

Methods

Through data partnership with Mercy Technology Services, adult patients who underwent multi-level spinal fusions were extracted from 2011-2018 Mercy electronic health records, which is one of the comprehensive real-world databases including preoperative and intraoperative information. Superficial, deep, general or no infection within 30 days of fusion were the outcome variables; if a patient had several infections, patient was assigned the highest level of infection (general organ system infection). To evaluate the association between infection outcome and 10-minute changes in ORT compared to patients without infection, multinomial logistic regression models, controlling for patient characteristics, were fitted.

Results

Among the 775 patients in this study, the incidence of 30-day superficial, deep, and general infection was 3.5%(n=27), 1.5%(n=12), and 10.6%(n=82), respectively. Mean age (standard deviation(SD)) of patients was 60.3(14.7) years, 52.5% were female, mean(SD) Elixhauser score was 3.1(2.3), mean(SD) BMI was 30.6(6.7) and mean(SD) ORT was 251.9(101.1) minutes; differences in mean Elixhauser scores and ORTs by infection category were statistically significant. Among the cohort, with a 10-minute increase in ORT, the odds for superficial, deep, and general infection increased by 4.9% (adjusted Odds Ratio(aOR):1.05,95% Confidence Interval (CI),1.02-1.08)), 4.6% (aOR,1.05,95% CI,1.00-1.10) and 3.1% (aOR,1.01,95% CI,1.00-1.05), respectively, compared to patients without infection.

Conclusions

This analysis suggests risk of superficial, deep, and general infections within 30 days following spinal fusion increases with a 10-minute increase in ORT. A larger sample size is needed to confirm the associations observed and develop recommendations on reducing ORT to potentially decrease these post-operative infection rates.

Word count: 300