

## Impact of antimicrobial prophylaxis duration on surgical site infection in patients undergoing complex hernia repair procedures

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Surgical site infections (SSI) are a common complication in surgical patients. Current guidelines do not support continuing postoperative antimicrobial prophylaxis (AP) for more than 24 hours after hernia repair procedures, however there is no standardized approach for patients undergoing complicated hernia repair. The purpose of this study is to determine the incidence of SSI among patients undergoing complex hernia repair procedures who received a short-course (<24 hours) vs. extended ( $\geq$ 24 hours) durations of AP.

This single center retrospective study included patients that underwent a complex hernia repair procedure between August 2016 and June 2020 and were between the ages of 18 and 90. Patients were excluded if they had an infection at the time surgery or received antibiotics during the follow up period for a non-surgical site related infection. Complex hernia repair was defined as a hernia repair performed inpatient in the presence of  $\geq$  1 procedure- or patient-related predefined risk factor(s). Patient demographics, AP history, surgery details, risk factors, and outcomes, including 90-day SSI rate, length of stay (LOS), and 30-day readmission were compared for patients who received AP for <24 hours vs.  $\geq$ 24 hours. SSI definitions were consistent with the Centers for Disease Control/National Healthcare Safety Network criteria for SSI. Analysis included descriptive statistics, Student's t-test, chi-square test, and a Mann-Whitney U test as appropriate.

Of the 197 included patients, 96 (48.7%) patients received a short-course and 101 (51.2%) patients received an extended duration AP. In the extended duration group 81 (80.2%) received AP for >7 days. Patients who received prolonged AP were more likely to have mesh placement (90.1% vs. 62.5%,  $P < 0.001$ ) or surgical drain placement (91.1% vs. 29.2%,  $P < 0.001$ ) and more likely to have had a concurrent procedure (60.4% vs. 33.3%),  $P < 0.001$ ). A procedure time of  $\geq$ 2 hours was observed more frequently in the extended duration AP group (91.1% vs. 52.1%,  $P < 0.001$ ). SSI rate within 90 days was similar between groups (7.3% vs. 9.9%,  $P = 0.514$ ). Median LOS was higher for patients who received prolonged AP (8 vs. 5 days,  $P < 0.001$ ), however, 30-day readmission was similar (9.4% vs 9.9%,  $P = 0.901$ ). The average number of predefined risk factor(s) was higher for patients who received extended duration AP (7.1 vs. 4.2).

There was no difference detected in the development of SSI in extended vs. short-course AP. Significant variation between the two groups was present amongst multiple procedure- and patient-related characteristics, with an average number of risk factors for infection being greater in those who received extended AP. Further research is needed to determine when extended AP is warranted to improve outcomes.