1244. Evaluation of Intraoperative Topical Vancomycin and the Incidence of Acute Kidney Injury

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Background. The use of intraoperative topical vancomycin (VAN) is a strategy aimed to prevent surgical site infections (SSI). Although there is evidence to support its efficacy in SSI prevention following orthopedic spine surgeries, data describing its safety, specifically acute kidney injury (AKI) risk, is limited. The purpose of this study was to determine the AKI risk associated with intraoperative topical VAN.

Methods. This is a retrospective cohort study reviewing patient encounters where intraoperative topical VAN was administered from February 2018 to July 2018. All adult patients (≥18 years) that received topical VAN in the form of powder, beads, rods, paste, cement spacers, or unspecified topical routes were included. Patient encounters were excluded for AKI or renal replacement therapy (RRT) at baseline, ≤2 serum creatinine values drawn after surgery, and/or if irrigation was the only topical formulation given. The primary outcome was the percentage of patients who developed AKI after intraoperative topical VAN administration. AKI was defined as an increase in serum creatinine (SCr) ≥25% from baseline, an increase in SCr >0.5 mg/dL from baseline, or RRT if RRT was initiated after topical VAN was given. Secondary outcomes included analysis of AKI risk factors and SSI incidence. AKI risk factors were analyzed using a multivariable logistic regression model.

Results. A total of 589 patient encounters met study criteria. VAN powder was used in 385 patient encounters (65.0%), VAN beads in 100 patient encounters (16.9%), VAN rods in 33 patient encounters (5.6%), VAN paste in 22 patient encounters (3.7%), and unspecified topical routes were included. Patient characteristics, risk of SSI, previous hospitalization, and type of surgical procedure, antibiotic prophylaxis and duration, ASA risk class, and 28-day postoperative outcomes were compared. Patient encounters were excluded for AKI or renal replacement therapy (RRT) at baseline, ≤2 serum creatinine values drawn after surgery, and/or if irrigation was the only topical formulation given. The primary outcome was the percentage of patients who developed AKI after intraoperative topical VAN administration. AKI was defined as an increase in serum creatinine (SCr) ≥25% from baseline, an increase in SCr >0.5 mg/dL from baseline, or RRT if RRT was initiated after topical VAN was given. Secondary outcomes included analysis of AKI risk factors and SSI incidence. AKI risk factors were analyzed using a multivariable logistic regression model. AKI was associated with concomitant systemic VAN (OR 3.39, [3.39-6.22]) and total topical VAN dose. Each doubling of the topical dose was associated with increased odds of developing AKI (OR = 1.42, [1.08-1.86]). The incidence of SSI was 5.3%.

Conclusion. AKI rates associated with intraoperative topical VAN are comparable to that of systemic VAN. Total topical vancomycin dose and concomitant systemic VAN was associated with an increased AKI risk. Additional analysis is warranted to compare these patients to a similar population that did not receive topical VAN.

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1245. Does Complexity of Infection Prevention Bundles Matter in Colorectal Surgery? A Systematic Review and Meta-Analysis

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Background. Surgical site infection (SSI) prevention bundles in colorectal surgery are common. The optimal bundle composition and impact of increasingly complex and resource-intensive bundled interventions on SSI remain unclear.

Methods. (1) A systematic review and meta-analysis of randomized and observational trials with post-pre implementation data for colorectal SSI prevention bundles to study their effect on superficial, deep, and organ-space SSI. (2) A meta-regression to determine whether the bundle size (number of different bundle elements) affects SSI. (3) A correlation analysis to identify individual bundle elements with greatest SSI reduction. We used the METAN, METAEEF, and METAREG packages in STATA SE 15 for analysis.

Results. We included 38 studies in the systematic review, and 29 studies (49,589 patients) in the meta-analysis. Bundle composition was highly variable, ranging from 3 – 13 guideline-recommended elements per bundle. Meta-analyses showed bundles to be associated with relative risk reductions of 43% for any SSI (RR 0.57 [95% CI 0.48–0.67]; 44% for superficial SSI (RR 0.56 [95% CI 0.42–0.75]; 33% for deep SSI (RR 0.67 [95% CI 0.45–0.98), and 37% for organ/space SSI (RR 0.63 [95% CI 0.49 – 0.81)). On meta-regression, bundle size, especially 20 elements, was significantly associated with SSI reduction for any SSI (P = 0.04) and for superficial SSI (P = 0.005). Individual bundle elements correlated with strongest SSI reductions were mechanical bowel prep combined with oral antibiotics (R = −0.68, P = 0.0028) and pre-operative chlorhexidine showers (R = −0.49, P = 0.04) for organ/space SSI. Protocol-specific separate instrument trays and glove gown change prior to surgical wound closure (R = −0.55, P = 0.009), and standardized postoperative wound dressing change at 48 hours (R = −0.39, P = 0.005) correlated with highest superficial SSI reductions.

Conclusion. Complex colorectal bundles with ≥20 clinical guideline-recommended prevention elements are associated with higher reductions in any SSI and in superficial SSI. Further research should evaluate how complex SSI prevention colorectal bundles can be implemented and sustained with high fidelity in the clinical setting in a cost-effective manner.

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