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“Using Hollow Viscus Injuries to Predict Intra-Abdominal Abscess after Exploratory Laparotomy”

INTRODUCTION: Intra-abdominal abscess (IAA) is a common complication after exploratory laparotomy. Hollow viscus injuries (HVI) can contaminate the peritoneal cavity and may carry a higher infection risk than solid-organ injuries. We evaluated whether HVI predicts IAA after exploratory laparotomy, and whether risk increases with the number of HVIs.

METHODS: We performed a retrospective chart review of trauma patients who underwent exploratory laparotomy after presenting to the Our Lady of the Lake Emergency Department between January 1, 2017 to December 31, 2024. Patients were grouped as HVI (stomach, small bowel, colon, rectum, or bladder) or other abdominal injury. The primary outcome was IAA. Fisher’s exact and Wilcoxon rank sum were used for group comparisons, as appropriated. Multivariable logistic regression was used to assess HVI as a predictor of IAA, adjusting for abdominal abbreviated injury scale, injury severity score, blood product administration, and open abdomen.

RESULTS: 500 patient charts were initially screened, and 328 were included for analysis. Of the 328 patients evaluated in this study, 72 (22%) developed IAA. Patients who developed IAA were more likely to have an HVI (94% vs. 80%; $p = 0.005$), a gunshot wound (74% vs 64%; $p = 0.037$), and a need for blood products (60% vs 34%; $p < 0.001$). On multivariable analysis, HVI was independently associated with IAA (aOR 5.50; 95% CI 2.00 - 19.7), and the odds of IAA roughly doubled with each additional HVI. Open abdomen was also independently associated with IAA (aOR 3.34; 95% CI 1.74 – 6.46), but injury severity score was not. Patients with IAA had longer median (IQR) hospital days 25 (17, 37) vs 9 (6, 14); $p < 0.001$ and median (IQR) ICU days 7 (3, 14) vs 2 (0, 4); $p < 0.001$.

CONCLUSIONS: Hollow viscus injury was independently associated with IAA after exploratory laparotomy, and risk rose with the number of HVIs. Overall injury severity was not an independent predictor. Consistent with prior studies, open abdomen and need for blood products were also associated with IAA. Patients with multiple HVIs may warrant closer monitoring for abscess after surgery.