

Matthew G. Johnson
L3
LSU Health Sciences Center, New Orleans, LA

Dr. Gregory Davis
LSUHSC School of Medicine, FMOL Research Institute, Our Lady of the Lake RMC

“Predictors of fungal infection among trauma patients with an intraabdominal abscess following exploratory laparotomy”

Introduction: Post-operative infections are especially dangerous following abdominal surgery given the peritoneal cavity’s polymicrobial, antibiotic-resistant flora. Abdominal sepsis has the highest mortality among surgical infections and about 40% of cases involve fungal colonization. Identifying predictors could enable early targeted antifungal therapy in high-risk patients to prevent life-threatening infections.

Methods: This single-center retrospective chart review compared trauma patients who developed a fungal versus bacterial intra-abdominal abscess (IAA) after laparotomy at Our Lady of the Lake Regional Medical Center (Baton Rouge, LA) from January 1, 2017, to December 31, 2024. The primary outcome was intra-abdominal fungal infection identified by culture from an intra-abdominally obtained specimen. Secondary outcomes were ICU/hospital length of stay. Pearson's chi-squared tests, Fisher's exact, and Wilcoxon rank sum were used for group comparisons, as appropriate. Univariate logistic regression was used for odds ratios. Results are presented as median (IQR).

Results: 500 patient charts were initially screened and 74 charts containing IAAs were included in the final analysis, with 22 (30%) fungal and 52 (70%) bacterial. Fungal infection was significantly associated with penetrating injury (95% vs 62%, $p=0.004$) and gunshot-wound (95% vs 64%, $p=0.005$) mechanism. Fungal cases had a higher overall injury severity score 25 (18, 29) vs 19 (12, 25); $p=0.042$ and longer ICU length of stay 12 (6, 19) vs 6 (3, 10) days; $p=0.017$. Two associations approached significance: open-abdomen management (73% vs 48%; OR 2.88, 95% CI 1.01–9.10, $p=0.056$) and a dose-response for hollow-viscus injury burden (OR 1.85 per additional injury, 95% CI 0.95–3.96, $p=0.086$).

Discussion: Fungal IAA following trauma laparotomy was associated with penetrating/GSW mechanism, higher ISS, and prolonged ICU stay. Open-abdomen management and dose-response for hollow-viscus injury burden trended toward significance. These results are consistent with prior work, as temporary abdominal closure/open abdomen is a well-established risk factor for fungal intra-abdominal infection in trauma patients, and a GI source with high injury severity is a recognized driver of intra-abdominal candidiasis. The study is limited by a small number of fungal events ($n=22$), low power, wide confidence intervals, and unadjusted analyses, so associations are hypothesis-generating. Data collection is ongoing to generate an adequately powered study comparing hollow- versus solid-organ injury as predictors of fungal IAA.