



Small Incisions for Small Bowel Injuries: Decreasing Length of Stay and Complications with Minimally Invasive Surgery



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BACKGROUND

- Minimally invasive surgery (MIS) in the setting of trauma has not been widely used since patient selection is crucial
- In hemodynamically stable patients with isolated injury patterns, it can be beneficial
- This study aims to identify trauma patients who underwent MIS and compare mortality and complications to open surgery in a high-risk cohort

METHODS

- A retrospective cohort study was performed on patients undergoing small bowel resections, colon procedures, and gastric perforation repairs at a single level 1 adult and pediatric trauma center
- Our institutional Acute Care Surgery Datamart was screened from January 2022 to August 2025
- Patients were stratified between MIS (laparoscopic or robotic) and open groups
- Propensity matching for sex, race, age, BMI, shock index, and case urgency was performed
- Outcomes were reported as odds ratios (OR) or incidence rate ratios (IRR) with 95% confidence intervals

Characteristics	Open (n = 318)	MIS (n = 15)	p-value
Case Priority			
STAT	23%	13%	<0.001
Emergency	19%	80%	<0.001
Urgent	31%	6.7%	<0.001
Elective	27%	0%	<0.001
Procedures			
Small Bowel	59%	87%	0.031
Colon	62%	33%	0.029
Gastric	17%	0%	0.14
Outcomes			
LOS	23.5 days	10.9 days	0.017
Minimum SBP	84.3	98.1	0.024
Bleeding Complications	63%	33%	0.044
Pulmonary Complications	81%	67%	0.02
Infectious Complications	38%	6.7%	0.014
Mortality	7.2%	0%	0.6

RESULTS

- MIS had more small bowel procedures (59% vs 87%, p=0.031)
- Open had more colon procedures (62% vs 33%, p=0.029)
- No difference between groups for gastric procedures
- Open was associated with increased length of stay (23.5 vs 10.9 days; IRR 2.10, p=0.017)
- Open procedures associated with lower minimum systolic blood pressure (84.3 vs 98.1, p=0.024)
- Open procedures had more bleeding related (63% vs 33%; OR 10.71, p=0.044), pulmonary (81% vs 67%; OR 24.26, p=0.02), and infectious complications (38% vs 6.7%; OR 11.82, p=0.014)
- Mortality was similar between groups (7.2 vs 0%, p=0.6)

CONCLUSION

- Diagnostic laparoscopy can be performed on patients with select injury patterns and was most frequently used in patients with small bowel injuries and had a higher incidence of an emergency case classification
- When patients are stable enough to attempt laparoscopic or even robotic exploration, they have fewer associated bleeding, GU, and infectious complications