Increased Intra-abdominal Abscess Occurs with Interrupted Fascial Closure Following Traumatic Open Abdomen

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Introduction

- Damage control laparotomy with subsequent open abdomen can have significant complications, including inability to achieve fascial closure and an open abdomen
- Ventral hernias, enterocutaneous fistulas, and intra-abdominal abscesses (IAA) are known complications of open abdomens
- There is minimal data regarding predictors of intra-abdominal abscesses

Methods

- Retrospective chart review of adult trauma patients admitted between June 2016 – June 2019
- Patients had undergone damage control laparotomy within 24 hours of arrival followed by an open abdomen.
- Patients must survive at least 7 days following the surgery, as this is how long it takes to form an intra-abdominal abscess.

Demographics

Patient Population:

- 91 patients underwent damage control laparotomy followed by an open abdomen
- 24 patients (26%) developed an intra-abdominal abscess
- Median age of all patients: 63

Demographics of patients who developed IAA

40 years old

79% male

35% Penetrating

GI > Liver > Spleen

Results

Factors Predicting Development of IAA

	Odds Ratio	p
Age	0.98	0.29
Abdomen AIS	1.50	0.22
Interrupted fascial closure	3.79	0.03
Any GI injury	7.41	0.01

AIS = abdominal injury score, GI = gastrointestinal

Nonsignificant factors

	IAA (n=24)	No IAA (n=67)	p
Male sex	17	55	0.255
BMI, kg/m^2	28.1 (24.7, 31.4)	32.5 (23.8, 47.3)	0.695
Tobacco use	6	24	0.450
Diabetes	1	3	0.999
Alcohol use	1	8	0.436
Illicit drug use	8	18	0.602
Steroid use	0	1	1.000
Penetrating mechanism	5	27	0.453
ISS	33.5 (24, 45)	29 (22, 42.5)	0.496
Time to fascial closure, hours	50 (42.8, 67)	47 (36, 67.8)	0.427
Number of surgeries until fascial closure	2 (2, 3)	2 (2, 3)	0.847
Antibiotics while open	14	41	0.813
Total IV fluids at 48 hours, L	7.4 (4.5, 12.8)	8.0 (4.6, 12.0)	0.989
Earliest postoperative nutrition, days	5 (4, 5.8)	4.5 (3, 5)	0.417

Conclusions

- Interrupted fascial closure was associated with IAA, possibly due to more suture surface area
- Antibiotic administration had no impact on IAA, bringing into question the use of prophylactic antibiotics
- A prospective study is warranted to understand surgeon decisions in determining fascial closure type