

Hannah Cheng¹, Gregory Davis, PhD, Hunter Collins, PhD.
LSUHSC School of Medicine, Our Lady of the Lake Regional Medical Center.

Introduction

Intraabdominal infections are the second leading cause of sepsis in the ICU, which accounts for lengthened hospitalization and an increased mortality rate. The need for additional reoperation seen in major trauma often leads to complications such as Intra-abdominal abscesses (IAA), resulting in longer hospital length of stay.

The objective of this study is to evaluate the frequency of and predictors/risk factors of intra-abdominal infections.

Methods

This study was a retrospective chart review of trauma patients admitted to Our Lady of the Lake Regional Medical Center comparing the outcomes of patients who underwent a laparotomy. Patients not requiring a laparotomy were excluded. The data collection of 145 patient records was taken from 1/2016 – 12/2024 and was input into REDCap, a secure online data storage tool. For data analysis, patients were divided into two groups based on the development of an IAA. A non-parametric statistical test was used to compare the medians of these two independent groups. A preliminary analysis was done on the current data from the registry. This study was approved by the IRB at LSUHSC-NO.

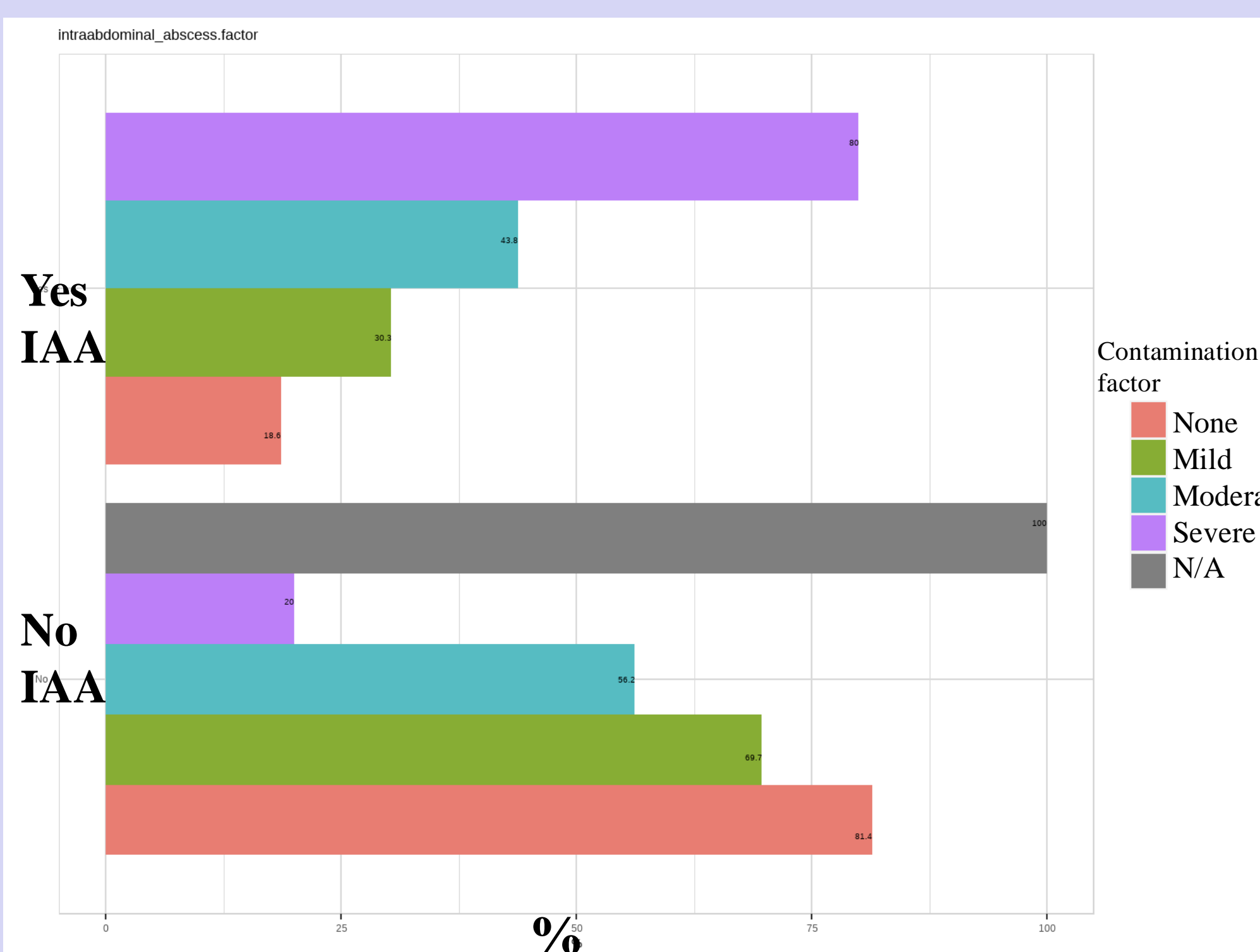


Figure 1. This plot shows the percentage of patients who developed an IAA with various levels of contamination. The top portion show the patients who developed an IAA and its correlation with various levels of contamination (purple being severe and red being none).

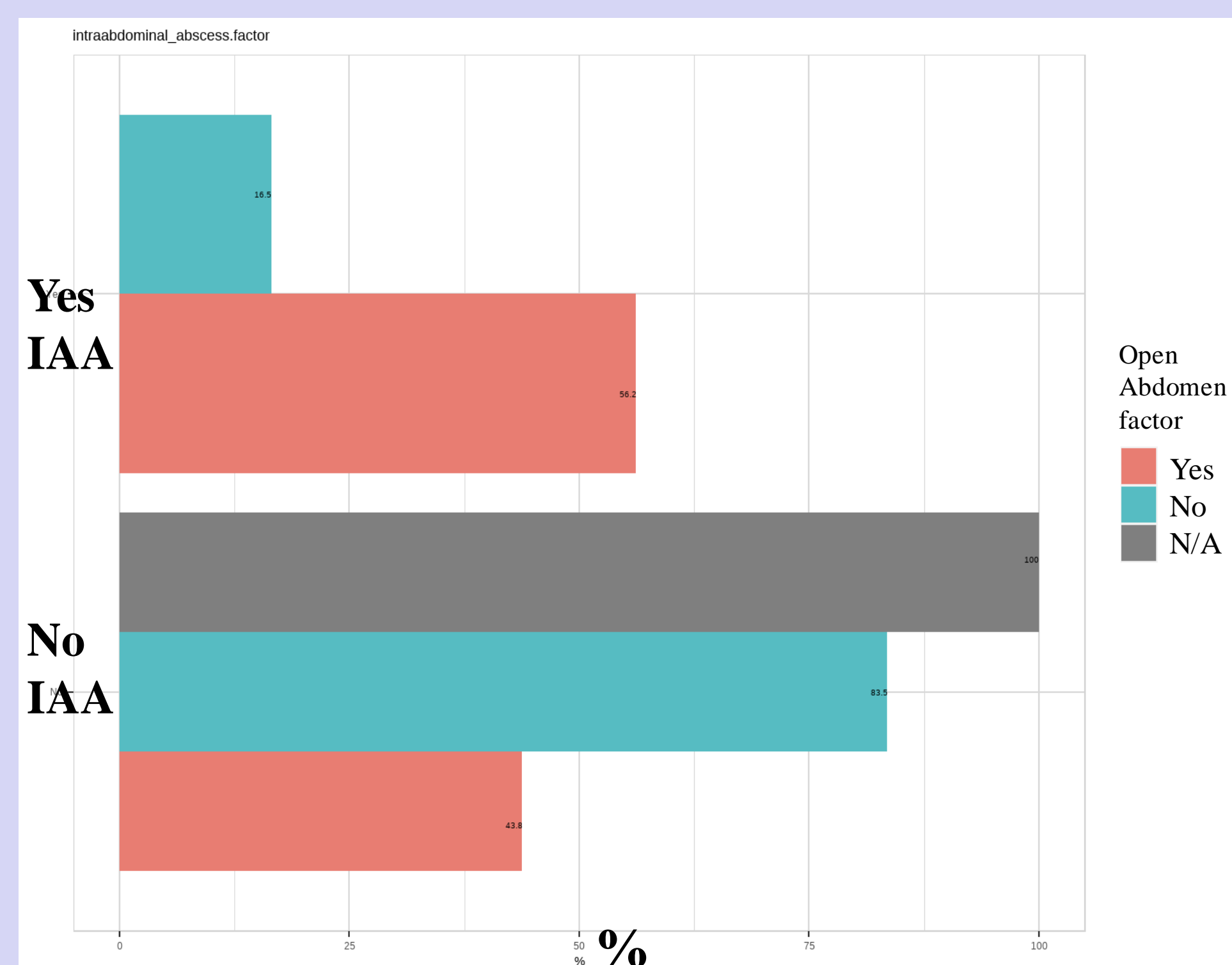


Figure 2. This plot shows the percentage of patients who developed an IAA with and without an open abdomen. The red represents the patient had an open abdomen and the blue represents no open abdomen.

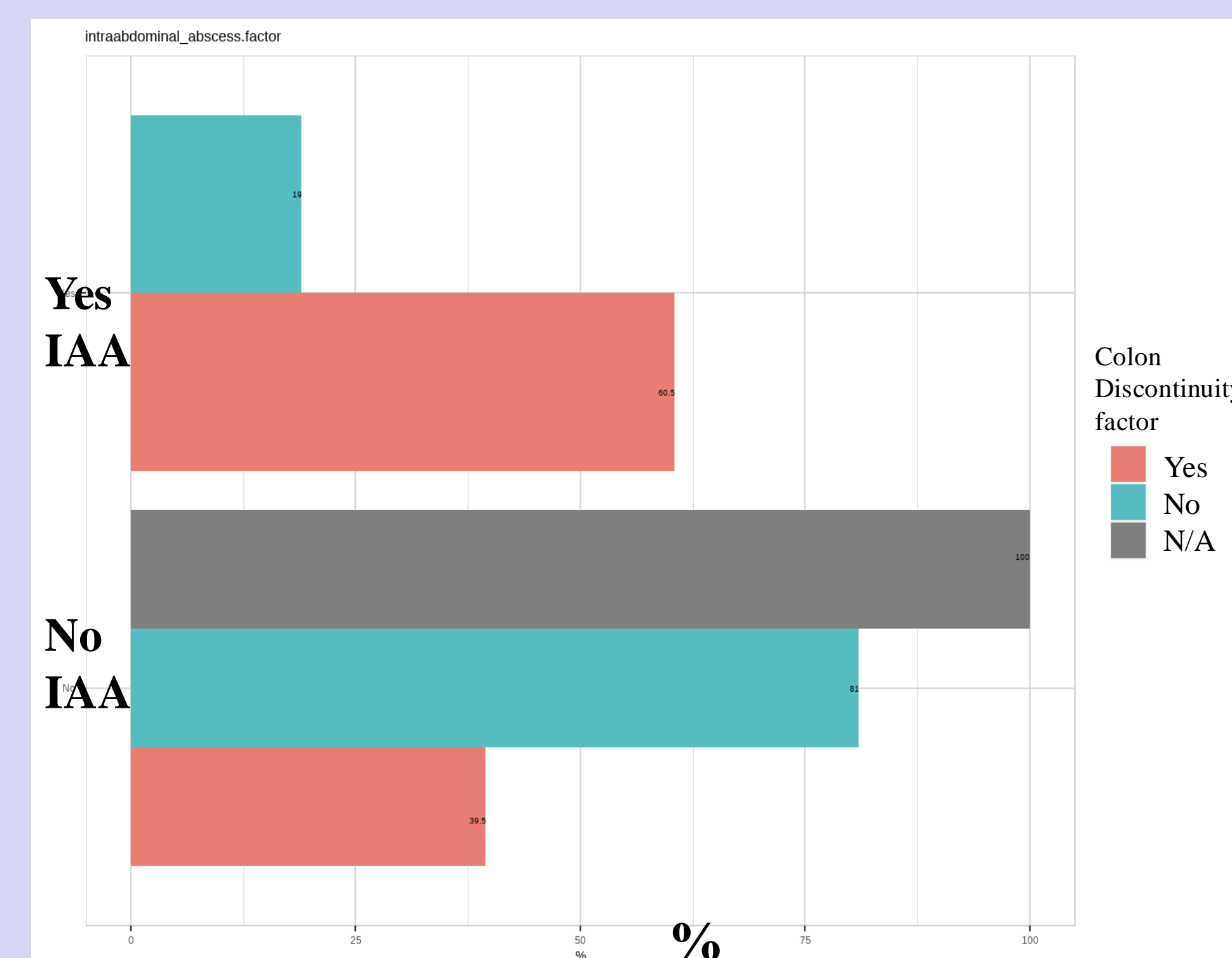


Figure 3. This plot shows the percentage of patients who developed an IAA and whether they had a colon discontinuity or not.

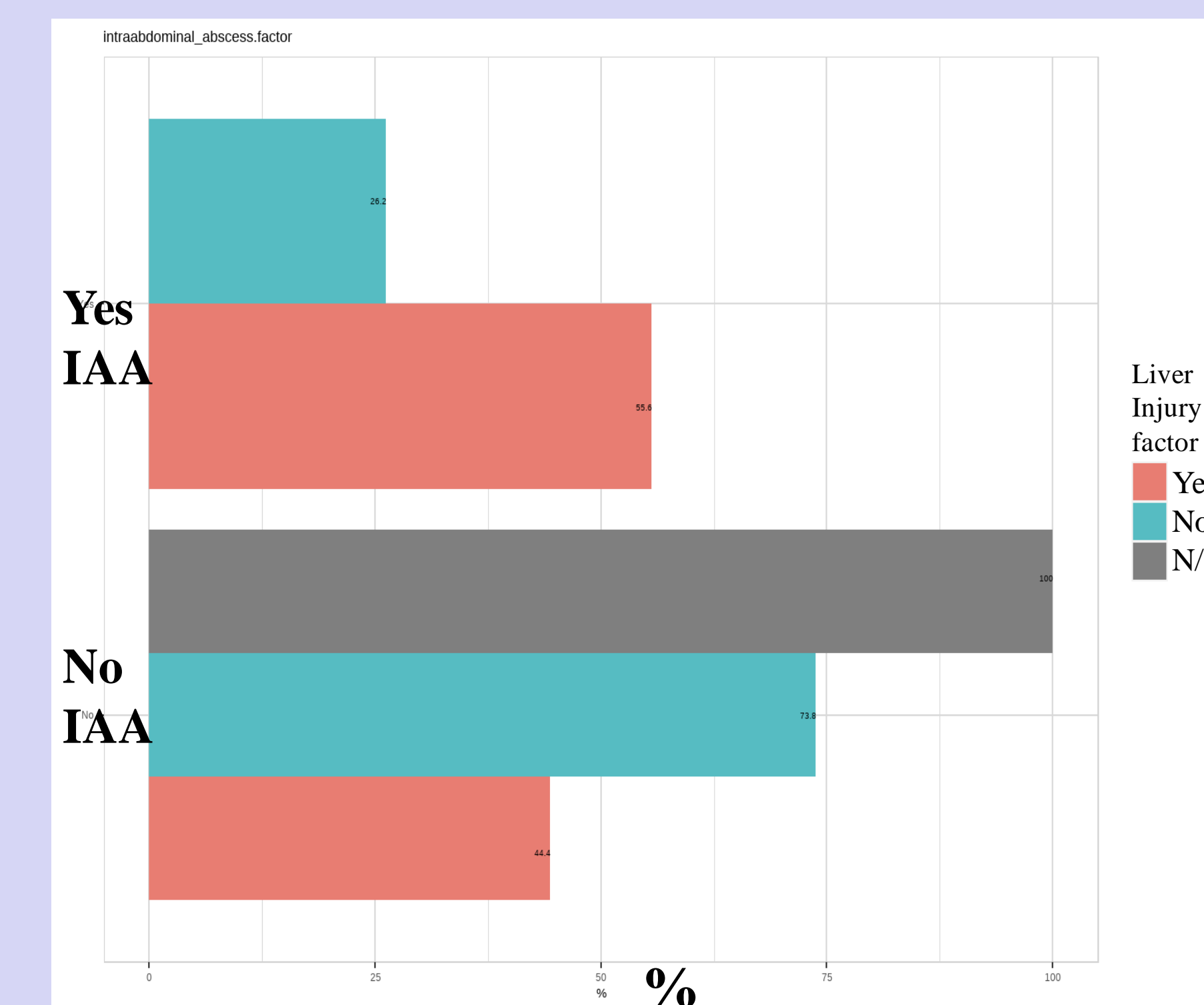


Figure 4. This plot shows the percentage of patients who had a liver injury and developed an IAA.

Results

The factors such as age, BMI, sex, ED pulse, etc. had a p-value > 0.05. The p values of moderate and severe contamination, open abdomen, colon discontinuity, and liver injury were < 0.05 (Table 1). 80% of patients with severe contamination, 43.8% of patients with moderate contamination, and 30.3% of patients with mild contamination developed an IAA. The odds ratio for mild contamination is 1.90 (95% confidence interval: 0.78 – 4.96), moderate contamination is 3.41 (0.96 – 12.19), and severe contamination is 17.5 (2.23 – 368). 56.2% of patients with and open abdomen and 16.5% of patients without an open abdomen developed an IAA. The risk ratio (probability of an event in exposed/probability of an event in unexposed) for having an open abdomen is 3.41 (2.02 – 5.77). 60.5% of patients who had colon discontinuity developed an IAA and 19% of patients who did not have colon discontinuity developed an IAA. The risk ratio of patients with colon discontinuity is 3.19 (1.97 – 5.14). 55.6% of patients who had a liver injury and 26.2% of patients without a liver injury developed an IAA. The risk ratio of patients with liver injury is 2.12 (1.27 – 3.52).

Discussion

Those factors that we do not expect to be different between the two groups (age, BMI, sex, etc.) showed no significant difference. This minimizes bias between the two groups. IAAs have a statistical significance associated with severe contamination, open abdomen, colon discontinuity, and liver injury. There are no significant differences in rates of IAA for mild or moderate contamination, however IAA is more likely to occur with severe contamination. Patients with an open abdomen are 3.5 times more likely to develop an IAA than those that do not. Patients with colon discontinuity are 3.19 times more likely to develop an IAA. Patients with liver injury have a 2.12 times higher risk of developing an IAA.

Conclusions

The results align with current literature depicting additional intra-abdominal injuries (such as colon discontinuity and liver injury) are independent risk factors for developing an IAA. Future directions include increasing the sample size to compensate for the wide confidence interval seen for the severe contamination odds ratio.

Characteristic	Overall, N = 142	Yes, N = 42	No, N = 100	p-value
Age	28 (22, 40)	28 (23, 38)	28 (22, 41)	0.9
Fecal Contamination*				0.019
*Mild	76 (54%)	23 (55%)	53 (54%)	
*None	43 (31%)	8 (19%)	35 (36%)	
*Moderate	16 (11%)	7 (17%)	9 (9.2%)	
*Severe	5 (3.6%)	4 (9.5%)	1 (1.0%)	
Open Abdomen	48 (35%)	27 (64%)	21 (22%)	<0.001
Colon Discontinuity	38 (28%)	23 (55%)	15 (16%)	<0.001
Liver Injury	18 (13%)	10 (24%)	8 (8.2%)	0.011

Table 1.

This table displays the factors that have a statistical significance when it comes to patients developing an IAA.

References

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