



Readmission and Imaging Outcomes in Pediatric Complicated Appendicitis: a Matched Case-Control Study

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Introduction

- Treatment for perforated appendicitis includes primary appendectomy or non-operative management followed by an interval appendectomy 6 to 12 weeks post discharge (first-line antibiotics).
- First-line antibiotics is selected with the intent to minimize complications of surgical management.
- Previous investigation identified that primary appendectomy was associated with higher family satisfaction, fewer CT scans, fewer visits to the emergency department, and reduced time away from normal activities.
- The benefits of both continue to be debated.
- The aim of this study was to compare clinically-relevant outcomes between patients selected for first-line antibiotics and first-line appendectomy using a matched case-control approach.

Methods

- Upon IRB approval, the electronic medical record system at Children's Health was queried for all patients diagnosed with perforated appendicitis who underwent an appendectomy.
- A total of 3,491 were identified over 4 years. Among 905 patients with perforated appendicitis, 105 underwent first-line antibiotic therapy.
- The patients were grouped by intervention, first-line antibiotics (case) vs. first-line appendectomy (control).
- The 291 patients were matched with a ratio of 1:2 and based on age, gender, and presence of a fecalith on imaging.
- Data points including length of stay (LOS), total number of imaging scans, and number of visits to the ED and readmission to the hospital were collected.

Results

Figure 1. Hospital Length of Stay

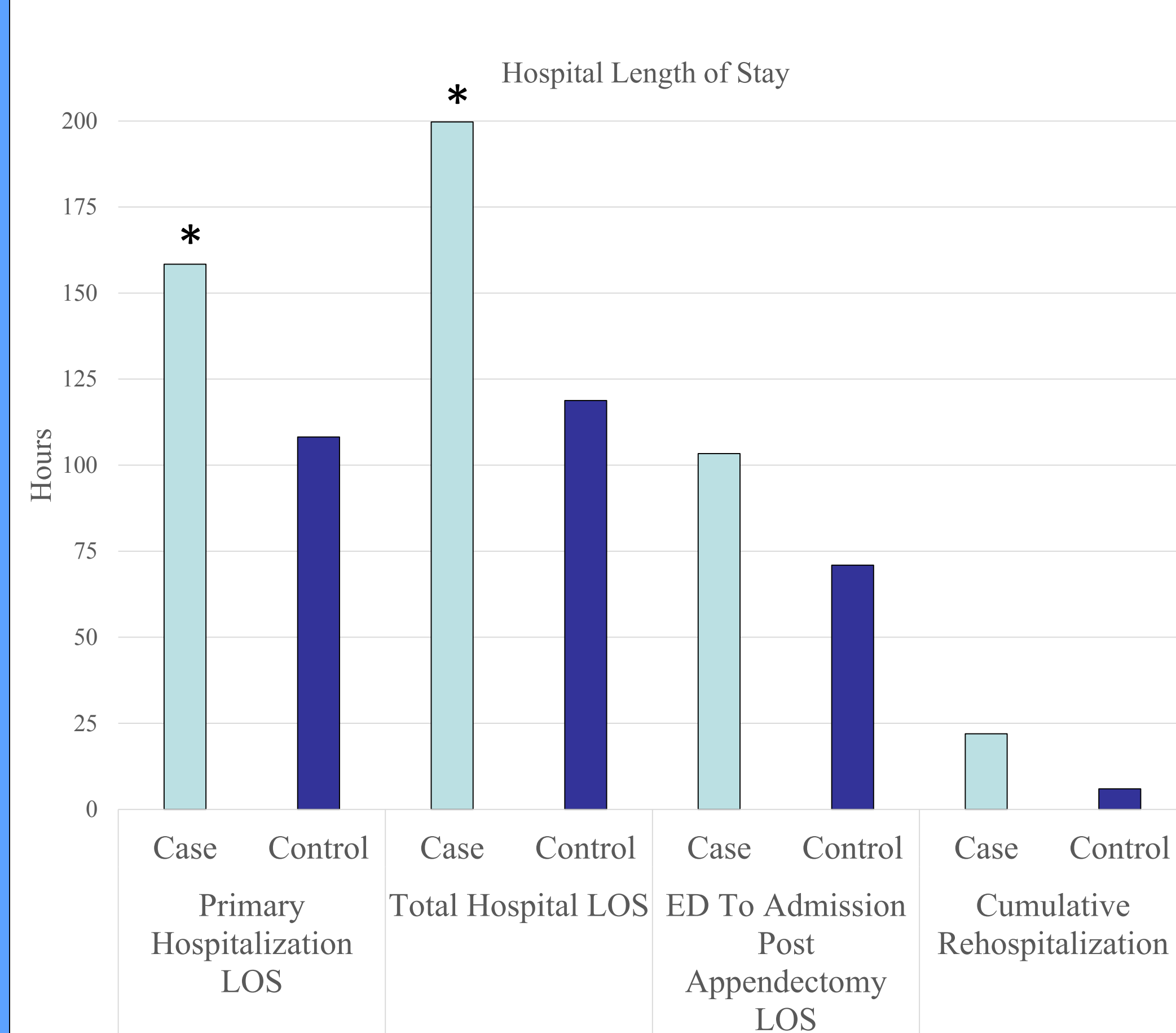


Figure 2. ED Visits and Hospital Admissions

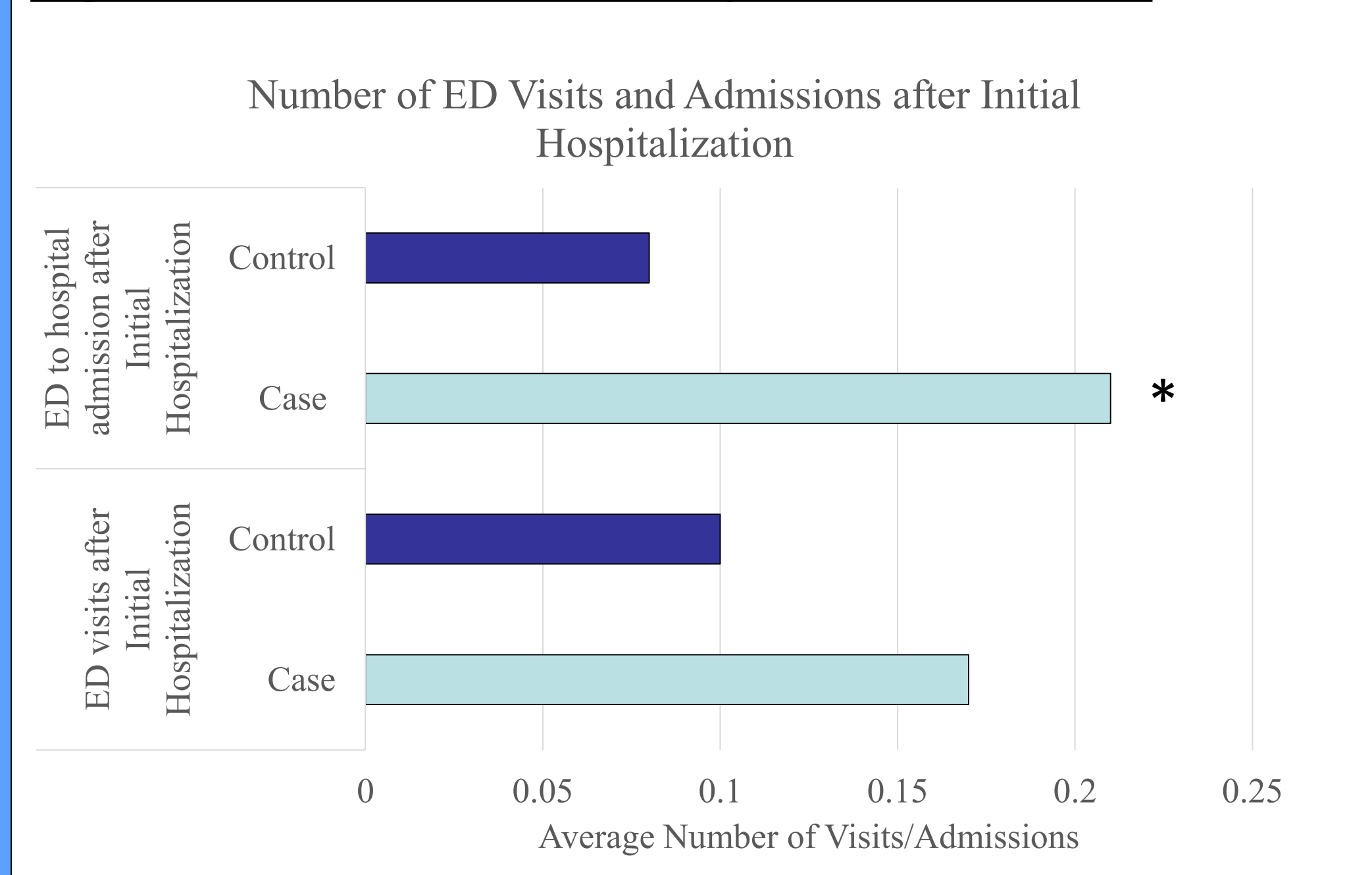


Figure 3. Number and Type of Imaging Scans

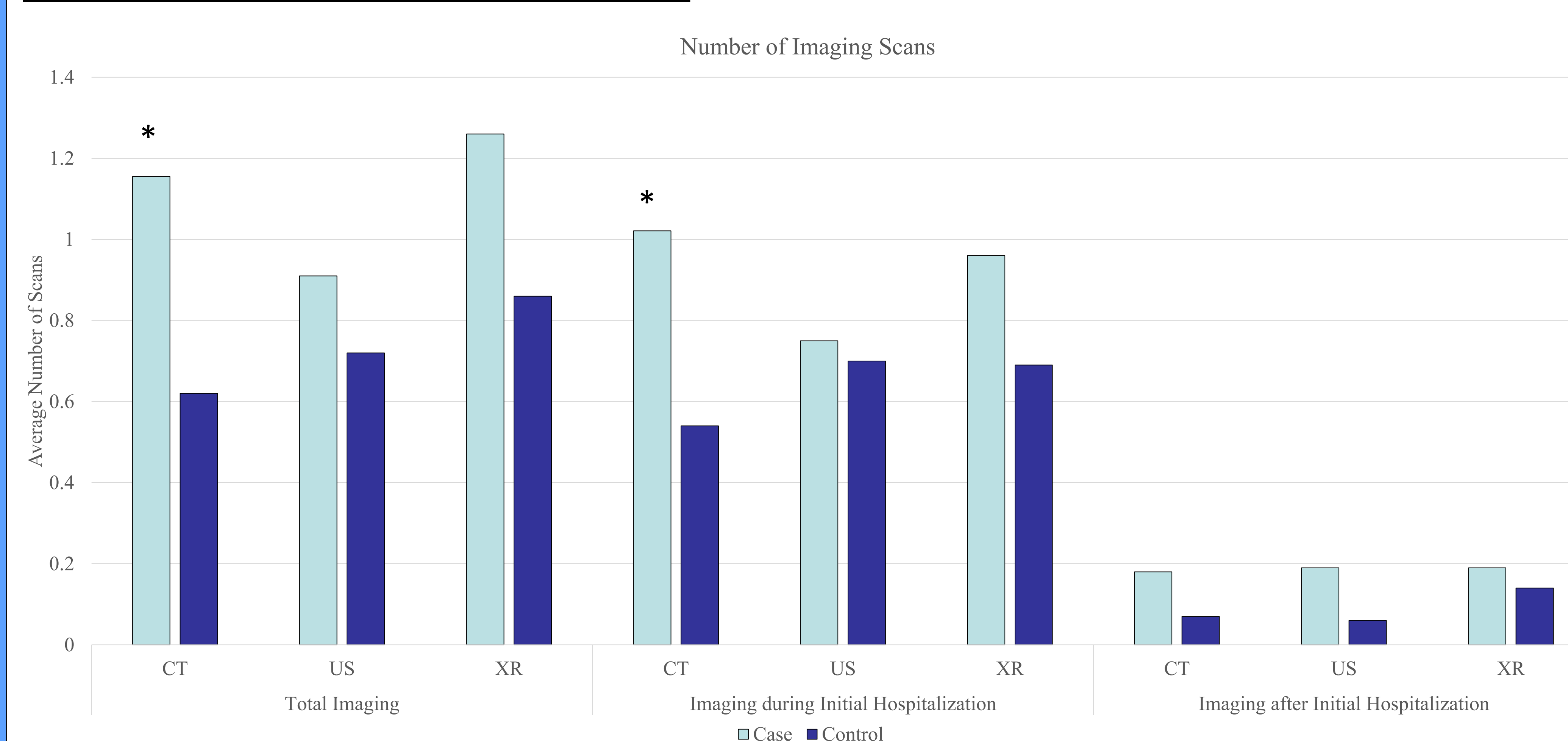
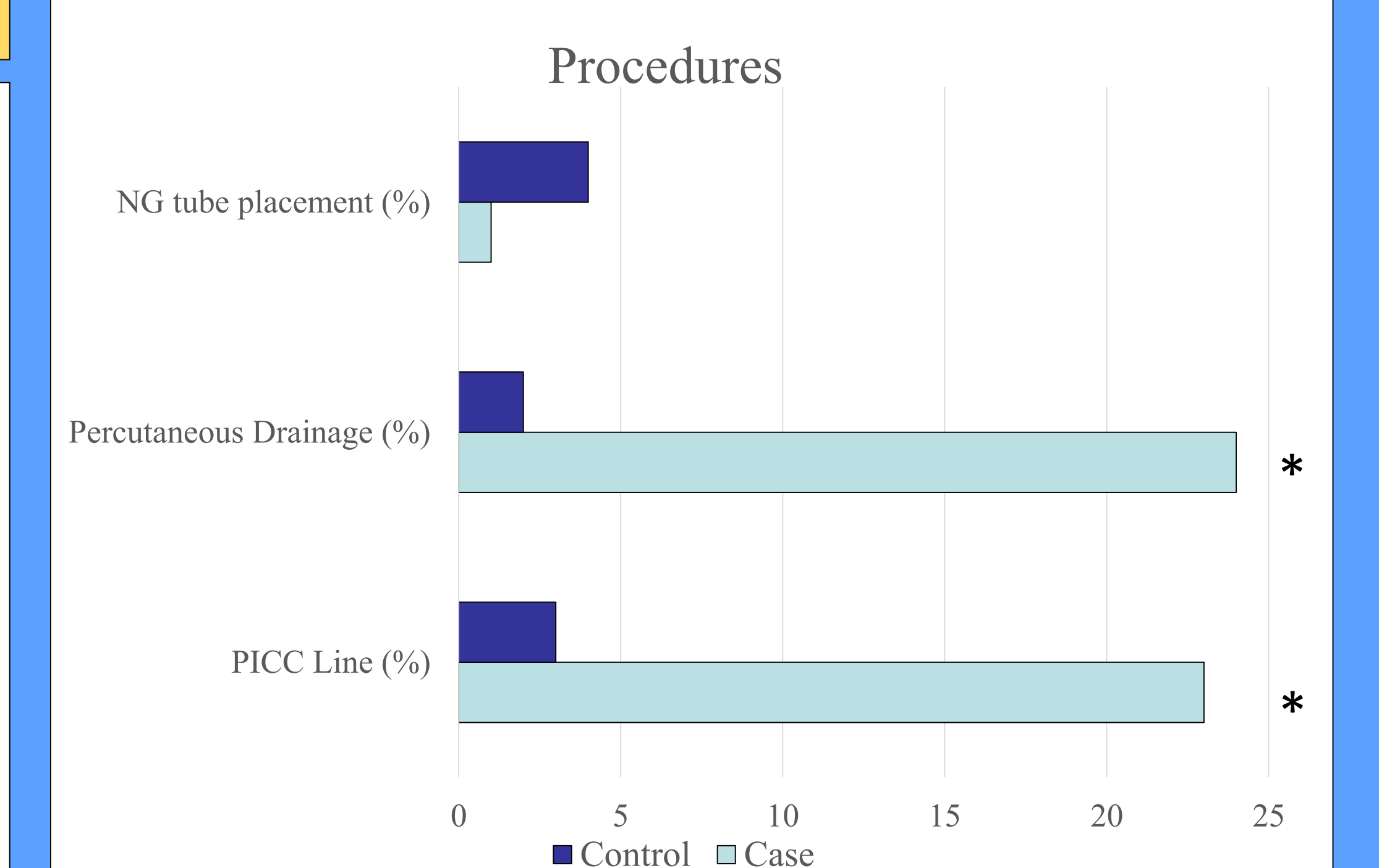


Table 1. P values of Collected Data

Outcomes	P Value
Primary Hospitalization LOS	p < 0.0001
Total Hospitalization LOS	p < 0.0001
Number ED to Hospital Admission after Initial stay	p = 0.0026
Number ED visits after initial stay	p = 0.1024
Total # CTs	p < 0.0001
Total # USs	p = 0.0167
Total XRs	p = 0.0353
# CTs on Initial Hospitalization	p < 0.0001
# USs on Initial Hospitalization	p = 0.3977
# XRs on Initial Hospitalization	p = 0.0801
# CTs After Initial Hospitalization	p = 0.0033
# USs After Initial Hospitalization	p = 0.0014
# XRs After Initial Hospitalization	p = 0.4832

Figure 4. Procedures Done During Hospitalization



Conclusion

- Delayed appendectomy (case) is associated with a longer total hospital length of stay and a longer primary hospitalization length of stay.
- The case group also had a longer stay once admitted from the ED for and an overall longer rehospitalization time.
- Readmissions are higher for the case group, while ED visits after initial hospitalization were similar.
- The first-line antibiotic group underwent more imaging scans and had significantly more CT scans.
- The case group had more PICC line placements and percutaneous drainages during their hospitalization.

Limitations

- Selection bias may be related to the results
- A lack of a standardized approach outlining when to scan patients and in access to outpatient surgical care may influence outcomes.

References

- Blakely, et al. *Archives of Surgery* 146.6(2011): 660-66.
- Peter, et al. *Journal of Pediatric Surgery* 45.1(2010): 236-240.
- Schurman, et al. *Journal of Pediatric Surgery* 46.6(2011): 1121-1125.

* indicates a statistical difference