Patient Outcomes in Ileocolonic Anastomotic Leak Treated with Percutaneous Drain

William Connolly[1], Katherine Battin[1], Marisa Joel[1], Benjamin Phillips[2], Andrew Morgan[2], Gerald Isenberg[2], Caitlyn Costanzo[2]

Thomas Jefferson University
HOME OF SIDNEY KIMMEL MEDICAL COLLEGE

Introduction

Anastomotic leaks (AL) are a devastating postoperative complication of colorectal surgeries and are associated with increased mortality, morbidity, and utilization of resources[1]. While reoperation provides a robust fix for AL, repeat abdominal surgery induces trauma and results in longer hospital stays and higher costs[2].

Conservative and less invasive treatment with interventional radiology (IR) percutaneous drainage may be considered when the leak is contained, and the patient's clinical status permits non-operative treatment.

Objective

To investigate patient outcomes in contained ileocolonic AL treated with IR percutaneous drains and delineate and identify factors that differentiate successful and unsuccessful treatment.

Methods

- Single-institution retrospective analysis
- Patients from NSQIP database of TJUH who underwent right colectomy or ileocecectomy between 2013 and 2023 and subsequently developed a contained ileocolonic AL
- Study period: time of ileocolonic anastomosis creation to definitive treatment
- Drain treatment "unsuccessful" if patient died during study period or required reoperation

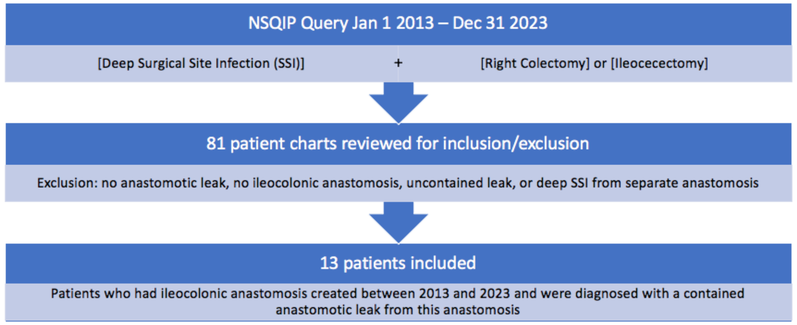


Figure 1. NSQIP query and inclusion/exclusion criteria

Results

13 patients met study criteria from query

- 11 patients were treated with drains
- 7 successful drain treatments
- 4 unsuccessful drain treatments

Statistically Significant Differences

- Post-operative complication?: 29% yes (Successful) vs. 100% yes (Unsuccessful) **p=.0188**
- Number of Drains at Initial Drain Placement: 1 (Successful) vs. 1.75 (Unsuccessful); **p=.0025**

Observed Differences

- Median Age: 45 y (Successful) vs. 66.5 y (Unsuccessful)
- Emergency Operation: 14% (Successful) vs. 50% (Unsuccessful); p=.2413
- Median POD Leak: POD14 (Successful) vs. POD7.5 (Unsuccessful)

Unsuccessful patients - Case Vignettes

1. *68 F/ PMH HTN, COPD. ASA 3.Open colectomy for bowel obstruction. Pneumonia and sepsis post-op. Clinically unstable for OR - 2 drains used for 12.5 x 8.5cm collection. Late CT shows disappearing collection*. Patient made comfort care, expired due to multi-system organ failure.*
2. *61 M/ PMH HTN, DM, anemia. ASA 3. Open colectomy for colon cancer. Ileus post-op. 1 drain used for 11.2 x 10.6cm collection found on POD4. CT on POD10 found uncontained leak → reoperation.*
3. *65 F/ PMH HTN, HF, Crohn's, DM. ASA 3. Laparoscopic Ileocolonic resection for perforation. Cardiopulmonary post-op complications. 2 drains used for 9.1 x 5.7cm collection. Discharged with drains, readmitted for enlarging abscess → reoperation.*
4. *77 M/ PMH HTN, HF, COPD, DM, anemia. ASA 4. Open colectomy for colon cancer. Ileus post-op. 2 drains used for 9.9 x 6.3cm collection. Bowel ischemia and continued leak on repeat CT; patient expired on POD17*

	Successful (n=7)		Unsuccessful (n=4)		p-value
	Mean	Median	Mean	Median	
Sex (% Male)	71		50		0.5269
Age	51.71	45	67.75	66.5	0.1618
BMI	27.38	27.3	25.57	23.1	0.7331
ASA	3	3	3.25	3	0.204
Duration of Procedure (Minutes)	149.29	125	144	142	0.8667
Emergency Operation? (% Yes)	14		50		0.2413
Laparotomy? (% Yes)	71		75		0.9103
Post-operative Complication? (%Yes)	**29**		**100**		**0.0188**
POD Leak	12.14	14	9.25	7.5	0.3335
Length of Stay (Days)	**11.43**	**9**	**43**	**42**	**0.0005**
Number of Drains	**1**	**1**	**1.75**	**2**	**0.0025**
Number of Drain Checks	2.86	2	2	1.5	0.6329
Days with Drain	34.29	20	27.25	19.5	0.7457
Size of Abscess (cm)	11.143	6.8	10.625	10.55	0.9057

Table 1. Means and Medians for Successful and Unsuccessful groups. P-values for unpaired t-tests between the two groups

Successful patients – Clinical Translational Statistics

- Require 1 drain
- 2-3 clinic visits for drain checks/exchanges
- Will have drain for around 1 month



1 Month



2-3x Clinic Visits

Conclusions

- Patients that required one drain had a lower risk of unsuccessful treatment than patients that required 2 drains
- Patients who were diagnosed with a post-operative complication other than anastomotic leak had a higher risk of unsuccessful treatment
- A larger sample size is necessary to determine the clinically ideal patient who will respond best to IR drainage treatment following contained ileocolonic AL.
- IR drainage can be a safe and largely effective alternative to reoperation for contained ileocolonic AL when the leak requires a **singular drain**, and the patient has **good overall clinical status**. Poor surgical candidacy, post-operative complications, and decreased clinical fitness may increase risk for unsuccessful drainage.

References

1.Sciuto, A., Merola, G., De Palma, G. D., Sodo, M., Pirozzi, F., Bracale, U. M., & Bracale, U. (2018). Predictive factors for anastomotic leakage after laparoscopic colorectal surgery. World journal of gastroenterology, 24(21), 2247–2260.

2.Burke, L. M., Bashir, M. R., Gardner, C. S., Parsee, A. A., Marin, D., Vermess, D., Bhattacharya, S. D., Thacker, J. K., & Jaffe, T. A. (2015). Image-guided percutaneous drainage vs. surgical repair of gastrointestinal anastomotic leaks: is there a difference in hospital course or hospitalization cost?. *Abdominal imaging*, *40*(5), 1279–1284.

@ResearchAtJeff