Predictors of Hospital Readmission in Patients Undergoing Intestinal Ostomy Creation

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INTRODUCTION

Readmission rates following colostomy/ileostomy creation have been reported as high as 15% by 30 days

Reasons for readmission are multifactorial and include dehydration, surgical site infection, anastomotic leaks, inflammatory bowel disease, discharge disposition to subacute facilities and lack of commercial insurance.

Currently there is insufficient evidence closely examining the contributing factors to hospital readmission in this population.

STUDY PURPOSE

The purpose of this study was to examine predictors of hospital readmission within 30 days and 60 days of the index hospitalization in patients undergoing ileostomy or colostomy creation.

Study Methods

Design: retrospective cohort design using data from existing patient dataset.
Study sample: All patients who underwent intestinal ostomy surgery from 2018-2021 at a suburban teaching hospital.
Inclusion Criteria/Exclusion
18 years or older
Creation of new ileostomy or colostomy;;
No preexisting ostomy

Variables Under Investigation

Demographic Variables	Ostomy /Surgical Characteristics	Complications During Index Hospitalization
Age	Ostomy	Ostomy Related
Gender	• Type of Ostomy	• Appliance failure
Race	• Type of Stoma	• Mucocutaneous separation
Hospital LOS	• Ostomy Status	• Peristomal irritation
Hospital Admitting Diagnosis		• Stomal retraction
GI diagnosis at admission	Surgical	• Stomal ischemia
BMI	• Preoperative Stoma marking	• High output
Comorbidities:	• Surgical Procedures	
• DM	• Surgical Approach	Surgical Related
PAD	• Case type	• Surgical Site Infection
• Pulmonary Disease	• OR duration	• Dehiscence
• Liver Disease	• ASA Score	• Anastomotic leak
• Past ostomy history		• Abdominal abscess
• Active Oncologic Diagnosis		• Ileus
Medications:		• Other
• Immunosuppressive Therapy		
• Steroid Therapy		
Smoking Status		
Discharge Disposition		
Insurance source		
Mortality		

Description of the Sample (n=258)

Age (mean/SD)	62.8(15.8) 19-97 yrs
Gender	
Male	129(50)
Female	129(50)
Race	
• Caucasian	159(61.6)
• Hispanic	32(12.4)
• Asian/Pacific Islander	30(11.6)
• Black/African American	22(8.5)
• Other	15(5.8)

Readmission Rates

Readmission Time	% (n)	Most Common Admitting Dx
30 Days	19%(49)	Infection/sepsis
60 Days	6.6%(18)	GI Medicine

Ostomy/Surgical Characteristics

Type of Ostomy	N(%)
• Ileostomy	130(50.3)
• Colostomy	126(49.2)
• Jejunostomy	1(0.4)
Stoma Anatomic Location	
• Ileum	130(50.4)
• Descending/sigmoid colon	114(44.2)
• Transverse Colon	13(5)
• Jejunum	1(0.4)
Ostomy Status	
• Temporary	146(56.6)
• Permanent	112(43.4)
Type of Stoma Created	
• End	169(65.5)
• Loop	89(35.5)

ASA Score (Mean/SD)	2.7(.71)
Surgical Procedure	
• Hartmann's Procedure	53(20.5)
• Colon Resection with ostomy	47(18.2)
• Lower Anterior Resection/Ileostomy	31(12)
• Abdominoperineal Resection	29(11.2)
• Diversion for obstruction	22(8.5)
• Subtotal colectomy	20(7.8)
• Diversion for Fistula	12(4.7)
• All other	44 (17)
Type of Surgical Procedure	
• Robotic	96(37)
• Open	92(36)
• Laparoscopic	70(27)
Case Type	
• Elective	168(65)
• Emergent	90(35)
Intraoperative Time (Hours: Mean/SD)	3.7 (2.1).

Ostomy Related Complications	N (%)	Surgical Related Complications	N (%)
High Output	28(10.9)	Abdominal Abscess	30(11.6)
Peristomal Irritation	25(9.7)	Anastomotic Leak	15(5.8)
Leakage(appliance failure)	16(6.2)	Dehiscence	11(4.3)
Mucocutaneous separation	11(4.3)	Ileus	10(4)
Stoma ischemia	9(3.5)	Surgical Site Infection	8(3.1)
Stoma retraction	4(1.6)	Other complications	31(12)

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Multivariate Results

30 DAY	Estimate (Regression Beta or Model Performance)	P - value	OR	Confidence Interval
Cardiovascular Disease	0.687	0.059	1.987	(0.974, 4.053)
End Stage Renal Disease	0.984	0.096	2.674	(0.841, 8.509)
Active Oncology Diagnosis	-0.664	0.071	0.515	(0.250, 1.060)
Leakage	0.685	0.286	1.984	(0.564, 6.984)
Admission Diagnosis	0.902	0.146	2.464	(0.731, 8.307)
Length of Index Hospital Admission		0.661		
Anatomic Location Contrasts:		**0.025**		
Colon vs Transverse	**1.511**	**0.036**	**4.529**	**(1.10,18-531)**
Colon Vs Ileostomy	**0.817**	**0.036**	**2.263**	**(1.055,4.854)**

For readmissions within 30 days, anatomical location of the stoma in the ileum and transverse colon as compared to descending/sigmoid colon stomas emerged as significant predictors

60 DAY	Estimate (Regression Beta or Model Performance)	P -value	OR	Confidence Intervals
High output ("Yes")	0.470	0.480	1.600	(0.434, 5.900)
ANASLEAK ("Yes")	1.233	0.111	3.431	(0.754, 15.604)
ileus ("Yes")	1.573	0.070	4.823	(0.881, 26.413)
Length of index Hospital Contrast:		**0.054**		
• Week 1 vs. Week 3	**1.890**	**0.018**	**6.622**	**(1.377, 31.848)**

For readmissions within 60 days, length of the index hospitalization from 15-21 days as compared to shorter lengths of hospitalization emerged as the only significant predictor.

Conclusions

In order to avert readmission, heightened surveillance in the immediate post-operative time period is needed.
Communication between the hospital team (surgeon, ostomy nurse specialist and surgical staff members) and the post-discharge agency healthcare team members is imperative to create a seamless transition to home or to a post-discharge facility.
For patients with high output ostomies, implementation of a evidence based algorithm can provide a systematic approach to management of this condition.
The role of patient engagement in post operative surveillance of patients with an ostomy is an area in need further research and may prove beneficial in reducing readmissions in this vulnerable cohort of hospitalized patients.

Study Publication Citation

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