



ORIGINAL ARTICLE

Value of ileo-ascending colic end to side anastomosis after ileocaecal resection.

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Article Citation: Zaidi AH, Taimur M, Naqvi S, Faridi MA, Samiullah. Value of ileo-ascending colic end to side anastomosis after ileocaecal resection. Professional Med J 2022; 29(12):1811-1815. <https://doi.org/10.29309/TPMJ/2022.29.12.7067>

ABSTRACT... Objective: To assess the outcome of end to side Ileo-Ascending Colic anastomosis in patients undergoing emergency and elective Ileo-Caecal resection in non-malignant cases. **Study Design:** Cross Sectional Descriptive study. **Setting:** Department of Surgery at Fauji Foundation Hospital Rawalpindi. **Period:** January, 2018 to December, 2020. **Material & Methods:** A Total of 40 patients with ileo-caecal benign pathology presenting with generalized peritonitis and intestinal obstruction were studied. All patients underwent laparotomy either in emergency or as planned procedure. After dealing with the primary pathology an end to side ileo-ascending colic anastomosis was performed in all cases. Cases of ileo-caecal disease that required an ileostomy or underwent ileo-transverse colic anastomosis were excluded from the study. Anastomosis was performed in conventional two layers with vicryl 3/0. Variables studied were; indication for surgery, per-operative findings and post-operative complications like anastomotic leakage, surgical site infection, burst abdomen and systemic sepsis. Data was analyzed on SPSS (v 26). **Results:** There were 30 females (75%) and 10 male patients (25%). Age range was 18-72 years with mean age 43.62 years. Common clinical indication of surgery was intestinal obstruction 11 cases (27.5%) followed by generalized peritonitis 10 cases (25%) and trauma 9 cases (22.5%). Post-operative diagnosis in most patients was ileo-caecal tuberculosis 14 cases (35%) followed by trauma to ileo-caecal region 9 cases (22.5%). Anastomotic leakage occurred in 1 patient (2.5%) who underwent second look laparotomy and re-anastomosis. Surgical site infection occurred in 3 cases (7.5%). There was one fatality (2.5%) due to uncontrolled systemic sepsis. **Conclusion:** An end to side ileo- ascending colic anastomosis in conventional two layers is a safe and reliable procedure after emergency or planned ileo-caecal resection. It saves the patient from ileostomy, preserves colonic length and avoids formation of blind loop.

Key words: Ileocaecal Resection, Ileo-ascending Colic, Anastomosis, End-to-Side, Non-malignant, Emergency.

INTRODUCTION

Emergency intestinal resection involving distal ileum or ileo-caecal region and forming a anastomosis is a common and important surgical procedure in a general surgeon carrier.¹ The decision regarding an ileostomy or restoration of gut continuity remains a challenge that surgeon has to take, considering various option in hand against the patient general condition, per-operative findings and surgeons own experience.² There is little doubt that ileo-ileal anastomosis in situation of a very short distal ileal segment carries high risk.³ The question remains as weather an ileostomy or gut restoration by ileo-colic anastomosis is safe in a given operative situation. If the per operative conditions are favorable and permissive for restoration of gut continuity then ileostomy may

be avoided. Problems of managing ileostomy are well known and may be avoided when possible.^{4,5} The next step is to decide that which type of intestinal continuity restoration procedure may be performed. The choices in such situations are ileo-caecal anastomosis if caecum is not excised, ileo-ascending colonic anastomosis or ileo-transverse colonic anastomosis.⁶ In case of ileo-transverse colic anastomosis there is a functional loss of large segment of gut including caecum, ascending colon and portion of proximal transverse colon with its potential hazards.^{7,8} End to side ileo-ascending colic anastomosis is thus an attractive option both in terms of ease of performing the anastomosis as well as the advantage of saving a functional segment of proximal colon. The objective of this study is to

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Article received on: 31/03/2022
Accepted for publication: 11/09/2022

assess the outcome of end to side ileo-ascending colonic anastomosis in patients who underwent emergency or elective ileo-caecal resection in non-malignant cases and views the safety of the procedure.

MATERIAL & METHODS

This Descriptive study was conducted at surgical unit 1 Fauji Foundation Hospital Rawalpindi from January, 2018 to December, 2020. After getting approval from ethical committee (540/RG/FFH/RWP). Forty patients of all ages and either sex were included in study. Patients of ileo-caecal pathology who were operated upon in emergency or as elective cases and underwent end to side "ileo- ascending colic anastomosis", were studied. Cases of both traumatic as well as non-traumatic pathologies were included in the study. Cases with ileo-caecal pathology that had undergone ileostomy in a previous surgery and required elective restoration of gut continuity with ileo-ascending colonic anastomosis were also included in the study. All patients underwent open surgery. Cases under going any other type of ileo-colonic anastomosis were excluded. Cases of malignant disease were also excluded from study. In cases of abdominal trauma patients included were those who mainly suffered injuries of distal ileum and or caecum. Patient of trauma having other major abdominal injuries were excluded from study.

The patients who underwent emergency surgery were operated within 24-72 hrs after the admission to surgical department. Elective cases were initially investigated in detail and were operated on planned operation list. Cases were operated upon by team of experienced surgeons with minimum of 12 years of surgical experience. End-to-side ileo-ascending colic anastomosis was done by conventional hand-sewn method in two layers using 3/0 polyglycamide. Clinical indication for

surgery, per operative findings, procedure detail and post-operative complications and outcome were documented.

Data Analysis

Data analysis was done by using SPSS version 26. Quantitative variable like age was analyzed by mean and standard deviation while qualitative variables like sex, indication for surgery, clinical presentation, per operative findings and postoperative complications were analyzed by frequency.

RESULTS

A total of 40 patients were studied. The age range of the sampling population (n=40) was from 18 years to 72 years. The mean age was 43.62 ± 13.99 SD years (Table-I). Majority of the study population was female i.e. 30 patients (75%), only 10 patients (25%) were male. Clinical indications of surgery in patients were: intestinal obstruction 11 cases (27.5%), generalized peritonitis 10 cases (25%), trauma to ileo-caecal region 9 cases (22.5%), right sided lower abdominal mass 3 cases (7.5%), small bowel ischemia 4 cases (10%) and previous ileostomy 3 cases (7.5%) (Table-II).

Common post-operative diagnosis was tuberculosis of ileo-caecal region 14 cases (35%) followed by trauma to ileo-caecal region 9 cases (22.5%), typhoid perforation 6 cases (15%), ischemic gangrene small bowel 4 cases (10%), ileo-caecal crohn's disease 3 cases (7.5%), amoebic typhilitis 2 cases (5%) and ileo-caecal intussusception 2 cases (5%) (Table-III). Anastomotic leakage occurred in one patient (2.5%) patient who underwent second look laparotomy and re- anastomosis. Surgical site infection occurred in 3 patients (7.5%) cases. There was one fatality (2.5%) due to uncontrolled systemic sepsis (Table-IV).

Mean	N	Std. Deviation	Range	Minimum	Maximum	Median
43.6250	40	13.99210	54.00	18.00	72.00	43.5000

Table-I. Age of patients (N=40)

	Frequency (%)	Valid Percent (%)
Trauma	9 (22.5)	22.5 (22.5%)
Intestinal Obstruction	11 (27.5%)	27.5 (50.0%)
Peritonitis	10 (25.0%)	25.0 (75.0%)
Right sided lower abdominal mass	3 (7.5%)	7.5 (82.5%)
small bowel ischemia	4 (10.0%)	10.0 (92.5%)
Previous Ileostomy	3 (7.5%)	7.5 (100.0%)
Total	40 (100.0%)	100.0

Table-II. Clinical indication of surgery (N=40)

	Frequency (%)	Valid Percent
-Trauma to ileocaecal region	9 (22.5%)	22.5 (22.5%)
Typhoid Perforation	6 (15.0%)	15.0 (37.5%)
Tuberculosis of ileocaecal region	14 (35.0%)	35.0 (72.5%)
Ischemic gangrene of small bowel	4 (10.0%)	10.0 (82.5%)
Ileocaecal Crohns disease	3 (7.5%)	7.5 (90.0%)
Amoebic Typhillitis	2 (5.0%)	5.0 (95.0%)
Ileocaecal Intussuception	2 (5.0%)	5.0 (100.0%)
Total	40 (100.0%)	100.0

Table-III. Post-operative diagnosis (N=40)

	Frequency	Percent
Anastomotic leakage	1	2.5
Surgical site Infection	3	7.5
Systemic sepsis	1	2.5
None	35	87.5
Total	40	100.0

Table-IV. Post-operative complications (N=40)

DISCUSSION

Resection of terminal ileum alone leaving a short segment of distal ileum and ileo-cecal resections are known surgical procedures that are often performed in emergency as well as during a planned operation.⁹ Majority of the patients in this study underwent abdominal exploration in emergency and the indications were penetrating abdominal trauma as well as non-traumatic conditions. Having dealt with the primary pathology in an emergency situation, it's a challenge for the surgeon to decide whether to perform an ileostomy, or to perform a gut continuity restoration procedure. Ileostomy though a safe option has inherent issues of its nursing care, complications and need for re-admission and re-

operation.¹⁰ These issues make ileostomy a least liked procedure but it is still widely performed especially in a desperate emergency situation.¹¹

Under favorable conditions when the surgeon is more inclined to perform a gut continuity restoration procedure, then the options are more than one, depending upon the extent of gut resection. Ileo-ileal anastomosis would be favored if distal ileal segment is > 15 cm and healthy, as anastomosis with distal ileal small segment <15 cm is known for high chance of leakage. In the event of a short distal residual ileal stump not suitable for ileo-ileal anastomosis, the option is an anastomosis between proximal ileum and any suitable part of colon.⁹ Ileo-transverse colonic anastomosis is a well familiar procedure commonly done.

Ugochukwu AI, performed proximal ileo-transverse anastomosis combined with limited right hemicolectomy in 4% cases of typhoid perforations operated upon in emergency. However in the presence of healthy ascending colon an ileo-transverse colonic anastomosis will result in a non-functional portion of gut proximal to the site of anastomosis.¹² This poses potential hazards of blind loop syndrome resulting in bacterial overgrowth, diarrhea, weight loss, malnutrition, mucosal erosion, bleeding, and even perforation peritonitis.¹³ Knowing these facts our study stresses on preserving the functional ascending colon by ileo ascending colic anastomosis and patency of the anastomosis with least complications. Intussuscepted ileo-right colic anastomosis has been described in the studies conducted by J P Owono-Mbouengou confirming the safety of this technique in emergency in cases of typhoid perforation.³

In our study we used simple conventional method of two layer end to side anastomosis in all of our cases using synthetic absorbable 3/0 polygalactin suture material and consider it convenient and safe. End to end ileo-colic anastomosis has risk of leakage.¹⁴ In our study one case of penetrating trauma underwent emergency end to end ileo-ascending colic anastomosis, but converted to end to side on account of leakage. In this regard

this study supports the study conducted by Edwin N Elechi considering the end to side ileo-ascending colic anastomosis as a safer option.¹⁵

In our study all the penetrating injuries involving distal ileum and caecum were managed by resection and primary restoration of gut continuity with rewarding results. We thus support the study by Tantardini, and colleagues that most of the penetrating gut injuries can be managed with primary restoration of gut continuity.¹⁶ In western literature, most of the non-traumatic cases for ileocaecal disease undergoing ileo-colic anastomosis are with reference to Crohn's disease.¹⁷ However In our study Ileocaecal Tuberculous 14 cases (35%) was the predominant indication for surgery while Crohn's disease 3 cases (7.5%) comprised only a small fraction in addition to other non-traumatic cases. Laparoscopic Ileocaecal resections¹⁸ are being increasingly performed however in our study all the cases under went open surgery due to multiple limitations in our own set up. Anastomotic leakage occurred in 15% cases in study done by Bali et.al¹⁹ while in our study anastomotic leakage occurred in one case (2.5%). Surgical site infection occurred in our study in 3(7.5%) cases while study done by Afridi et.al infection rate was 20%.²⁰

CONCLUSION

An end to side ileo- ascending colic anastomosis in conventional two layers is a safe and reliable procedure after emergency or planned ileo-caecal resection. It saves the patient from ileostomy, preserves colonic length and avoids formation of blind loop.

CONFLICT OF INTEREST

The authors of this publication express no conflict of interest in publishing this paper and certify to have no affiliations with any organization or entity for any financial or non-financial interest






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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Abrar Hussain Zaidi	Conceived idea and wrote discussion.	
2	Muhammad Taimur	Fomulated data, Data analysis and results.	
3	Shazia Naqvi	Literature search and worte references.	
4	Manzoor Ahmed Faridi	Wrote the introduction and did proof reading.	
5	Samiullah	Wrote methodology and did formatting for article.	 Dr. Samiullah ESPS Evidenced Based Surgery