

A Clinical Study of Enterocutaneous Fistula**Vivek Saini^{1*}, Girish Bhardwaj², Vineet Sharma³**¹Assistant Professor, Department of General Surgery, Govt Medical College, Alwar²Assistant Professor, Department of General Surgery, RNT Medical College, Udaipur³Assistant Professor, Department of General Surgery, National Institute of Medical Science, Jaipur

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Abstract:**Introduction:** A fistula is defined as an abnormal or surgically made passage between a hollow or tubular organ and body surface, or between two hollow or tubular organs.**Aim:** To review and study patients who presented with enterocutaneous fistula.**Method:** Study was conducted on 70 patients aged between 21-70 years, admitted in various surgical wards of Mahatma Gandhi and Mathura Das Mathur Hospital attached to Dr. Sampurnanand Medical College, Jodhpur over a period of five years from 1st July 2012 to 30th June 2017. The cases included in the prospective study were personally attended and all relevant data recorded. All cases of enterocutaneous fistula admitted in surgical wards were included in the study.**Result:** Bowel resection and anastomosis is the most common procedure associated with occurrence of enterocutaneous fistula followed by intestinal perforation repair. Most fistulae occurred within first post-operative week. High output fistula, hypoalbuminemia, anemia, electrolyte imbalance and fistula with bilious discharge carries high mortality.**Conclusion:** Exteriorization of bowel loop has an edge over resection and anastomosis.**Keywords:** Fistula, Enterocutaneous fistula, bowel loop.

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Introduction

A fistula is defined as an abnormal or surgically made passage between a hollow or tubular organ and body surface, or between two hollow or tubular organs. Enterocutaneous fistula is defined as an abnormal connection between intestinal tract to skin. It is mostly seen as postoperative complication. The most distressing situation to the patient, his relatives and the surgeon is the development of enterocutaneous or fecal fistula. Most large series dealing with this complication cover a period of many years back. Most are retrospective studies since enterocutaneous fistula is not a complication that every surgeon look forward to. This study tries to highlight and review various aspects of this condition. [1]

Enterocutaneous fistula is divided according to output in high, moderate and low output fistula. Several inflammatory conditions such as tuberculosis, anastomotic ulcer and diverticular diseases can cause enterocutaneous fistula. Yet, despite all possibilities mentioned, 80% of enterocutaneous fistulae follow surgical procedures. Now a days enterocutaneous fistula is treated by sustained enteral or parenteral nutritional support, correction of fluid and electrolyte imbalance and control of sepsis,

which helps in spontaneous closure in 70 to 80% of cases. [2]

The major concern is to minimize fistula output, replace fluid and electrolytes and care of surrounding skin. To minimize fistula output the most important method is to provide bowel rest. Hence, favorable outcome in patients with enterocutaneous fistula depends on control of sepsis, adequate nutritional support, maintenance of fluid-electrolyte balance, and skin protection.

Earlier studies have reported mortality as high as 65% in patients with enterocutaneous fistula. Advances in imaging, nutritional support, and availability of effective antibiotics have reduced this to around 20%. [3]

This study was carried out to document our institutional experience with enterocutaneous fistula and to determine the etiological factors, presentation, prognosis, and outcome in patients with enterocutaneous fistula.

Aim

To review and study patients who presented with enterocutaneous fistula.

Method

The present retrospective and prospective study was conducted on 70 patients aged between 21-70 years admitted in various surgical wards of Mahatma Gandhi and Mathura Das Mathur Hospital attached to Dr. Sampurnanand Medical College, Jodhpur over a period of five years from 1st July 2012 to 30th June 2017. The cases included in the

prospective study were personally attended and all relevant data recorded.

All cases of enterocutaneous fistula admitted in surgical wards were included in the study.

Result

74% patients were males and 26% were females with a male female ratio of 2.8:1.

Table 1: Age and Sex

Age (in years)	Male		Female	
	No.	%	No.	%
21-30	12	17.14	10	14.28
31-40	14	20	2	2.85
41-50	14	20	2	2.85
51-60	6	8.57	2	2.85
61-70	6	8.57	2	2.85

Median age of this study was 40 years. There was no patient below the age of 20 years. 31% (22) patients were in the age group of 21-30 years. 23% (16) patients were in the age group of 31-40 and 41-50 years each and 11% (8) patients were in the age group of 51-60 and 61-70 year. Of the total 70

cases, 97.15% (68) cases were seen as post-operative complication in which 71.43% (50) cases underwent emergency surgeries and 25.71% (18) as elective surgery. Whereas only 2.85% (2) cases were seen as of spontaneous origin of enterocutaneous fistula.

Table 2: Procedures during Laparotomy

Indication	Procedure	Frequency	Percentage
Intestinal obstruction	Resection and anastomosis	24	37
Intestinal perforation	Perforation repair	15	22
	Perforation repair with proximal stoma	3	5
	Resection and anastomosis	2	3
Ruptured liver abscess	Resection and anastomosis	2	3
Mesenteric artery ischemia	Resection and anastomosis	2	3
Acute Appendicitis	Appendectomy	2	3
Malignancy			
Head of pancreas	Whipple's procedure	6	9
Sigmoid	Resection and anastomosis	2	3
Stomach	Resection and anastomosis	2	3
Cholangiocarcinoma	Hepaticojejunostomy	1	1.5
	Triple bypass	1	1.5
CBD stone	Choliodocholithotomy	4	6
IBD	Resection and anastomosis	2	3
Total		68	100

Table 3: Procedures During Laparotomy

Procedure	Frequency	Percentage
Resection & anastomosis	36	52
Perforation repair	15	22
Perforation repair with proximal stoma	3	5
Appendectomy	2	3
Whipple's procedure	6	9
Choliodocholithotomy	4	6
Hepaticojejunostomy	1	1.5
Triple bypass	1	1.5
Total	68	100

Table 2 and 3 shows that out of 68 patients, 52% (36) developed fistula after resection and anastomosis whereas only 22% (15) had it after perforation repair. In 5% (3) patients perforation was repaired with proximal stoma formation. Appendectomy was done in 3% (2) patients, Whipple's procedure in 9% (6), choliodocholithotomy in 6% (4) and one (1.5%) each underwent hepaticojejunostomy and triple bypass.

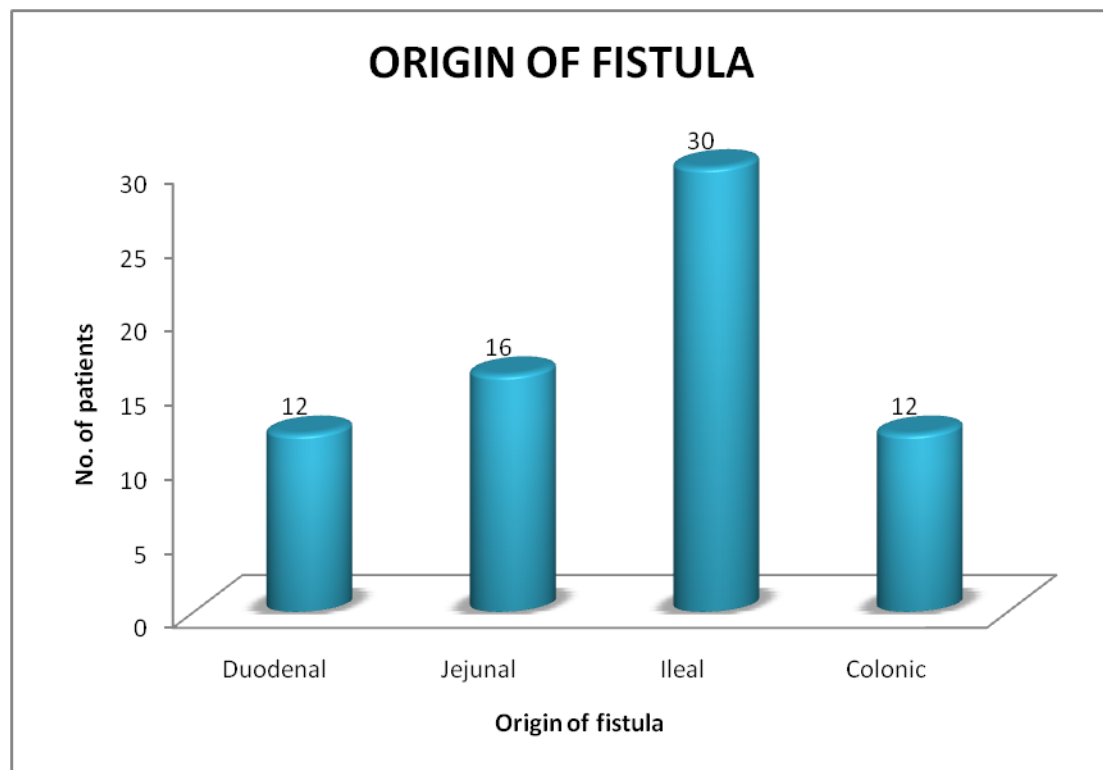


Figure: 1 shows origin of fistula

Chart 1 shows that 17% (12) fistulae were colonic which low output fistulae were and with a feculent discharge while small bowel fistulae comprise of 83% (58) cases in which 17% (12) were duodenal, 23% (16) jejunal and 43% (30) were ileal fistulae. There were high output fistulae among all jejunal and duodenal fistulae. 33% (10) ileal fistulae were with high output and 66% (20) were low output. 33% ileal fistulae with high output were mainly in the proximal ileum and rest were in the distal ileum.

Table 4: Output amount

Amount (ml/day)	Frequency	Percentage
<200	22	31.42
200-500	10	14.28
>500	38	54.28

Table 4 shows output from enterocutaneous fistulae. Fistula output is divided into low, moderate and high according to daily fistula output as <200, 200-500, >500ml/day. 31% (22) patients developed low output fistula while 14% (10) patients had moderate and 54% (38) high output fistulae. 57% (40) patients had bilious whereas 42% (30) had fecal discharge. In our study 82% (56) patients developed fistulae during 1st post-operative week whereas 18% (12) developed after 1st post-operative week.

Table 5: Operative Management of Enterocutaneous Fistula

Modes	Frequency	Percentage	Mortality
Exteriorization	6	75	2 (33%)
Resection and anastomosis	2	25	1 (50%)
Total	8	100	3 (37.5%)

Table 5 shows that 11.42% (8) of all patients underwent surgery for the treatment of enterocutaneous fistula. 75% (6) patients underwent bowel loop exteriorization and in 25% (2) resection and anastomosis was performed. Mortality was higher (50%) in cases in whom resection and anastomosis was performed compared to bowel loop exteriorization (33%).

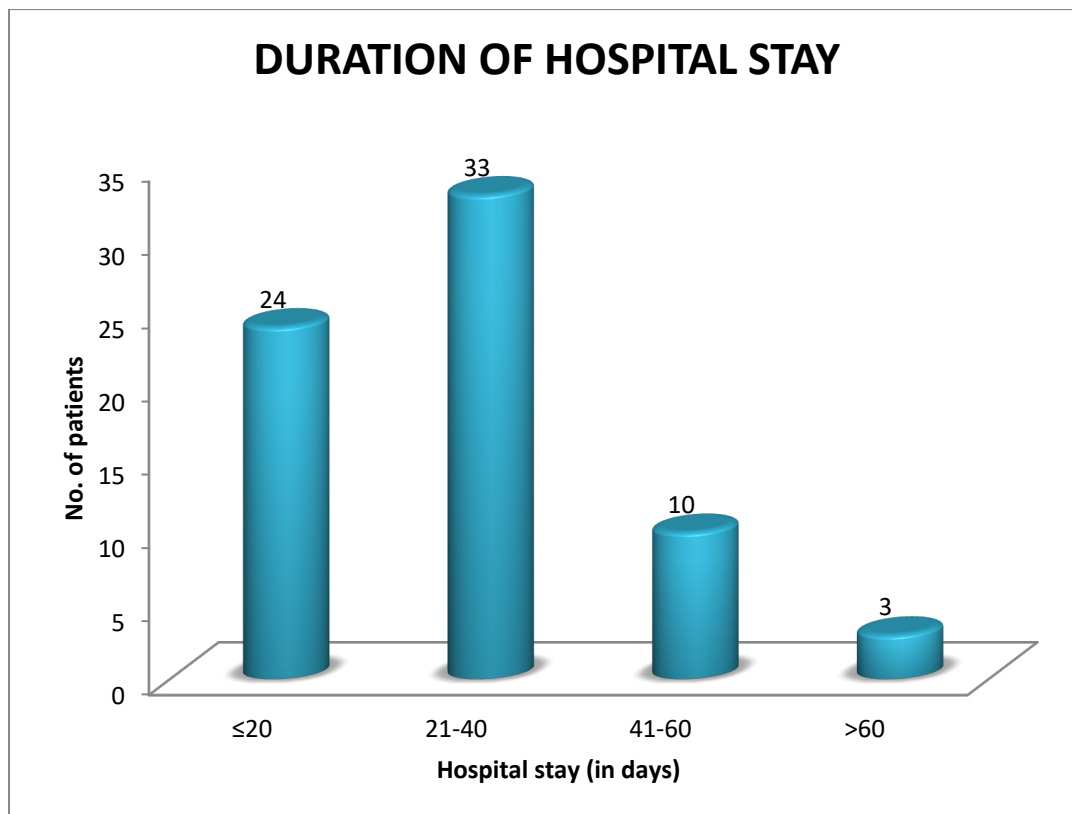


Figure 2: Duration of hospital stay (in days)

Patient's hospital stay varies from 9 days to 66 days. In majority of patients (47%) hospital stay ranges from 21-40 days whether managed conservatively or operatively whereas only 4% (3) stayed for >61 days.

Conservative management was done in all patients initially and 71% (50) patients could be managed successfully. In 29% (20) patients conservative management proved unsuccessful. 17% (12) of the patients expired during conservative treatment. 12% (8) patients underwent operative management and 7% (5) had successful outcome while 4% (3) patients expired during further course of treatment.

Discussion

There was a male predominance in our study with 52 male (74.28%) patients with M:F 2.8:1 which is comparable to the Kumar P et al [2] study. In our study most of the patients were in 20-30 age group 31.44% cases with median age is 40.57 years with range of 21-64 years.

While in other studies like Kumar et al [2] most of the patients were in the age group of 40-60 years with median age of 41.23 years. In our study we have found that the occurrence of enterocutaneous fistula was more commonly seen in cases operated as emergency (71%) compared to those operated as elective (25%).

Spontaneous origin found in 3% cases. Similarly study of Haffejee et al [4] shows 76% emergency

cases v/s 18% elective cases and 5% spontaneous origin of enterocutaneous fistula. In our study most common cause for developing enterocutaneous fistula is post-operative, whether it is lack of bowel preparation, wrong surgical techniques or decision, condition of bowel itself leads to formation of enterocutaneous fistula. As compare to study of Kumar P et al [2] and Mukadam P et al [5] there was no case of trauma, pancreatic abscess in our study.

In our study as symptoms skin excoriation and related complications were seen in 31.43% cases as compared to Kumar P et al [2] (42.46%).

We had divided patients according to fistula output. Fistula output is divided into low, moderate, and high as described earlier. We have found that the incidence of complications and operative interventions were more in those with a higher output groups. Total 15 patients were expired during our study. 11 patients were expired from high output group. From high output group 6 patients underwent surgery, out of which 3 patients were expired.

In my study there were 22 patients with low output fistula and 10 patients with moderate output fistula, 2 patients were expired from each group. From moderate output and low output group 1 patient from each group underwent successful surgery. Comparisons to other studies are as follow, in study of Kumar p et al [2] shows 51 % cases of high output fistula, whereas Taggarshe D et al [6] study shows 34 % of high output fistulae in study of total

83 cases. In our study 57% (40) patients had bilious whereas 43% (30) patients had fecal discharge. Comparison of Kumar P et al [2] study which shows 36% (14) bilious discharge whereas 64% (25) with fecal discharge.

In our study most patients with high output suffer from malnutrition, most commonly in form of anemia (68.57%). 20% (14) patients were diagnosed as having malignancy, 10 were known pre-operatively and 4 diagnosed intraoperatively. 8 patients had bowel malignancy out of which 4 were large bowel and another 4 of small bowel.

6 patients had malignancy of hepatopancreaticobiliary system out of which 2 were from gall bladder and 4 from pancreas itself. 6 patients had tuberculosis. 2 patients were referred from other hospitals with jejunum-sigmoidostomy with short bowel syndrome and enterocutaneous fistula for Crohn's disease. 2 patients had ischemic bowel disease who were diabetic.

Other associations were history of jaundice, hypertension, and renal failure. Similar findings were there in Kumar P et al.[2] In our study, patient's hospital stay varies from 9 days to 66 days. In majority of patients (47%) hospital stay ranges from 21-40 days. Study of Kumar p et al [2] shows almost similar data.

In our study 11% (8) patients received total parenteral nutrition alone for their source of energy and out of them 62% (5) patients expired, this shows high mortality rate compared to study of Kumar P et al [2] (50%).

In our study 11.42% (8) patients underwent surgery compare to study of Taggarshe D et al [6] (42%;

35). This shows the higher cure rate with conservative management in our study.

Conclusion

Patients who were managed with conservative modalities had better outcome compared to operative management. Exteriorization of bowel loop has an edge over resection and anastomosis.

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