

## Early Surgical Intervention in Small Bowel Enterocutaneous Fistulae

Dr.Kunal, Dr.Satyajeet Kumar Singh, Prof.(Dr.) S.Nag

---

### Abstract

**Background:** *Fistulas are abnormal communications linking two epithelialised surfaces. Enterocutaneous fistula is an abnormal communication between the GI tract and skin. Even with recent advances in parasurgical management, critical care and nutritional support, enterocutaneous fistulas remain a great challenge to the general surgeon. The mortality and morbidity associated with only conservative management is often high and expensive because most patients cannot afford prolonged parenteral nutrition. Although operations are difficult, if performed early they may be lifesaving in our situation. The focus of this study was to determine whether, in patients with fistulae, early intervention resulted in low mortality and morbidity.*

**Patients and methods:** *Between 2013 to 2015 we treated 32 patients with small bowel enterocutaneous fistulae. The most common cause was surgical (78.13%) mainly emergency surgery. Surgical intervention was performed after a median period of 15 days (range 3-34 days) from the occurrence of the fistula.*

**Results:** *The overall success of surgical treatment was 59.3% and the mortality rate was 12.5% (4 patients). It was seen that early surgery resulted in greater closure rates than conservative treatment and this was found to be statistically significant ( $p$  value—0.0418). Spontaneous closure was seen in 3 patients.*

**Conclusion:** *Early surgical intervention resulted in good patient outcomes as compared to conservative treatment ( $p$  value- 0.0418). Initial emphasis should be on the treatment of septic foci, aiming to improve the patient's condition. Rather than following a prolonged conservative line of management, surgical repair should be performed when the patient is stable.*

---

### I. Introduction

Fistulas are abnormal communications linking two epithelialised surfaces. Enterocutaneous fistula is an abnormal communication between the GI tract and skin. Even with recent advances in parasurgical management, critical care and nutritional support, enterocutaneous fistulas remain a great challenge to the general surgeon.

Mortality remains high largely due to the frequent complications of sepsis and malnutrition. Regardless of the etiology or specific nature of the fistula the ultimate goals in treating patients with enterocutaneous fistula are the re-establishment of bowel continuity, the ability to achieve oral nutrition and the closure of the fistula. The mortality and morbidity associated with only conservative management is often high and expensive because most patients cannot afford prolonged parenteral nutrition. Although operations are difficult, if performed early they may be lifesaving in our situation. Moreover the psychological impact of a difficult draining foul smelling wound and the major impact on the patients daily activities of living cannot be underestimated.

In our country there is a need to abandon expectant lines of management for a more aggressive surgical approach once the fluid and electrolyte disturbance and sepsis have been corrected. The aim of the present study was to audit the results of an aggressive approach in patients with enterocutaneous fistula and to identify the time of convalescence prior to restorative surgery thereby reducing the morbidity and mortality associated with them.

### II. Patients And Methods

#### Patients

Cases were selected from those patients admitted in surgical wards of NMCH either from emergency services or from outpatient department. The patients were those upon whom abdominal surgeries of some sort or other were performed. Only patients with enterocutaneous fistulae of the small intestine were included in the study. Patients with salivary colonic, pancreatic, biliary and perianal fistulae were excluded from study.

#### Methods

The following treatment guidelines were followed

##### 1. Resuscitation with fluid and electrolyte

Patients were aggressively resuscitated with fluid and electrolytes in the first 48 hours. Fluid resuscitation was mainly with crystalloids (ringer lactate). Electrolytes were replaced with frequent monitoring of serum levels until stable values were obtained. Red blood cells were transfused in selected patients.

## 2. Control of sepsis

Control of sepsis carried the highest priority. When clinical signs indicated the presence of a septic focus, USG and CT was used to identify and outline abscesses and to guide percutaneous drainage or local surgical drainage procedures. Third generation cephalosporins and metronidazole were the main intravenous antibiotics generally used.

## 3. Optimization of the nutritional state

Enteral nutrition was always the first option in cases of small bowel fistulae when the fistula output did not interfere with wound care. Total parenteral nutrition was preferred in patients with a high output fistula. TPN was instituted in selected cases(who could afford).

## 4. Wound care and control of fistula drainage

The skin surrounding the fistulous opening was protected by “siloderm”, a proprietary zinc oxide paste and aluminum paint. In some cases where the external opening was small, a foley’s catheter was introduced which was attached to an urosac for drainage. In some cases where the external wound was small, a colostomy bag was applied. In some cases sump suction was tried by two malecot’s catheter with one fenestrated tube inside another large tube and continuous aspiration with 50 cc syringe.

## 5. Reduction of fistula output

Otreotide was used in a dose of 100micrograms eight hourly subcutaneously for a period of 14 days in all cases of high output fistulae. Intravenous pantoprazole was also used for gastric acid suppression.

## 6. Anatomy

The anatomy of the fistula was defined prior to planned surgery. Fistulogram was used in defining the site of the fistula. USG and CT were used to localize intra abdominal abscesses.

## 7. Timing of surgery

Patients were eligible for surgery when all septic foci had been adequately treated. The patient’s condition was stabilized before performing any surgical procedure.

## 8. Surgical strategy

One of the following surgical procedures was undertaken:-

- (a) Laparotomy, drainage and feeding jejunostomy for leaks from the duodenum.
- (b) Laparotomy, exteriorization of fistula and feeding jejunostomy for leaks from the jejunum.
- (c) Laparotomy, ileostomy and mucous fistula for ileal injuries.
- (d) Excision of fistula, end to end anastomosis if circumstances were favorable e.g. a clean abdomen in a well nourished patient.

## FOLLOW UP

- Morbidity- Hospital stay
- Mortality- Death
- Recurrence

## III. Results

### Patient Characteristics

In the present study, thirty two cases of small bowel enterocutaneous fistulas were taken, which were either operated in Narayan Medical College and Hospital or outside.

Majority of patient were < 60yrs of age with mean age of 42yrs(range 17-75yrs).The percentage of male population was 56.2 and that of female was 43.8.The most common cause was surgical (78.13%) mainly emergency procedures. Other causes were tuberculosis, malignancy, radiation and inflammatory bowel disease.

Patient outcome

	Number(n=32)	Percentage(%)	
Closure	22	68.78	
Spontaneous	03		9.38
Surgical	19	59.38	
Success of Surgery	19/24		79.16
Mortality	04/32		12.5

The overall success of surgical treatment was 59.3% and the mortality rate was 12.5%(4 patients).

It was seen that early surgery resulted in greater closure rates than conservative treatment and this was found to be statistically significant (p value— 0.0418). Spontaneous closure was seen in 3 patients. These results were seen in those favorable group of patients who had low output fistula, no organic disease, no abscess cavity etc, and were thus subjected to conservative treatment. Surgical intervention was performed after a median period of 15 days (range 3-34 days) from the occurrence of the fistula. The goal was to surgery as soon as the patient condition was stabilized and any septic foci had been adequately treated.

#### IV. Discussion

This study shows that adherence to a strict treatment guideline for patients with small bowel ECFs results in a good outcome with a relatively short period of convalescence.

In this study, after diagnosis the patient's condition had been stabilized and once all septic foci had been adequately treated, majority of patients underwent surgery.

Closure rates were better in patients < 60 yrs group than in patients above 60 yrs. Mortality was higher in  $\geq 60$  yrs group (28.5%) than in < 60 yrs group (8%), but the was not statistically significant (p value- 0.1548). Mortality was higher in female population (11.1%) than in male population (p-0.6409). Closure was less likely in high output group than in output fistulas. Mortality was higher in high output fistulas (33.3%) than in low output fistulas (0%) (p-0.0309). In patients without sepsis the closure rates were better than in patients with sepsis. Mortality was 16% in patients sepsis whereas there was no mortality in patients without sepsis (p-0.4032). Closure rate were significantly higher in patients with midgut fistulas than in patients with foregut fistulas. Mortality rates were significantly higher in patients with foregut fistulas (75%) than in patients with midgut fistulas (3.6%) (p-0.0178). Surgical closure rates were better than spontaneous closure rates in patients receiving enteral nutrition alone. Closure rates were higher in higher in patients with albumin level  $\geq 3.0$ g/l. Surgical closure rates were higher than spontaneous closure rates in population. Mortality rates were higher in patients with albumin level < 3.0g/l (16.6%) than in patients with level  $\geq 3.0$ g/l (7.2%). Closure rates were higher in patients with hemoglobin level  $\geq 8.0$  gm% surgical closure rates were higher than spontaneous closure rates in both population. The median length of hospital stay was 16.5 days (range 5-86 days). Morbidity due to delayed complications could not be ascertained.

#### V. Conclusion

Overall, closure was achieved in twenty two patients (68.7%). Surgical closure was achieved in nineteen patients (59.38%). Spontaneous closure was seen in three patients (9.38%).

Early surgical intervention resulted in good patient outcomes as compared to conservative treatment (p value- 0.0418). Initial emphasis should be on the treatment of septic foci, aiming to improve the patient's condition. Rather than following a prolonged conservative line of management, surgical repair should be performed when the patient is stable.

#### References

- [1]. M.Gupta, P.Sonar, R.Kakodkar, V.Kumaran, R.Mohanka, A.Soin, S.Nundy, Indian J.Surg. (October-December 2008) 70:303-307.
- [2]. Sachdev A, Agarwal A, Chowdhary A (1994) Management of enterocutaneous fistula. In: Chattopadhyay TK, editor. GI Surgery Annual 1:65-84
- [3]. Berry SM, Fischer JE. Enterocutaneous fistulae. In: Wells SA Jr, ed. Current problems in surgery. St. Louis: Mosby Year Book, 1994:469
- [4]. Haffjee AA. Surgical management of high output enterocutaneous fistulae: a 24 year experience. Curr opin clin nutr metab care 2004;7:309
- [5]. Hollington P, Mawdsley J, Lim W, et al. A 11 yr experience of enterocutaneous fistula. Br J Surg 2004;91:1646
- [6]. Lynch AC, Delaney CP, Senagore AJ et al (2004) Clinical outcome and factors predictive of recurrence after enterocutaneous fistula surgery. Ann Surg 240:825-831
- [7]. Campos AC, Meguid MM, Coelho JC (1996) Factors influencing outcome in patients with gastrointestinal fistula. Surg Clin North Am 76:1191-1198
- [8]. Rose D, Yarborough MF, Canizaro PC, Lowry SF (1986) One hundred and fourteen fistulas of the gastrointestinal tract treated with parenteral nutrition. Surg Gynae Obstet 163:345-350
- [9]. Tassiopoulos AK, Baum G, Halverson JD (1996) Small bowel fistulas. Surg Clin North Am 76:1175-1181
- [10]. Makhdoom ZA, Komar MJ, Still CD (2000) Nutrition and enterocutaneous fistulas. J Clin Gastroenterol 31:195-204
- [11]. Evenson AR, Fischer JE (2006) Current management of enterocutaneous fistula. J Gastrointest Surg 10:455-464
- [12]. Schein M, Decker GA (1990) Gastrointestinal fistulas associated with large abdominal wall defects: experience with 43 patients. Br J Surg 77:97-100
- [13]. Soeters PB, Ebeid AM, Fischer JE (1979) Review of 404 patients with gastrointestinal fistulas. Impact of parenteral nutrition. Ann Surg 190:189-202
- [14]. McIntyre PB, Ritchie JK, Hawley PR et al (1984) Management of enterocutaneous fistulas: a review of 132 cases. Br J Surg 71:293-296