

# A Clinical Study of Enterocutaneous Fistula and Management Options

K. Ramsingh<sup>1</sup>, Jeevan Kenche<sup>2</sup>, M. Steve Richards<sup>3</sup>

<sup>1</sup>Associate Professor of General Surgery, Osmania General Hospital, Hyderabad, India  
H.no 16-2-313 S.S Colony near Vasanthnagar, Hydernagar, KPHB. Hyderabad-72

<sup>2</sup>Assistant Professor of General Surgery, Osmania General Hospital, Hyderabad, India  
Flat no. 406, Thakur Apartments, Opposite Railway officers quarters, Walkers town, Padmarao nagar, Secunderabad, India

<sup>3</sup>Postgraduate in General Surgery, Osmania General Hospital, Hyderabad  
H.no 11-5-293/303, Moghal Mezonet Apts, Red Hills, Hyderabad-04, India

**Abstract:** Enterocutaneous fistula (ECF) is defined as an abnormal connection between the gastrointestinal tract and the skin resulting in drainage of enteric contents on to the skin, and it requires multidisciplinary team management and surgical expertise. The objective is to study enterocutaneous fistula and its management options. Majority of them can be managed conservatively but those who required surgery is a difficult task to perform because of hostile abdomen with dense adhesions, presence of infections, malnutrition, electrolyte imbalance etc and carries significant risk of morbidity and mortality. This study is conducted at Osmania General Hospital, Hyderabad with patients who are referred from outside hospitals and those who developed enterocutaneous fistula postoperatively are included in this study during a period of 14 months from June 2014 to August 2015. Age, Sex, haemoglobin levels, onset and duration of fistula, site of fistula, grade of fistula, output, sepsis, mode of surgery, management options and outcome were studied. Results concluded that the risk factors like sepsis, high output, decreased albumin levels, high grade of fistula were associated with increased mortality.

**Keywords:** Enterocutaneous fistula, conservative management, output, risk factors, clinical study.

## 1. Introduction

Fistula is an abnormal communication between two epithelialized surfaces lined by granulation tissue or occasionally by epithelium. An enterocutaneous fistula is one whereby the gut is connected to the body surface, directly or indirectly. They result in drainage of enteric contents on to the skin. The discharge should continue for more than 24 hours to be considered as a fistula. Over past 35-40 yrs mortality associated with gastrointestinal cutaneous fistulas has diminished from apparently 40-60% to 15-20%. This improvement in prognosis is attributed to general advances in fluid and electrolyte balance, blood transfusion, critical care, ventilator management, antibiotic regimen, nutrition management. Mortality is mainly due to sepsis, malnutrition and electrolyte imbalance[1]. Though a lot of risk factors were studied, only a few were found to be statistically significant. The aim is to study these risk factors and their effect on the outcome of the patient.

## 2. Material and Methods

All the patients coming to Osmania General Hospital with an enterocutaneous fistula and those patients who developed a fistula post operatively in Osmania General Hospital during the period of 14 months i.e., June 2014 to August 2015 are included in this study.

### Variables Studied:

Age, Sex, haemoglobin levels, onset and duration of fistula, site of fistula, grade of fistula, output, sepsis, mode of surgery, management options and outcome

### Inclusion Criteria:

Postoperative and spontaneous ECF between 0-60 years of age group

### Exclusion Criteria:

Fistula in ano, Oropharyngiocutaneous fistulas

## 3. Observation

A total of 25 patients with enterocutaneous fistulas were observed and treated at General Surgery Department at Osmania General Hospital during June 2014 to August 2015. There was one case of spontaneous enterocutaneous fistula involving caecum, following the development of incisional hernia post appendectomy. Rest of the 24 patients developed a post operative complication within the hospital.

### Age

The mean age of the patients was 38.12 years with a minimum age of 8 years to a maximum age of 60 years.

There are 4 (16%) cases less than 20 years of age of which 2 cases died (Mortality – 28.57%)

There are 9 (36%) cases between 21-40 years of age of which 1 case died (Mortality – 14.28%)

There are 12(48%) cases between 41-60 years of age of which 4 cases died (Mortality – 57.14%)

### Sex

Of the 25 cases, 17 were male and 8 were female patients.

There are 6 deaths in male patients (Mortality – 35.29%) and 1 death among female patients (Mortality – 42%)

### Etiology

Of the 25 cases, 24 cases were due to postoperative complication and one was spontaneous onset

### Elective/ Emergency

Of the total cases, 6 cases followed elective surgeries (24%) while 19 cases of fistula followed emergency surgeries (76%). Mortality was higher i.e 6 deaths (31.8%), in cases done in emergency, whereas 1 death out of 6 cases (16.7%) in cases done on elective basis

### Site of Fistula

There were 4 cases arising from stomach and duodenum (16%), 14 cases from small bowel (56%) and 7 cases from colon (28%)

	No. of cases	Deaths	Mortality (%)
Stomach & Duodenum	4	1	25
Small Intestine	14	5	35.71
Large Intestine	7	1	14.28

### Onset

The mean time of onset of postoperative fistula was 5.84 post operative day. The earliest onset was 1 day and the longest on the 20<sup>th</sup> post operative day. Mortality was high i.e 37.5% in cases which developed fistula within 7 days of onset and mortality was 16.7% in cases after 8-14 days and there were no deaths in cases which developed fistula after 15 to 21 days

### Output

	Low (<200ml/day)	Moderate (200-500ml/day)	High (>500 ml/day)
Stomach & Duodenum	1	0	3
Small intestine	3	2	9
Colon	5	2	0

There was one death in 10 patients with low or moderate output fistulas (Mortality 10%). 6 of the 12 patients with high output fistula (Mortality 50%) [4]

### Grade of Fistula

	No. Of cases	Deaths	Mortality (%)
GRADE I	6	0	0
GRADE II	1	0	0
GRADE III	1	0	0
GRADE IV	9	4	44.5
GRADE I + III	7	2	28.5
GRADE I + IV	1	1	100

Majority of deaths occurred in grade III and grade IV fistulas.

### Sepsis

	No of cases	Deaths	Mortality (%)
Present	12	7	58.3
Absent	13	0	0

12 out of 25 (48%) patients had evidence of sepsis of which 7 died (58.3% Mortality). Of the 13 patients (52%) without sepsis there were no deaths (Mortality 0%) [3]

### Closure

Of the 18 fistulas which closed, 12 closed by conservative management alone. 2 patients resolved after surgical control of sepsis and feeding jejunostomy. 4 patients with fistulas underwent surgical closure. Rest of the 7 patients died before the closure of fistula.

## 4. Discussion

The overall mortality in this series was 28%

### Sex

There were 17 male and 8 female patients. 6 male patients (35.29%) & 1 female patient (42%) died. The difference in the mortality between male and female patients does not appear to be statistically significant (Chi-Square test)

### Age

The mean age of patients was 38.12 years. In this study, mortality in patients >40 years is 57.14%, whereas in patients <40 years is 42.85%

### Site of Fistula

Small bowel is the most common site of fistula. There are 14 cases of small bowel fistulas with 5 deaths (35.71% Mortality), while in the study by Altomare et al, was 44% [3]

There are 4 cases of fistula arising from stomach and duodenum, of which 3 closed while 1 patient died (25% mortality v/s 30% mortality Altomare et al). [3]

1 patient among 7 cases of colonic fistulas died (Mortality 14.28%)

### Output

The mortality in high output fistulas observed in this study was 50% when compared to only 7.69% in patients with a low or moderate output fistula.

### Grade of Fistula

Grade I: Through the drain site

Grade II: Single or multiple openings passing through abdominal wall close to bony prominences, surgical scars, umbilicus

Grade III: Fistula through small dehiscence of the main wound.

Grade IV: Fistula through a large dehiscence at the bottom of a gaping wound.

Majority of deaths were occurring in grade III and grade IV fistulas

### Sepsis

In this study sepsis was present in 12 patients (48%), 7 of who died (Mortality 58.3%), compared with 0 of the 13 patients without sepsis (Mortality 0%) [3]

Sepsis is the most common cause of death in the patients with enterocutaneous fistulas. [2]

## 5. Conclusions

- Post operative fistula accounting for most of the enterocutaneous fistula (72%)

- Small bowel is the most common site of fistula, of which terminal ileal fistulas are more common
- Most of the fistulas occurring in emergency surgeries(76%)
- Appendiceal and colonic fistulas have a better prognosis when compared with patients with gastric and small bowel fistulas
- High output fistulas are associated with poor prognosis
- The presence of sepsis is associated with a poor prognosis and seems to be the most important cause of death in these patients
- Grade III and IV fistulas are associated with increased mortality
- Age and sex of the patient does not affect the outcome in patients with enterocutaneous fistula

## References

- [1]Edmunds LH, Williams GM, Welch CE. External fistulas arising from gastrointestinal tract. Ann surg 1960;152:445
- [2]Soeters PB, Ebeid AM, Fischer JE. Review of 404 patients with gastrointestinal fistulas : impact of parenteral nutrition. Ann surg 1979; 190 :189[PubMed : 111638]
- [3]Altomare D.F. Serio.G et al. Prediction of mortality by logistic regression analysis in patients with post operative enterocutaneous fistulae, Br.J. Surg 1990;7:450-453
- [4]Sitges-Serra. A , Jaurieta.E and Sitgescruces. Management of postoperative enterocutaneous fistulas: The impact of parenteral nutrition and surgery. Br.J.Surg. 1982;69;147-150

## Author Profile



**K. Ramsingh**, MBBS, MS (General Surgery) joined in MBBS Course in the year 1986 in Gandhi Medical College and completed in 1991. Completed MS in General Surgery in the Year of 1997 from Kakatiya Medical College.Joined in Government Service in 1997 in UPHC,Gandhari, Nizamabad as Civil Assistant Surgeon in 1997 to 2006.Joined as Asst Professor of Surgery in Osmania Medical College from 2003 to 2013.Working as Associate Professor of General Surgery from 2013 till date at Osmania General Hospital , Hyderabad. Received Best laparoscopic family planning surgeon at Nizamabad in 2001 and 2002. Best Laparoscopic surgeon in Telangana from Osmania Medical College in 2015. Published various papers in different journals



**Jeevan Kenche**, MBBS, MS joined in MBBS Course in 1992 in Osmania Medical College and completed in 1997. Completed MS in General Surgery in 2002 from Gandhi Medical College. Completed FIAGES in 2010 Working as Assistant Professor in General Surgery in Osmania Medical College from 2006 till present



**M Steve Richards**, MBBS, (MS) General Surgery joined MBBS Course in 2007 in Chalmeda Anandrao Institute of medical Sciences, Karimnagar, Telangana and completed in 2013. Pursuing Postgraduation in General Surgery from 2014 at Osmania Medical College, Hyderabad.