

# Study of various factors associated with outcome of gastro intestinal fistula at tertiary health care center

Ravi P Reddy<sup>1\*</sup>, S P Jadhav<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of General Surgery, Government Medical College, Latur, Maharashtra, INDIA.

<sup>2</sup>Professor, Department of General Surgery, Government Medical College, Aurangabad, Maharashtra, INDIA.

Email: [reddydravi@gmail.com](mailto:reddydravi@gmail.com)

## Abstract

**Introduction:** The enterocutaneous fistula (ECF) is a devastating complication for both surgeons and patients alike. Prior to the advent of sophisticated critical care support and parenteral nutrition, the development of an ECF nearly equated to a death sentence. In the current era, the mortality rate has been reduced to 5 to 20%. **Aims and Objectives:** To Study various factors associated with outcome of Gastro Intestinal Fistula at Tertiary Health care center **Methodology:** This was a Cross-sectional study of the Patients with Gastro-intestinal fistula at tertiary health care center in 40 patients who developed GI fistulas by various reasons were study during the one year period from December 2014 to December 2015 All those patient those given consent were included into the study while those who didn't given consent and were having immune compromised state and terminally ill were excluded from the study. All the information related with fistulas and their outcomes were collected by semi structured questionnaire. **Result:** Thus Ileal site was mostly of high output type and are associated with greater mortality. Perioperative hypotension significantly affecting the mortality thereby close monitoring of IV fluids and judicious use of pressor agents is essential to avoid hypotension. Septicemia significantly affected mortality thereby favoring the pus culture and sensitivity, and antibiotics accordingly covering the wide range of organisms. Mortality was high in Addicted Patients i.e. 26.31% as compared to non- addicted Patients i.e. 19.04%. The most common organism found in the culture was E. coli. Enteral feeding has decreased mortality rate. **Conclusion:** From our study it can be concluded that the most common factors associated with worse outcome were Ileal site, hypotension, Septicemia and Addiction in the patients.

**Keywords:** Enterocutaneous fistula (ECF), Gastro Intestinal Fistula, Enteral feeding.

## \*Address for Correspondence:

Dr. Ravi P Reddy, Assistant Professor, Department of General Surgery, Government Medical College, Latur, Maharashtra, INDIA.

Email: [reddydravi@gmail.com](mailto:reddydravi@gmail.com)

Received Date: 23/04/2016 Revised Date: 20/05/2016 Accepted Date: 03/06/2016

## Access this article online

Quick Response Code:	Website: <a href="http://www.statperson.com">www.statperson.com</a>
	DOI: 08 June 2016

## INTRODUCTION

The enterocutaneous fistula (ECF) is a devastating complication for both surgeons and patients alike. Prior to the advent of sophisticated critical care support and parenteral nutrition, the development of an ECF nearly equated to a death sentence. In the current era, the mortality rate has been reduced to 5 to 20%.<sup>1,2</sup> However, the development and management of an ECF remains a

chronic, debilitating condition<sup>3</sup> associated with prolonged intensive care unit and hospital length of stay, and hospital costs of over \$500,000.<sup>4</sup> The ECF arises from a myriad of conditions including Crohn's disease, malignancy, trauma, and diverticular disease. However, the most common etiology is iatrogenic injury following abdominal surgery, accounting for 75% of ECF.<sup>2</sup> It is the early management in controlling intraabdominal sepsis that is most closely linked to mortality. Patients with high-output fistulas are often severely hypokalemic upon presentation, requiring aggressive replacement to prevent cardiac disturbance. Early goal-directed therapy.<sup>5</sup> Blood cultures and cultures from any coexisting intraabdominal fluid collections should be taken prior to antibiotic administration if possible. Recent guidelines suggest that cultures of an intraabdominal abscess in the patient with a community-acquired intraabdominal infection are optional.<sup>6</sup> However, the majority of ECFs are iatrogenic, and thus represent nosocomial infections.<sup>7</sup>

## MATERIAL AND METHODS

This was a Cross-sectional study of the Patients with Gastro-intestinal fistula at tertiary health care center in 40 patients who developed GI fistulas by various reasons were study during the one year period from December 2014 to December 2015 All those patient those given consent were included into the study while those who didn't given consent and were having immune compromised state and terminally ill were excluded from the study. All the information related with fistulas and their outcomes were collected by semi structured questionnaire.

## RESULT

**Table 1:** Interrelationship between nature of fistula, anatomical site and mortality

	Low	Moderate	High	Mortality	Mortality
Jejunal	04	04	03	03	27.27
Ileal	02	09	07	07	38.80
Colonic	13	--	--	--	--
Mortality	01	03	05	--	--

Thus Ilealsite were mostly of high output type and are associated with greater mortality.

**Table 2:** Perioperative hypotension

Hypotension	No. of cases	Mortality
Present	18	09
Absent	22	--
<b>Total</b>	<b>40</b>	<b>09</b>

Thus, perioperative hypotension significantly affecting the mortality thereby close monitoring of IV fluids and judicious use of pressor agents is essential to avoid hypotension.

**Table 3:** Septicaemia

Septicaemia	No. of cases	Mortality
Present	15	09
Absent	25	--
<b>Total</b>	<b>40</b>	<b>09</b>

In the present study, septicaemia significantly affected mortality thereby favouring the pus culture and sensitivity, and antibiotics accordingly covering the wide range of organisms.

**Table 4:** Effect of addiction

Addiction(smoking, alcoholism, tobacco chewing)	No. of cases	Mortality	Mortality rate
Present	19	05	26.31
Absent	21	04	19.04

The mortality was high in Addicted Patients i.e. 26.31% as compared to non- addicted Patients i.e. 19.04%.

**Table 5:** Operating surgeon

Surgeon	NO. of cases	Percentage
Junior	23	57.5
senior	11	27.5

Most of the cases were operated by junior surgeon indicating experience and skilled surgical technique is essential to prevent enterocutaneous fistula.

**Table 6:** Culture reports

Culture	No. of cases
Proteus	09
Streptococcus	01
Staphylococcus	02
Klebsiella	11
E. coli	21
Sterile	02
Not taken	03

Culture taken from the pus or leak at the site of fistula, and organisms detected were noticed. The most common organism found in the culture was E. coli.

**Table 7:** Effect of enteral feeding on Outcome

Type of fistula	Enteral feeding			
	Given	Mortality rate (%)	Not given	Mortality rate (%)
High	05	40%	05	60%
Moderate	12	16%	01	100%
Low	17	05.8%	--	--

Thus enteral feeding has decreased mortality rate.

## DISCUSSION

Gastrointestinal fistulae remain a catastrophe in any contemporary surgical practice. In past spontaneous enterocutaneous fistula were more as compared to the present number now, post surgical enterocutaneous fistula forms major portion. Also number of cases of enterocutaneous fistula has risen last decade. In past post-surgical enterocutaneous fistula were seen as a failure of surgery and patients often used to preferred to die in their own homes rather than to be treated in the hospital. Also due to economic problems and non aggressive approach by surgeon leads to major morbidity and mortality. Now with TPN, enteral feeding, better local care, psychological boost up of patient to maintain morale has improved management of enterocutaneous fistula a lot giving better results. "If the gut works, use it." This age-old surgical adage is well known, and bespeaks a fundamental principle that a functioning gastrointestinal (GI) tract is critically important to a patient's overall health. The critical care literature is replete with data showing that enteral feeding maintains GI mucosal immunity, and elemental diets may also minimize or even decrease fistula output. Supplementation with immunonutrition, i.e., enteral formulas supplemented with additives such as

fish oil, arginine, glutamine or omega-3 fatty acids appears to reduce infections in critically ill patients,<sup>8,9</sup> but larger systematic reviews and meta-analyses fail to show any translation into improvement in mortality.<sup>10,11</sup> The use of fistuloclysis, or refeeding into the efferent limb of a fistula was used in many patients, either with enteral formulas or chyme output from the proximal fistula. This method has been supported with modern experience as well.<sup>12</sup> Nature of fistula: In present study patient of low output fistula were 17 with mortality rate 5.8%, moderate output fistula were 13 mortality rate 23%, and high output fistula were 10 with mortality rate 50%. This can be compared with study of Lorenzo G.A. (1969) in which mortality of high, moderate and low output fistula were 71.4%, 65% and 54.3% respectively. Also in study of 132 cases by McIntyre P.B. (1984), 93 were low output and 29 were high output, while mortality was 41% and 65% in low output and high output fistulas respectively. This decrease in mortality rate may be attributed to better management and technical advances. In our study, we found most of the fistulas were developed from ileum. We found; out of 40 fistula, 11 from jejunum, 16 from ileum and 13 were from colonic. In study done by Lorenzo *et al* in 1969, ileum was the most common site. In 1971, in the study of Sheldon *et al* ileum was common site. They found 16 out of 51 cases are from ileum. In 1969 R. Chad Halversen<sup>15</sup> also found 24 cases out of 55 were from ileum. In 1964 Richard Chapman also mentioned majority of cases were from ileum. This can be due to more number of pathology involving ileum such as enteric perforation, abdominal Koch's. In our study mortality was high in fistulas from ileum i.e. 38.8% while for jejunum 27.27% and no mortality in fistulas from colon. Also in study of Chapman *et al* (1964)<sup>13</sup>, mortality was high in ileum. Thus our findings correlates with them. In our study perioperative hypotension was present in all patients that succumbed. Also history suggestive of distal obstruction was present in 7.5% while bronchopneumonia in 42.5% cases. In study of Lorenzo Gabriel, history suggestive of distal obstruction was present in 30% while bronchopneumonia present in 58% cases. In this series septicaemia was present in all patients that succumbed and mortality rate when septicaemia was present was 65%. Also in study of Fischer J.E. (1983)<sup>14</sup>, sepsis was most common of death in patients of enterocutaneous fistula. In our study enteral feeding was more useful and has decreased mortality rate. Most of the cases were operated by junior surgeon indicating experience and skilled surgical technique is essential to prevent enterocutaneous fistula.

## REFERENCES

1. Irving M, White R, Tresadern J. Three years' experience with an intestinal failure unit. *Ann R Coll Surg Engl* 1985;67(1): 2–5
2. Draus JM Jr, Huss SA, Harty NJ, Cheadle WG, Larson GM. Enterocutaneous fistula: are treatments improving? *Surgery* 2006;140(4):570–576; discussion 576–578
3. Visschers RG, OldeDamink SW, van Bekkum M, Winkens B, Soeters PB, van Gemert WG. Health-related quality of life in patients treated for enterocutaneous fistula. *Br J Surg* 2008;95(10):1280–1286
4. Teixeira PG, Inaba K, Dubose J, et al. Enterocutaneous fistula complicating trauma laparotomy: a major resource burden. *Am Surg* 2009;75(1):30–32
5. Trzeciak S, Dellinger RP, Abate NL, et al. Translating research to clinical practice: a 1-year experience with implementing early goal-directed therapy for septic shock in the emergency department. *Chest* 2006;129(2):225–232.
6. Solomkin JS, Mazuski JE, Bradley JS, et al. Diagnosis and management of complicated intra-abdominal infection in adults and children: guidelines by the Surgical Infection Society and the Infectious Diseases Society of America. *Clin Infect Dis* 2010;50 (2):133–164.
7. Berry SM, Fischer JE. Enterocutaneous fistulas. *Curr Probl Surg* 1994;31(6):469–566
8. Bower RH, Cerra FB, Bershadsky B, et al. Early enteral administration of a formula (Impact) supplemented with arginine, nucleotides, and fish oil in intensive care unit patients: results of a multicenter, prospective, randomized, clinical trial. *Crit Care Med* 1995;23(3):436–449
9. Schilling J, Vranjes N, Fierz W, et al. Clinical outcome and immunology of postoperative arginine, omega-3 fatty acids, and nucleotide-enriched enteral feeding: a randomized prospective comparison with standard enteral and low calorie/low fat i.v. solutions. *Nutrition* 1996;12(6):423–429
10. Heyland DK, Novak F, Drover JW, Jain M, Su X, Suchner U. Should immunonutrition become routine in critically ill patients? A systematic review of the evidence. *JAMA* 2001; 286(8):944–953
11. Marik PE, Zaloga GP. Immunonutrition in critically ill patients: a systematic review and analysis of the literature. *Intensive Care Med* 2008;34(11):1980–1990
12. Teubner A, Morrison K, Ravishankar HR, Anderson ID, Scott NA, Carlson GL. Fistuloclysis can successfully replace parenteral feeding in the nutritional support of patients with enterocutaneous fistula. *Br J Surg* 2004;91(5): 625–631
13. Chapman R, Foran R, Dunphy E. Management of intestinal fistulas. *Am J Surg* 1964; 108: 157–63.
14. Fischer JE. The pathophysiology of enterocutaneous fistulas. *World J Surg* 1983;7:483–50
15. Halversen RC, Holgle HH, Richards RC. Gastric and small bowel fistulas. *Am J Surg* 1969; 118:968–72.

Source of Support: None Declared  
Conflict of Interest: None Declared