



EARLY ENTERAL FEEDING IN POST-OPERATIVE ENTEROCUTANEOUS FISTULA:- AN OBSERVATIONAL STUDY

General Surgery

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ABSTRACT

To find out the effect of early enteral feeding in post-operative enterocutaneous fistula admitted to surgery ward VSSIMSAR, During December 2018 to November 2020

Materials and Methods-A prospective study of 30 patients presenting to VSS Institute of Medical Sciences And Research, Burla with a clinical diagnosis of postoperative enterocutaneous fistula was done. The study of site, amount, nature and type of the postoperative enterocutaneous fistula was done and the effect of early enteral feeding was observed.

Results- In early enteral nutrition (before 14 days) group enterocutaneous fistula without distal obstruction, fistula closure occurred in 86% (12 out of 14 cases) within 30 days. Whereas in delayed enteral nutrition (after 14 days) group enterocutaneous fistula without distal obstruction, fistula closure occurred in 57% (8 out of 14 cases).

Conclusion- By these studies, early enteral feeding favours the improvement of general condition of the patients and thereby early closure of entero-cutaneous fistula.

KEYWORDS

Post-operative; Small bowel; Enterocutaneous fistula; Management; Mortality; Morbidity

INTRODUCTION

A fistula is nothing but an abnormal communication between two epithelial surfaces.^[1] Entero-cutaneous fistula is an abnormal communication between gastrointestinal tract & skin.^[1]

In 15 to 20% entero-cutaneous fistulas occur spontaneously & most commonly develop as a post-op complication of bowel surgeries.^[2] Spontaneous fistula may arise in patients with inflammatory bowel disease, radiation enteritis, diverticular disease, perforated duodenal ulcer, pancreatic and gynaecological malignancies. Difficult to treat fistulas also may develop in these patients postoperatively. Common causes of ECF include disruption of anastomotic suture line, adhesiolysis & accidental bowel injury during closure.^[2]

More proximal the fistula will have high output^[4] & are more likely to be associated with malnutrition, sepsis, fluid & electrolyte imbalance leading to lower incidence of spontaneous closure.^[5]

Management of ECF is one of the important challenges for the surgeons due to inadequate nutrition, fluid & electrolyte imbalance, & sepsis.^[6] Nutritional built up by TPN with or without enteral feeding. Advantages of enteral feeding is not only prevent atrophy of gastrointestinal mucosa, supports immunological & hormonal functions of gut & liver but also provide improvement in bowel caliber & ability to hold sutures^[1]. Spontaneous closure is dependent on number of factors which include anatomical site, presence of intercurrent disease and associated abscesses or multiple tracts.

Taking all those factors into consideration, the present work was taken up for study in department of General Surgery, Veer Surendra Sai Institute of Medical Sciences and Research (VIMSAR), Burla, Odisha from December 2018 to November 2020.

It is our sincere hope that this study will help the profession in showing light to the difficult path of its diagnosis and treatment and reduce the complications to a large extent.

AIMS AND OBJECTIVES

General Objective

- To find out the effect of early enteral feeding in post-op ECF admitted to surgery ward VSSIMSAR, During December 2018 to November 2020

Specific Objective

- To study the effect of early enteral feeding

- To study the nature of output.
- To study the amount & type of output.
- To study the exact site of fistula

Secondary Objective

- To study the cause of enterocutaneous fistula.
- To study the day of fistula closure
- To study the duration of hospital stay
- To study any complications associated

MATERIALS AND METHODS

- Place of study**- Dept. of Gen. Surgery, Veer Surendra Sai Institute of Medical Sciences and Research, Burla, Odisha.
- Period of study**- December 2018-November 2020
- Study design**- Hospital based Observational Prospective study
- Study population**- All the Patients with a diagnosis of postoperative enterocutaneous fistula either referred from outside or developed in this institute after surgery, admitted to surgery ward VSSIMSAR, During December 2018 to November 2020.

STUDY SUBJECT

INCLUSION CRITERIA-

- Patients developing enterocutaneous fistula in post-op period admitted to General Surgery ward VIMSAR, Burla.
- Age >18 Yrs of both sexes.
- Patients willing to be included in the study after consent.
- At least 4 feet of functioning small bowel between the ligament of Treitz and the Enterocutaneous fistula^[7]

EXCLUSION CRITERIA-

- All type of congenital and spontaneous fistula.
- Fistulas involving oesophagus, pancreatic, urinary and biliary system.
- Pregnant and psychiatry patients.

Sample Size-

Minimum sample size will be around 30 with 80% power and 5% level of significance.^[8]

Formula of sample size = $2 SD^2 (Z_{\alpha/2} + Z\beta)^2 / d^2$

N_1 = Patients with early enteral feeding

N_2 = Patients with late enteral feeding

Sampling Procedure-

All clinically suspected patients of postoperative enterocutaneous

fistula who got admitted to surgery dept. were enrolled in to the study after informed consent and above exclusion criteria.

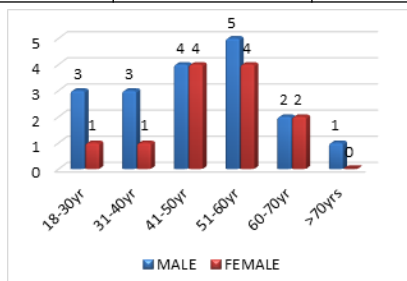
They will be equally divided into 2 groups (group A & group B). Group A were subjected to early enteral feeding (after resuscitation) and Group B were subjected to delayed enteral feeding (after 14 days).

OBSERVATION

There were 30 cases of Enterocutaneous fistula identified post operatively in VSS institute of medical sciences and research, BURLA.

Table 1: Age & Sex Distribution

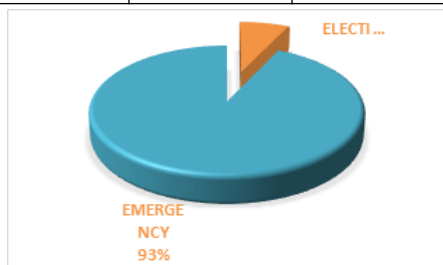
AGE	MALE	FEMALE
18-30yr	3	1
31-40yr	3	1
41-50yr	4	4
51-60yr	5	4
61-70yr	2	2
>70yrs	1	0



Graph 1: Age & Sex Distribution

Table 2: Etiological Distribution Of Ecf In Elective And Emergency Setting

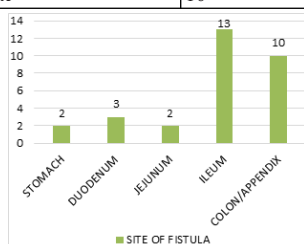
Etiology	Elective (2) 7%	Emergency (28) 93%
HVP		8
Tuberculosis		5
Malignancy	1	4
Intestinal obstruction	1	9
Trauma		2



Graph 2: Distribution Of Ecf In Elective & Emergency Setting

Table 3: Site Of Enterocutaneous Fistula

Site of Fistula	No. of Patients
Stomach	2
Duodenum	3
Jejunum	2
Ileum	13
Colon/Appendix	10



Graph 3: Site Of Enterocutaneous Fistula

Table 4: Fistula Output

Type of Fistula	No. of patients	Percentage
High output (>500ml/day)	10	33%
Moderate output (200-500ml/day)	09	30%
Low output (<200ml/day)	11	37%

GRAPH 4: FISTULA OUTPUT

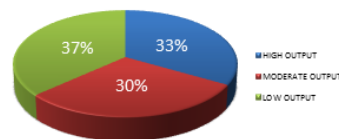
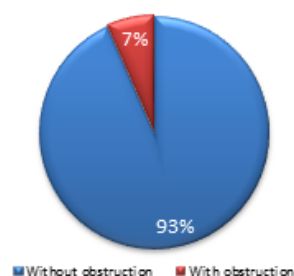


Table 5: Fistula Grading By Distal Obstruction

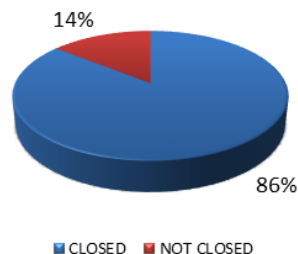
	Cases	Percentage
Without obstruction	28	93.3%
With obstruction	2	6.7%



Graph 5: Fistula Grading By Distal Obstruction

Table 6: Results In Early Enteral Feedings (14 Cases)

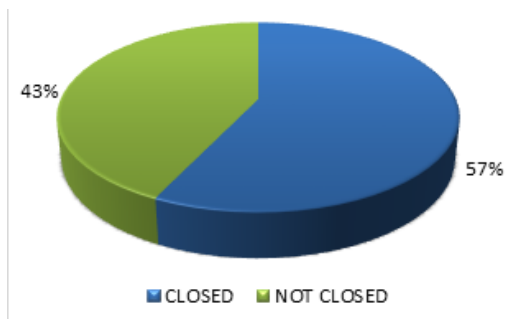
	Cases	Percentage
Fistula closed spontaneously within 30 days	12/14	85.71%
Persists	2/14	14.29%



Graph 6: Results In Early Enteral Feedings

Table 7: Enteral Feeding After 14 Days (14 Cases)

	Cases	Percentage
Closed spontaneously in 30-45 days	8/14	57.14%
Not closed	6/14	42.86%



Graph 7: Enteral Feeding After 14 Days

DISCUSSION

Enterocutaneous fistula provides a great challenge to the surgeons in view of healing of the wound. It needs a combine management of medical, surgical and intensive care unit teams. In this study 30 cases of post-operative enterocutaneous fistula are studied.

Majority of the patients were within 50 to 60 years of age. The most common cause of the fistula was due to anastomotic leak, followed hollow viscous perforation, post appendectomy and then inadvertent enterotomy. In a large case series done by Rose et al^[9] with 114 cases the most common cause was due to "surgical misadventure" accounting for about 76% of the postoperative fistulas.

Majority of the cases in our study (93%) are done in an emergency setting either due to acute intestinal obstruction, hollow viscous perforation, acute gangrenous appendicitis, blunt trauma or penetrating injury to abdomen. Only in 2 of the 30 patients elective surgery was done.

Risk for fistula formation is high in case of emergency surgery cases as they usually associated with sepsis, with compromised hemodynamics, renal & liver functions. In this setting they are also the patients who are usually poorly nourished having from a low socioeconomic class. This is similar to a study by Kumar S et al^[10] which showed 11% of the surgeries done in an emergency setting developed fistula whereas, no one developed fistula following an elective surgery.

Most common site for formation of enterocutaneous fistula accounting for 40% of the cases is ileum, followed by colon, jejunum, caecum and stomach. Ileal fistulas were almost due to anastomotic leak whereas gastric fistulas were all due to large gastric perforations for which omental patch closure was done.

Almost all patients in this study were under nourished and the patients were invariably in sepsis, though, majority of them were in sepsis even pre-operatively. Patients with post-operative enterocutaneous fistula are often malnourished due to a combination of poor enteral intake, hypercatabolic septic state, and the loss of protein rich enteral contents through the fistula. Proper nutrition not only improve immune function, but also provides protein precursors for proper wound healing and support the functions of gastrointestinal tract.

Once sepsis controlled, the attention should be focused towards the metabolic & nutritional supports. As the general guidelines by provision of 25-32 kilocalories/kg/day with 150:1 to 100:1 calorie: nitrogen ratio & 1.5 gms/kg/day of protein necessary for early closure.

Transition to partial or total enteral nutrition has been advocated to prevent atrophy of gastrointestinal mucosa and support the immunologic and hormonal functions of gut and liver.

Enteral feeding can be done via various ways like per oral, feeding tubes nasointernally or nasogastrically or via fistula itself. Enteral support typically requires 4 feet of small intestine without distal obstruction.

Enteral nutrition must always be preferred over parenteral nutrition as it improves the gut flora and reduces the electrolyte abnormalities.^[11] Enteral nutrition may be provided through a feeding enterostomy tube distal to the fistula. Many times, it is not possible to do so. The concept of keeping a patient nil per oral and giving the 'bowel rest' is becoming obsolete.^[11] Enteral nutrition protects the gut mucosa. Also, there is refeeding of the fistulous output into a mucous fistula or an enterostomy tube. Though this may be unacceptable by many patients, this enable a good method to continue enteral nutrition.

In early enteral nutrition (before 14 days) group enterocutaneous fistula without distal obstruction, fistula closure occurred in 86% (12 out of 14 cases) within 30 days. Whereas in delayed enteral nutrition (after 14 days) group enterocutaneous fistula without distal obstruction, fistula closure occurred in 57% (8 out of 14 cases). This indicates role of enteral feeding in spontaneous closure of enterocutaneous fistula as described above.

Other complications that arise commonly include weight loss, anemia, skin excoriations, intra-abdominal abscesses, with a large defect in the

abdominal wall. Its very difficult to close the abdomen after surgery due to presence of inflammation of skin and subcutaneous tissue. Skin excoriations treated with soothing creams, lotions and avoiding the contact of effluent onto the skin by using isolated stoma bags or VAC dressings should be done. Patient also has the stigma of feculent smell and discharge which causes significant psychological stress to the patient. Adequate & proper counselling must be given to the patients and their relative to overcome this.

CONCLUSION

Enterocutaneous fistula remain a dreaded complication in abdominal surgeries, cancer & inflammatory diseases. In order to provide a healthy management we have to understand the pathophysiology and risk factors. Early recognition & resuscitation with control of sepsis & provision of nutritional support may limit associated complications. Investigation into the anatomic and etiologic characteristics of fistula may provide information about the likelihood of spontaneous closure or suggest earlier operative management. Durability of the repair mainly depends on adequate nutrition along with to some extent emotional support. The care in these patients may be complex and has led to the establishment of specialized intestinal failure units, aimed at optimizing outcome. For distal obstruction ECF definitive management is surgery.

This study is restricted only to postoperative fistulas. Spontaneous fistulas occurring due to an underlying bowel pathology is not discussed and studied.

1. Enterocutaneous fistula without distal obstruction, Fistula closure by early enteral feeding is 12 out of 14 cases within 30 days i.e. 85.71%. and
2. In cases without distal obstruction, Fistula closure by delayed enteral feeding is 8 out of 14 cases i.e. 57.14%

So, by these studies, early enteral feeding favours the improvement of general condition of the patients and thereby early closure of enterocutaneous fistula.

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