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Enterocutaneous Fistula: Trend, Management & Outcome at a Tertiary Hospital in North India

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Abstract: Enterocutaneous fistula is a challenging surgical condition arising most commonly as a complication of surgery or in few instances spontaneously secondary to underlying diseased gastrointestinal tract. The basic management protocol incorporates initial stabilization of patient and control of sepsis and nutritional build up but even though the morbidity and mortality rate remains high. The present study was designed to study the etiology, management and outcome of patients with enterocutaneous fistula presenting at Patna Medical College & Hospital. All patients who developed or presented during the study period with enterocutaneous fistula except oesophageal, biliary, pancreatic and perianal fistulas were included in the study. The etiology, fistula output, clinical course, complications, and outcomes for patients with ECF were studied. A total of 72 patients with ECF were included in the study. 31 patients each were managed conservatively and with surgical intervention. 10 patients were discharged against medical advice or were referred to super speciality centre. 16 patients out of total 62 patients treated at our centre succumbed to their illness. Most frequent surgical intervention involved exteriorization of fistula site or repair with proximal diversion in 28 patients, resection and anastomosis in 2 patients and primary repair of fistula without diversion procedure. Most of the ECF are encountered as a complication of surgery. Conservative management should be the first line of treatment though surgical intervention may be a secondary option in a subset of patients. Mortality in patients with ECF continues to be alarming.
Keywords: Enterocutaneous Fistula, Diversion Surgery, Fistula Surgery

INTRODUCTION

Enterocutaneous fistula has often been described as a surgeon's nightmare, a surgical disaster or a catastrophe [1]. Most enterocutanoeus fistulas occur following breach or disruption in the gastrointestinal tract either due to surgery and are classified as iatrogenic or are spontaneous in 15-25% of patients due to underlying pathology secondary to inflammatory bowel disease, radiation enteritis or diverticular disease, or both [2,3] Septic foci which includes localized collection, soft tissue infection, generalized peritonitis, or frank sepsis and similarly postoperative ileus, sepsis, breach in bowel integrity and disruption in absorptive surface area along with loss of protein-rich enteric contents all contribute to the malnutrition and fluid and electrolyte abnormalities as observed in patients with enterocutaneous fistulas. Enterocutaneous fistulas are generally associated with significant morbidity and mortality and the outcome or the prognosis depends upon the primary management which is directed to control sepsis, to correct malnutrition, fluid and electrolyte imbalances, and the resultant metabolic disturbances [4-6].

Besides etiology enterocutaneous fistula has also been classified on basis of output [7-9] where a high-output ECF is characterized as one with >500 mL/24 hours output, low output <200 mL/24 hours, and a moderate output fistula between 200 and 500 mL/24 hours. Source or the organ of origin is another classification for ECF and is also useful in the consideration of management options: Type I (abdominal, esophageal, gastroduodenal), Type II (small bowel), Type III (large bowel), and Type IV (enteroatmospheric, regardless of origin) [8].

In present era of advanced wound care and parenteral nutrition (PN), spontaneous closure rates vary considerably in reports from 19 to 92% [10,11]. But most studies demonstrates closure rates in the 20 to 30% range [11,12,13].

ECF management protocol is commonly described by acronym "SNAP" which stands for management of skin and *s*epsis, *n*utrition build up, delineation of fistula *a*natomy, and proposing a *p*rocedure to address the fistula [14]. In addition, it has also been emphasised that the patient be managed in centres with significant experience in treating ECFs and where multidisciplinary approach is available [15, 16]. The later measure results in 50% decrease in mortality [17].

The present study was carried out to document our institutional experience with enterocutaneous fistula and to determine the etiological factors, presentation, management, and outcome in patients with ECF.

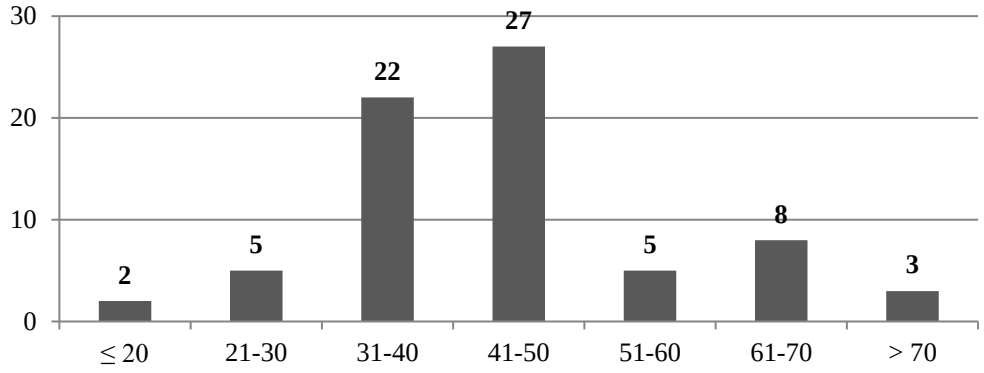
MATERIALS AND METHODS

This observational, prospective study was carried out in the Department of Surgery, Patna Medical College & Hospital, Patna, between January 2016 and December 2016. All patients, who developed or were admitted under Department of Surgery with the diagnosis of enterocutaneous fistula during the study period, were included in the study. Patients with esophageal, biliary, pancreatic, and perianal fistulas were excluded from this study. A diagnosis of ECF was made clinically on detection of intestinal or faecal effluent from the drain site or abdominal incision site.

All included patients of enterocutaneous fistula were managed as per the policy and guideline of the department. Study parameters included patient's demographic profile, haematological and biochemical profile, management modalities and the resultant outcome. Fistula was described in terms of etiology, site, output, complication and management end result. Categorization of fistula based on the output was through direct measurement of effluent in the presence of a drain or stoma bag or by keeping a count of number of dressing pads soaked in a day. Decision to manage conservatively or to operate on individual patient was taken by the unit in charge under whom the patients were admitted. Patients were followed up for a period of six month and relevant post operative complications were documented and analysed. The compilation and analysis of data was done using Microsoft Excel 2010 software.

RESULTS

A total of 72 patients were managed in the department with diagnosis of enterocutaneous fistula during the study duration. There were 43 female (59.72%) and 29 male (40.28%) patients and the age of the patient varied from 17 to 78 years with mean age being 43.61 ± 13.22 years.



Fig–1: Age Distribution of the patients

Of the total 72 patients, 60 patients were referred from other medical facilities whereas 12 patients developed enterocutaneous fistula during treatment at Patna Medical College and Hospital. All except 1 patient developed ECF following surgery and the indication for surgery or the documented intraoperative diagnosis of the patients included ileal perforation in 3, tumour excision in 8, appendicectomy in 5, bowel obstruction in 16, resection and anastomosis in 9, perforation of bowel (site not mentioned) in 7, jejunal perforation in 3, hysterectomy in 6, post caesarean section in 2. 12 patients were admitted with enterocutaneous fistula following surgery done outside without documented nature of pathology, intra operative finding or surgical procedure done. The average duration of presentation of patient following diagnosis of ECF in Department of Surgery, PMCH was 3.10 ± 3.45 days. The patients were primarily resuscitated, stabilized, investigated and managed as per the respective surgical unit protocol. 41 patients were managed conservatively and 31 patients went under the knife.

Table-1: Comparison of Conservative Vs Surgical Group of ECF patients.

	Conservative Group	Surgical Group	Total
Number of Patient	41	31	72
Mean Haemoglobin (gm/dl)	11.67±1.19	11.04±1.93	11.16±1.65
Mean Albumin (mg/dl)	3.3±0.36	2.87±0.55	3.1±0.51
Mean Serum Potassium (mEq/L)	3.3±0.36	3.69±0.39	3.5±0.42
Mean ECF Output (ml/day)	378.79±86.63	425.64±208.65	404.17±165.03
Average Hospital Stay (days)	21.41±8.66	21.77±15.18	20±12.20

In the conservative group two of the admitted ECF patients were referred to gastro intestinal super speciality surgical centre for further management, 8 patients left the hospital against medical advice whereas 9 patients succumbed to illness. In surgical group there were 7 mortalities. Most common surgical procedure performed was exteriorization of fistula site or repair with proximal diversion in 28 patients, resection and anastomosis in 2 patients and primary repair of fistula without diversion procedure in 1 patient. Total parenteral nutrition was initiated in 19 patients in initial course of management for nutritional supplementation and build up.

Of the 46 patients who were discharged after completion of treatment 17 patients were lost to follow up, 10 had no significant complains, incisional hernia developed in 5 patients, 3 patients presented in the emergency with features of bowel obstruction, 8 patients had chronic pain of mild to moderate intensity in the abdomen and 3 patients presented with chronic pain with incisional hernia. Stoma closure was done in 21 out of 28 patients who had undergone exteriorization/diversion surgery and the closure was uneventful, 5 patients of stoma group did not showed up for follow up whereas 2 patients were referred to gastro intestinal surgery speciality centre for further management.

DISCUSSION

Enterocutaneous fistula remains a challenge for the treating clinician and the complexity in management also remains due to social and economical implications and largely due to narrow treatment options. In western world, 75%-85% enterocutaneous fistula has been reported secondary to some surgical procedure whereas spontaneous fistula accounted for the remaining 15%-25%. In the present study only one out of 72 patients (1.39%) had spontaneous fistula whereas the remaining 71 patients (98.61%) had undergone a surgery in the immediate past. The result is in line with other studies done in Indian subcontinent where the incidence of spontaneous fistula was reported to be low.[18,19] The probable cause leading to postoperative enterocutaneous fistula in patients could be attributed to late presentation in initial disease process or poor general condition of the patients, inappropriate judgment by the treating clinician and technical defect in the operative procedure.

In the present study, 43.06% of the total patients were managed conservatively, and equal percent of patient were treated with surgical intervention. In addition, 13.88% of patients who were put on initial conservative regimen left the hospital against medical advice or were referred to super speciality centres. The surgeries performed included exteriorization of fistula site or repair with proximal diversion, resection and anastomosis and primary repair of fistula without diversion procedure. Studies have reported the requirement of surgical intervention in 20-50% of patients of enterocutaneous fistulas with spontaneous closure rates between 50% and 80%.[18,19,20] Surgical intervention, its timing and the nature of the procedure depended upon the type of fistula, response to conservative management, and the state of the patient and the same has been mentioned in various literature [21,22].

The use of nutritional support is one of key factors in management of patients with ECF and the decision of enteral versus parenteral nutrition delivery systems remains controversial. It is generally guided by the nature of the fistula and the nutritional status of the patient.[23] In the present study 19 patients were administered total parenteral nutrition and the subset comprised of patients with high output fistula and poor nutritional status.

Despite intensive management of the patients, in the present study there were 9 (29.03%) mortalities amongst the 31 conservatively managed patients and 7 (22.58%) mortality amongst the 31 patients who underwent surgical intervention for the management of ECF with an overall mortality of 25.81% amongst the 62 patients who received treatment for ECF at the centre excluding those who left the hospital against medical advice or who were referred to speciality centre. Varied overall mortality rate has been quoted by different authors in their clinical studies ranging from 7 to 48% [3,11,12,18,24] and hence reiterating that overall result of management of enterocutaneous fistula is multivariate in nature and diverse.

CONCLUSION

Enterocutaneous fistulas can be considered as the most vexing surgical pathology arising frequently as

a complication of a difficult or a bad surgery and rarely spontaneous. Initial stabilization, sepsis control and proper nutritional build up of the patient remains the mainstay of treatment. A large subset of patients respond to conservative therapy with spontaneous closure of fistula even in restricted setting however surgical intervention does play a crucial role in high output fistulas and where conservative treatment fails. Exteriorization of fistula site or repair with proximal diversion, resection and anastomosis and primary repair of fistula without diversion procedure remains the procedure of choice at our institute, depending largely upon the type and character of fistula, surrounding tissue, patient's general and nutritional status.

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