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A COMPREHENSIVE ANALYSIS OF ENTERO-CUTANEOUS FISTULAS

General Surgery

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ABSTRACT

An enterocutaneous fistula (ECF) is an abnormal communication between the small or large bowel and the skin. It is one of the serious complications of gastrointestinal surgery and has a mortality rate of up to 20%. Management involves dealing with malnutrition, sepsis, metabolic derangement and electrolyte imbalance. Surgery accounts for majority of cause for ECF. Anatomical origin, length of tract, bowel wall defect, others like sepsis, malnutrition, malignancy, serum albumin are factors that influence spontaneous closure. The importance of nutrition cannot be overemphasized. Definitive surgery is required in: no spontaneous closure after 4-6weeks of conservative, complex fistula anatomy, including intra-abdominal abscess, distal bowel obstruction, bowel defect >1cm diameter, fistula tract length <2cm.

KEYWORDS

Enterocutaneous Fistula, Intestinal Fistula, Bowel Fistula, Faecal Fistula.

INTRODUCTION

In spite of immense recent advancement in post-operative care, enterocutaneous fistulas (ECF) remain one of the fascinating challenges because of their anatomical abnormalities, metabolic derangement and associated extensive sepsis. They also remain to the surgeon the fallibility of surgical technique and of the stress that falls upon both the surgeon and patient when major complications occur.

MATERIAL AND METHODS

Prospective analysis of ECF cases over one year was done from diagnosis till their discharge. Details regarding type of surgery performed, category of fistula, their origin and their individualised management policy were noted. Retrospective analysis was made to draw the principles for ECF prevention. Fistulas arising from small bowel and colon were included. Those arising from pharynx, oesophagus, stomach, biliary tract, rectum and anal canal were excluded.

RESULTS

Among 20 ECF patients, 85% were postoperative, 10% traumatic and 5% malignant. Among the postoperative ECF, appendicectomy (29.4%), perforation peritonitis (23.5%) and anastomotic leaks (17.6%) were predominant causes. All of them had Ultrasound while 85% fistulogram and only 45% CT. 45% were small bowel fistula, 40% colonic and 15% duodenal. Malnutrition (30%), sepsis (25%) and dyselectrolytemia (20%) were commonest adverse factors. Only the duodenal fistulas were high output (15%).All patients were managed initially by conservative through a sequential planning phase for 4-6weeks (compared to Sheldon's four-phase management). Then surgery (70%, n=14) was done if there is no likelihood of spontaneous closure. Parenteral nutrition (TPN) was used in 10% (n=2) during stabilisation phase and were later switched to enteral nutrition (EN). EN was achieved in others by oral, nasogastric or feeding jejunostomy due to non-availability or cost factors in TPN. We used three-category management for ECF skin problems (compared to Irving-Beadle's four categories).Among conservatively managed ECF (30%, n=6), two died (10%) and four (20%) were successful. Among surgical ECF, four (20%) had resection-anastomosis because of bowel defect >1cm and tract <2cm. Remaining ten (50%) had proximal diversion stoma, care of ECF to allow spontaneous closure and stoma closure after three months – of which one died.

DISCUSSION

The outcome of treatment of enterocutaneous fistulas vary widely from hospital to hospital. Mortality rates quoted in literature varies from 6.25% to 60%. Spontaneous closure occurs in 30 to 70%. This is because of the heterogenous nature of this condition. This study revealed a mortality rate of 10% and spontaneous closure rate of 73.33% which is similar to other studies in literature. Ileal fistulas in this study closed spontaneously in 92.3% cases, which is far better compared to other series where the rates are less than 40% despite it being an anatomically favourable location. In this study Ileal fistulas were the most common accounting for 46.66% of patients. A similar distribution is reported in a study done by Roback et al.7 In a study done by Edmunds et al1 out of 157 patients studied, 67 developed ECF following surgery. Important complications of ECF included fluid and electrolyte imbalance, malnutrition, and generalized peritonitis. Mortality was 62% in patients with gastric and duodenal fistulas, 54% in patients with small-bowel fistulas, and 16% with colonic fistulas. Reber et al8 observed that 90% of patients who had closure of fistula did so within 1 month after sepsis was controlled. Less than 10% closed in 2 months and none after 3 months. Fazio et al9 observed that surgical mortality and success rate when surgery was done before and after 6 weeks was 21 and 70% and 12 and 84% respectively. Thus, elective surgery is best undertaken at least 4 to 6 weeks after resolution of intraabdominal sepsis, which is usually 60 – 75 days after initial surgery. In this study among the factors analysed the only factor that was predictive of spontaneous closure was the size of the abdominal wall defect. It was found that malnutrition, hypoalbuminemia and large abdominal wall defect were all predictive of mortality. Altomare et al showed that sepsis, serum albumin and high output fistulas were significantly related to the risk of death in ECF, which is similar to our study. Operative closure was undertaken between 4 to 6 weeks except in one case where it was done in the first week for emergency drainage of an intra-abdominal abscess. In the 22 patients who had spontaneous closure only 6 had sepsis which was controlled by giving higher antibiotics, 7 had malnutrition which was corrected and 1 had abdominal wall defect. None of them had hypoalbuminemia. Mortality in this series was due to a combination of risk factors with the rate increasing as these factors accumulated. Among the 5 cases that needed operative closure all cases had sepsis, 3 had abdominal wall defect, 1 patient had distal obstruction and abdominal wall defect and one had Crohn's disease. Although serum albumin levels at the appearance of the fistula did not predict spontaneous closure, it was predictive of mortality. Kuvshinoff et al10 reported that serum transferrin levels of > 200 mg/dl was predictive of spontaneous closure. Age of the patient influences mortality, but not spontaneous closure. Rubelowsky et al11 reported spontaneous closure rates have been estimated to be between 50% and 80%. In this study the albumin levels after 3 weeks of treatment, however, were predictive of both spontaneous closure and mortality. This shows that improving the nutritional status of the patient as evidenced by the increase in serum albumin levels after 3 weeks of treatment increases the chances of spontaneous closure. Similarly, failure to correct malnutrition as evidenced by decreased serum albumin levels after 3 weeks increases the mortality. Altomare et al reported a statistically significant difference in albumin levels between survivors and non-survivors and concluded that serum albumin levels have a 94% accuracy in

predicting outcome. In this study another outcome is TPN which increases the spontaneous closure and also decreases the mortality in enterocutaneous fistula. Coutsoffides12 reported mortality rates of 32% and 4% in the malnourished and well-nourished patients respectively. Serum visceral protein levels can be used to predict outcome in ECF. This study revealed a mortality rate of 10% and spontaneous closure rate of 73.33% which is similar to other studies in literature. Edmunds, Sitges Serra et al and Levy observed mortality rates of 54%,32% and 50% for high output fistulas and 16%,6% and 26% for low output fistulas respectively. Chapman13 observed a mortality rate of 12% and spontaneous closure in 89% of patients with ECF who received more than 3000 kcal/24 hrs. But in patients who received less than 1000 kcal/24 hrs corresponding values were 55% and 37%. Fazio et al9 reported mortality rate of 0% and 42% in patients with serum albumin above 3.5 g/dl and below 2.5 g/dl respectively. Reber et al8 reported mortality rates of 22% and 48% in patients below and above 65 years respectively. Narsos et al14 reported a mortality rate of 48% for jejunal fistulas and 18% for ileal fistulas in their study. Hollender's et al15 in their study reported that advances in percutaneous drainage of abscesses and the availability of better antibiotics could be responsible for the huge difference in mortality reported. In the present study, 73% of the total patients were managed conservatively, whereas 27% of patients required surgical intervention. The common surgeries done in our patients are resection of segment of bowel containing fistula and end-to-end anastomosis, exteriorization of both ends, adhesiolysis and primary closure. Our study correlates with Lorenzo et al16 and Tarazi et al17 that the timing of operation and selection of the operative procedure depends on the type of fistula, response to conservative management, and the state of the patient.

CONCLUSION

Surgery accounts for majority of cause for ECF. Anatomical origin, length of tract, bowel wall defect, others like sepsis, malnutrition, malignancy, serum albumin are factors that influence spontaneous closure. The importance of nutrition cannot be overemphasized. Definitive surgery is required in: no spontaneous closure after 4-6weeks of conservative, complex fistula anatomy, including intra-abdominal abscess, distal bowel obstruction, bowel defect >1cm diameter, fistula tract length <2cm.

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