Enterocutaneous Fistula : Aetiology and Management Outcome in a Tertiary Center in Nigeria

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ABSTRACT

Background: ***Enterocutaneous fistula is a major surgical challenge worldwide. It has a potential for serious morbidity and mortality, especially the high output type.***

Objective: ***To review the cases of Enterocutaneous fistula that presented to Federal Medical Center, Owerri, over a 6 year period with the aim of determining the causes and management outcomes.***

Method: ***A six year retrospective study from July, 2005 to June, 2011. Data were retrieved from emergency room, theatre and ward records.***

Results: ***There were 20 patients; 11 females and 9 males. The mean age was 33years while the age range was 14 to 80 years. Post-surgical complication accounted for 17(85%) of the cases. ECF from post appendectomy was 6 (30%) making it the most common aetiological factor. Spontaneous closure of ECF after conservative (non-operative) treatment was recorded in 2(10%) patients. Intestinal resection and anastomosis was the most common procedure done. Five (25%) of the patients died during the course of management. Four (20%) of them had types 1 and 4 ECF.***

Conclusion: ***The incidence of ECF in Federal Medical Center Owerri is low (4 cases per year). Appendicectomy is the most common cause of ECF in the study. Mortality is unacceptably high for patients with types 1 and 4 ECF. Operative treatment was offered to most of the patients.***

Keywords: ***Enterocutaneous fistula, aetiology, management outcome.***

INTRODUCTION

Enterocutaneous fistulae (ECF) are abnormal communications between the skin and a portion of the intestinal tract which leads, to loss of digestive juice, water, electrolytes and nutrients. Fistulae may occur in any part of the gastrointestinal (GI) tract, but frequently develop in the small and large intestines. There are many classification systems for intestinal fistulae[1]. The anatomical classification using Stiges - Serra classification is based on the part of the gut involved and it has a bearing on prognosis[2]. The physiological classification is based on the output of the fistula over 24 hours. Physiologically, ECF are divided into high output (>500ml/24hr), moderate output (200-500lml/24hr) and low ouput fistulae (<200ml/24hr). The mortality from a recent study is 10–30%. The cause of the high mortality is attributed to complications of sepsis and malnutrition and electrolyte imbalance[1]. Common causes of Enterocutaneous fistulae are surgical wound dehiscence, bowel ischemia, inflammatory bowel disease, malignancy, trauma, radiation therapy, or possibly injury during surgery[3]. Blunt abdominal trauma may result in fistula when the part of traumatized bowel is not recognised following exploration. The introduction of parasurgical care and total parenteral nutrition has improved the outcome in ECF management with increase in spontaneous closure following non operative management[4]. Most patients in the sub-saharan Africa do not have access to total parenteral nutrition and optimal parasurgical care; thus, type1 and 2 fistulae have high incidence of morbidity and mortality. Operative treatment has been reserved for cases that failed to close after non operative management and/or after the onset of complications. The recommended time for operative treatment is 4-6 weeks of commencement of non operative treatment[5]. However, in our environment, surgery still forms an important part of management protocol, since most of the patients present late and with features of complications at presentation. Total parenteral nutrition and use of drugs like somatostatin and octreotide are important in the management of high output fistulae but are not easily accessible in our environment.

Thus, this study aims to review the different etiological factors, treatment options and outcome of patients managed for ECFs in our center.

PATIENTS AND METHODS

Federal Medical Center, Owerri, is a tertiary hospital in Imo State, Nigeria. The study was a retrospective review that covered a period of six years, from July, 2005 to June, 2011. Data were collected from patients' records in emergency room, theatre and wards. Age, sex, causes of the fistulae, anatomical sites, treatment and outcome were extracted and filled in a previously prepared protocol sheet. Using Sitges – Serra classification, patients were classified into 4; type1 (esophago-gastro-duodenal fistulas), Type 2 (small bowel fistulas), type 3 (colonic fistulas) and type 4 (any anatomical site with large abdominal wall defect). Data were analysed using SPSS 17 (IBM, New York).

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RESULTS

A total of 24 patients were managed for ECF, but the records of 20 patients were complete and analysed. Admissions through the accident and emergency room and the surgery outpatient clinics (outpatients) were 12(75%) while 8 developed ECF post-operatively during admission (inpatients). Females were 11(55%) while 9 (45%) were males.

The most common cause of fistula found in this study was surgery for appendicitis (6 patients), others causes, management and mortality are as shown in table 1

Table 1: Aetiology, management and mortality

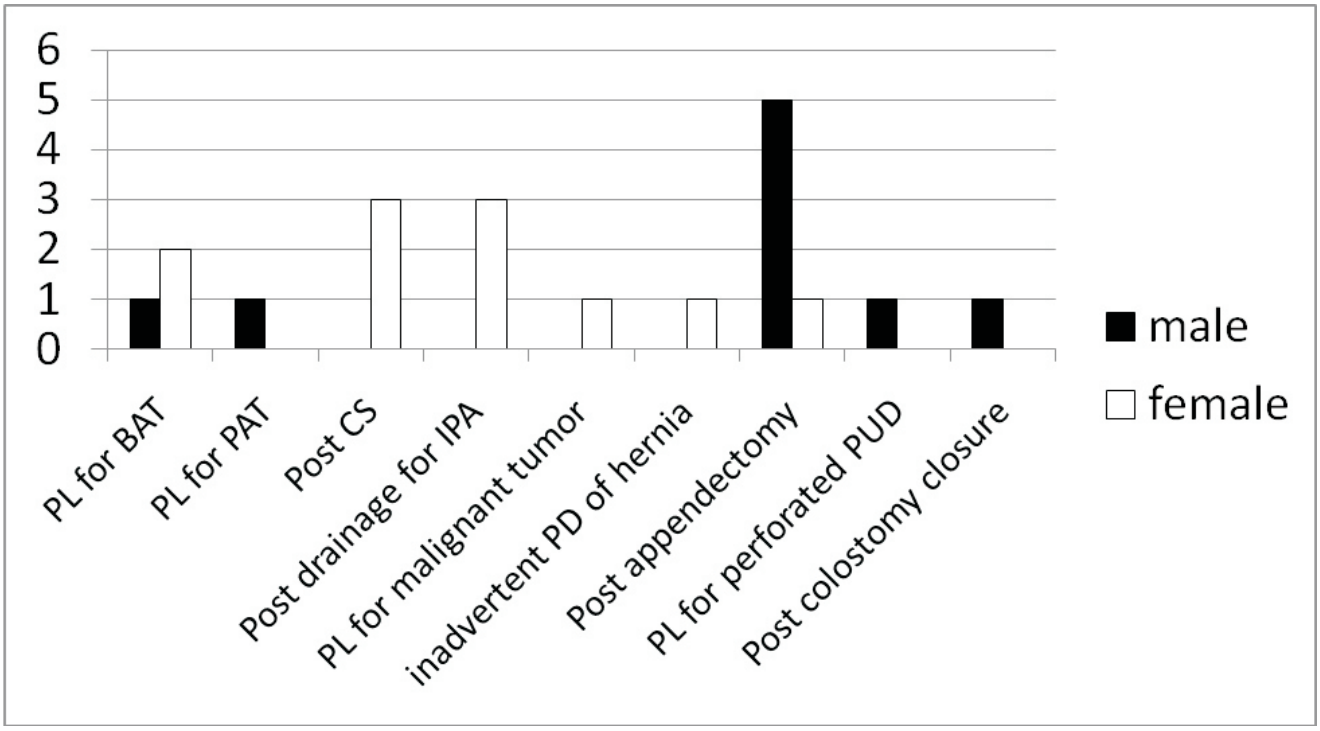
Aetiology	No of patients	Conservative only(%)	Operative closure(%)	mortality (%) (percentage)
Post laparotomy for blunt abdominal trauma	3	0(0%)	3(100%)	3(100%)
Post laparotomy for Penetrating abdominal trauma	1	0(0%)	1(100%)	0(0%)
Post laparotomy for Peptic ulcer perforation*	1	1(100%)	0(0%)	0(0%)
Inadvertent Percutanous drainage of gluteal hernia**	1	-	-	-
Post appendectomy	6	1(16.7%)	5(83.3%)	0(0%)
Post caesarian section	3	0(0%)	3(100%)	0(0%)
Post colostomy closure	1	1(100%)	0(0%)	1(100%)
Post drainage of intraperitoneal abscess	3	0(0%)	3(100%)	0(0%)
Malignant obstruction from pelvic tumors*	1	1(100%)	0(0%)	1(100%)
Total	**20**	**4(20%)**	**15(75%)**	**5(25%)**

Table 2: Comparison between the Anatomical types of Fistula and the Outcome

Type of fistula	No of patients	Spontaeneous closure(%)	Operative closure (%)	Mortality (%)
Gastric*	1	0(0%)	0(0%)	1(100%)
Duodenal	2	0(0%)	2(100%)	2(100%)
Jejunal	1	0(0%)	1(100%)	0(0%)
Ileal	4	0(0%)	4(100%)	0(0%)
Colonic**	12	2(16.7%)	8(66.7%)	2(16.7%)
Total	**20**	**2**	**15**	**5**

**patient died during conservative management*
***One patient declined surgical intervention after failure of conservative management and signed against medical advice .*

Fig 1: Causes of ECF in males and females



KEY: ***PL for BAT (Post laparotomy for blunt abdominal trauma), PL for PAT (Post laparotomy for penetrating abdominal trauma), Post CS(Post Caesarian section), Post drainage for IPA(Post drainage for intraperitoneal abscess), PL for malignant tumo Post laparotomy for malignant tumor, inadvertent PD of hernia (inadvertent percutaneous drainage of hernia), PL for perforated PUD(Post laparotomy for perforated PUD).***

There were 16 patients, who underwent surgical operation for fistula closure. The surgical procedures done for the patients who had colonic fistulae included bowel resection and re-anastomosis. Other surgical options are as shown in table 3.

Table 3: Anatomical part, type of Surgery, Recurrence and Mortality

Types of surgery	No of patients	Recurrence (%)	Mortality (%)
Duodenum			
Primary closure	1	1(100%)	1(100%)
Primary closure with omental patch	1	1(100%)	1(100%)
Jejunum			
Primary closure	1	0(0%)	0(0%)
Ileum			
Resection and anastomosis	1	0(0%)	0(0%)
Primary closure	2	1(50%)*	0(0%)
Wedge resection and repair	1	1(100%)	0(0%)
Colon			
Right Hemicolectomy	4	1(25%)	1(25%)
Extended right hemicolectomy	2	0(0%)	0(0%)
Defunctioning stoma	3	0(0%)	0(0%)
Total	**16**	**5(31.25%)**	**3(18.75%)**

DISCUSSION

Iatrogenic bowel injury is a common cause of ECF, with post appendectomy fistulas being the most common. This agrees with a study by Eni & Gali[6]. A rare cause of ECF, inadvertent drainage of hernias by traditional healers, was recorded. Similar aetiology was reported in another study done in south east Nigeria[7]. Typhoid perforation, a common cause of ECF[2,7] was not recorded in our study. This was a surprise finding because of the prevalence of the disease in our environment. Inflammatory bowel disease, radiation enteritis and diverticular diseases were not seen in our study or in any other report in our region showing the rarity of these conditions in our environment unlike in western literature where they are common[1,2,3].

Mortality was 100% in patients with type 1 & 4 ECFs. This shows the poor prognosis of proximal fistulas and fistulas with large defects. This is unacceptably high when compared with a series in the western world (in which total parenteral nutrition was used) that reported 18% mortality[8] . This high mortality may be due to late presentation of these patients and lack of facilities for total parenteral nutrition and parasurgical care in our environment. Two of the three type 1 fistula patients had surgical closure of high output duodenal fistulas, while one was not fit for surgery. These patients were maintained on oral feeds despite the presence of high output fistula. However, Levy et al reported excellent results with enteral nutrition in treatment of high output fistula in their series [9]. Careful patient selection may be the reason for the good outcome. Fistuloclysis has also been recommended in some patients with type 1 and 2 fistulas though presence of concurrent distal fistula should be ruled out.[3]

Most(75%) of our patients had operative treatment ranging from primary closure of fistula to bowel resection and anastomosis after initial failed non operative management with 81.3% success rate. Some (12.5%) of the patients had a second surgery in which bowel resection and anastomosis were done after initial primary closure of fistula.

Primary closure is fraught with dangers of dehiscence due to relatively devitalised bowel making bowel resection and anastomosis, where possible, the preferred treatment option[2,10]. Detailed inspection of the integrity of repair may further reduce this rate.

Spontaneous closure was recorded in 20% of cases after non operative management. This concurs with a review of 277 cases of entrocutaneous fistula treated at St. Mark's Hospital over 11 years; Hollington et al found

out that spontaneous closure rate was 19.9% and surgical closure rate was 64%[11]. However, some studies recorded higher rates, 74.2% and 50% respectively[7,12]. High failure rate after non operative treatment in our study may be due to presence of complex fistulas.

CONCLUSION

Mortality is high in patients with gastroduodenal fistulae. Operative treatment was commonly employed with good outcome. Bowel resection and re-anastomosis should be the preferred operative treatment whenever feasible.

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