

AETIOLOGY, MANAGEMENT AND OUTCOME OF ENTERO-CUTANEOUS FISTULA IN MAIDUGURI, NIGERIA.

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ABSTRACT

Background: Enterocutaneous fistula (ECF) remains an important surgical problem with significant morbidity and mortality. This study aims to review the aetiology and management outcome in a depressed economy like ours.

Methods: A retrospective review of 54 patients with ECF admitted into the surgical wards of the University of Maiduguri Teaching Hospital (UMTH) between January 1994 and December 2004 (11 year period).

Results: Thirty two (59.3%) were males and 22 (40.7 %) were females giving a male/female ratio of 1.5 to 1. The age ranged from 1 to 58 years with two peak incidents of 20-29 years and 40-49 years. Eighteen cases (33%) occurred following appendectomy, 12 (22%) following laparotomy for intestinal obstruction, 10 (18.5%) following laparotomy for abdominal malignancies, 7 (13%) followed laparotomy for penetrating abdominal injuries, 3 (5.5%) followed laparotomy for perforated typhoid enteritis, 2 (3.7%) cases were due to spontaneous rupture of strangulated and neglected inguinal hernia, 1 (1.9%) case followed chest tube insertion for pleural effusion in a PTB patient and 1 (1.9%) case followed a native healer's incision on a lumbar hernia. Altogether, 45 (83.3%) were referred cases from peripheral hospitals. Forty one (76%) were high output type, while 13 (24%) were low output type. Most patients 32 (59.3%) healed spontaneously on conservative management. Eighteen (33%) had surgical intervention. Eight patients demised giving a mortality rate of 15%. The average hospital stay was 56 days.

Conclusion: The main cause of ECF in our environment is postoperative (94.4%) with post appendectomy cases alone accounting for 33%. Majority of our patients (66.7%) were managed conservatively.

Key words: Enterocutaneous fistulae, aetiology, management, outcome, Maiduguri. *Accepted 10 May 2006*

INTRODUCTION

Enterocutaneous fistulae (ECF) are abnormal communications that connect any portion of the gastrointestinal tract with the skin. It is classified based on output as low output (with discharges < 500mls/24hours) or high output (when discharges \geq 500mls/24hours) and this has a bearing on management¹. High output fistulae usually require surgical intervention while low output fistulae in well preserved individuals may be managed conservatively. ECF² may be complicated with abscess cavities in relation to the fistulous tract or complex with multiple tracts which may involve the gut and the pancreas or the bile duct system. Most follow surgery as a complication which accounts for about 80% of cases². Other known causes include trauma (especially penetrating gunshot or stab wounds of the abdomen) and inflammatory Bowel disease (Tuberculosis,

diverticulitis or Crohn's disease). ECF are serious complications associated with high morbidity and mortality, due to the attendant wide variety of pathophysiological effects. It is therefore better prevented than treated.

The management of ECF can be quite challenging especially in the high output type. This occurs in proximal fistulae involving the small intestines or the caecum, with rapid loss of fluid and electrolytes. Loss of absorptive surface coupled with hypercatabolism, especially in the presence of infection, leads to malnutrition and weight loss. The initial management of these patients is therefore necessarily conservative to correct fluid and electrolyte imbalance as well as nutritional rehabilitation. Surgical misadventure at this time is prone to failure with more complications and should therefore be resisted³. Luckily over 60% cases will close spontaneously within 4-6 weeks on such conservative treatment^{4,5}.

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surgery is therefore to be considered in those not closing after 4-6 weeks and in complicated or complex fistulae^{6,7}. Most cases of ECF seen here are referred cases from the peripheral hospitals in this sub region. This was a retrospective analysis of all cases of ECF seen and managed in our centre over the past 11 years, with particular interest in our peculiar limitations.

Patients And Methods

This was a retrospective study of all cases of enterocutaneous fistula (ECF) seen and managed in the University of Maiduguri Teaching Hospital from January 1994 to December 2004 (11 year period). The case files of the patients were retrieved from the medical records department of the hospital. Information on age, sex, clinical features, causes of ECF, level of fistula, treatment and outcome were collected, analyzed by simple methods and discussed. Four cases with inadequate information were excluded.

RESULTS

Of the total of 54 cases evaluated 32 (59.3%) were males and 22 (40.7%) were females, giving a male/female ratio of 1.5 to 1. The age ranged from 1-58 years with two peak age incidents of 20-29 years and 40-49 years (table 1)

Forty-five (83.3%) were referred cases. Eighteen cases (33%) occurred following appendicectomy, 12 (22%) occurred post laparotomy for intestinal obstruction (of these 4 were due to adhesions, 2 sigmoid volvulus, 2 abdominal tuberculosis, 2 sigmoid tumour and 1 strangulated femoral Richter's hernia). Ten cases (18.5%) occurred post laparotomy for abdominal malignancies (of which 5 were for tubo-ovarian cancers, 3 sigmoid colonic carcinoma and 2 caecal carcinoma). Seven cases (13%) followed laparotomy for penetrating abdominal injury (5 were gunshot wounds and 2 arrow shot injury). Three cases (5.5%) and 2 cases (3.7%) occurred following laparotomy for perforated typhoid enteritis and spontaneous rupture of strangulated inguinal hernia respectively. One (1.9%) case each followed chest tube insertion for pleural effusion in a PTB patient and a native healer's incision on a lumbar hernia respectively (table 2).

The common clinical features were high output faecal discharge in 41 cases (76%) and low output in 13 (24%) cases. Weight loss in 45 (83%) cases, dehydration and skin excoriation in 41 (76%), anorexia, abnormal pain and some tenderness in 40 (74%). There was hypoproteinaemia in 47 (78%), anaemia in 38(70%), hypokalaemia in 36 (67%). Hyponatraemia and hypochloroemia in 26 (50%) cases.

There was clinical evidence of distal obstruction in 4 (7.4%) patients.

Barium enema study was done in 5 cases of which 2 showed simple large bowel fistulae, 2 demonstrated large bowel tumor causing distal obstruction, while one demonstrated complicated large bowel fistula with abscess cavities. Five cases had fistulogram done of which 2 showed complicated small gut fistulae with abscess cavities, while 3 showed simple small gut fistulae. Barium swallow and meal showed gastro-pleural fistula in one case. Two patients had CT scan of the abdomen (to assess a caecal carcinoma that was fixed and burst to the surface following appendicectomy and a recto-sigmoid tumour causing distal obstruction, for respectability).

Thirty-two (59.3%) healed spontaneously on conservative management. Eighteen (33%) had surgical intervention of whom 6 had recurrent fistulation. Altogether eight patients demised giving a mortality rate of 15%. The hospital stay ranged from 10-96 days with average hospital stay of 56 days.

DISCUSSION

Despite advances in the field of gastrointestinal surgery, ECF remains an important surgical problem with significant morbidity and mortality⁸. Of the 54 cases reviewed here, 51 (94.4%) occurred following surgery. This is consistent with other reports^{8,9}. The two spontaneous cases in our series were due to neglected inguinal hernia which ruptured externally following strangulation. This may be unheard of in the western world today where Crohn's disease, ulcerative colitis and radiation enteritis are the foremost causes of spontaneous ECF^{10,11}. These diseases are rare in our environment.

A case of ECF following surgical misadventure by a native healer's incision on a lumbar hernia points to the need to regulate the activities of traditional healers (figure 1). In all (83.3%) were referred cases from peripheral hospitals in this sub region. Most of these referred cases had at least one surgical intervention within days of developing ECF only to be referred here with recurrent fistulation and deteriorating condition. This is not surprising because most of our peripheral hospitals (including general hospitals, some federal medical centre and private hospitals) do not have the requisite compliment of specialists and yet are burdened by a myriad of cases that deserve urgent surgical intervention. There is, therefore, a real need for a continuous medical education on regional basis.

Such will serve the purpose of feed back to the referring centers, while helping to address some peculiar regional problems.

Table 1: Age and gender distribution of 54 cases of ECF

Age (years)	Male	Female	Total (%)
1-9	2	-	2 (3.7%)
10-19	4	2	6 (11%)
20-29	10	5	15 (27.8%)
30-39	5	6	11 (20.4%)
40-49	9	5	14 (25.9%)
50-59	2	4	6 (11%)
Total	32	22	54 (100%)

Table 2: Aetiology of ECF

Aetiology	Frequency (%)
Post appendectomy	18 (33%)
Post laparotomy for intestinal Obstruction	12 (22%)
Post laparotomy for abdominal malignancy	10 (18.5%)
Post laparotomy for penetrating abdominal injury	7 (13%)
Post laparotomy for typhoid Perforation	3 (5.6%)
Spontaneous rupture of strangulated and neglected inguinal hernia	2 (3.7%)
Post chest tube insertion for pleural effusion in PTB patient	1 (1.9%)
Native healers incision on hernia lumber	1 (1.9%)
Total	54 (100%)

Table 3: Mode of management and outcome

Management	Number	Healed	Mortality
Conservative	36 (66.7%)	32 (59.3%)	4 (7.5%)
Surgical	18 (33.3%)	14 (22.2%)	4 (7.5%)
Total	54 (100%)	46 (85%)	8 (15%)

Figure 1: Barium enema study showing left colonic fistulae following native healers incision on a lumber hernia.

Various factors which contribute to the development of ECF include poor surgical technique, presence of sepsis and poor general condition of the patients¹². Therefore, speedy resuscitation of the patient with correction of fluid and electrolyte imbalance, anaemia, as well as nutritional rehabilitation before surgery is no waste of time. Intestinal anastomosis in the presence of gross peritoneal sepsis is perilous.

The procedure of appendectomy may turn out quite difficult necessitating a laparotomy incision for a "safe" surgery. Also hasty surgical intervention in cases of ECF in acutely ill and debilitated patients seldom succeeds³

The peak age in incidences at 20-29 and 40-49 years reflect the age ranges when the commonest predisposing surgical condition viz acute appendicitis and intestinal obstruction respectively occur most commonly.

The common clinical features of dehydration, anaemia, electrolyte imbalance and hyperprotenaemia impose postponement of immediate surgical intervention to allow for adequate resuscitation and nutritional rehabilitation of the patients. Antibiotics was given only in the presence of sepsis or wound infection.

Fistulogram was not done routinely. This may be required to determine the site of the fistulation where surgical intervention is planned. Fistulogram will also demonstrate complicated or complex fistulae, necessitating surgery. Barium meal and follow through is useful in delineating upper gastrointestinal fistulae, while barium enema is useful in colonic fistulae. Abdominal ultrasound is useful in the assessment of fluid collection (abscess or faces) in the peritoneal cavity. Contrast enhanced CT scan is useful in the assessment of complex fistulae or associated tumour mass for operability⁴.

Thirty-two (59.3%) of our patients including some high output fistulae healed spontaneously on conservative management. This is similar to other reports^{4,5,7}. Conservative management here consist of correction of fluid and electrolyte imbalance, treatment of sepsis with broad spectrum antibiotics commonly cefuroxime or ceftriaxone with metronidazole. Nutritional rehabilitation is taken seriously. In the absence of facility for parenteral nutrition, enteral feeding remains the sole route of feeding in our practice. High protein is derived from casilan milk drinks after each meal supplemented by high protein (groundnut based) pap, which is luckily a common diet in our environment. Vitamin supplements are also given routinely. Skin excoriation is tackled with application of zinc oxide paste on the skin around the stoma. This has proved to be effective as the excoriation heals with time despite continuing faecal discharges. Colostomy bags are often unavailable, and even when available, too expensive for our patients at N150 a piece. We have therefore adopted stoma dressing with black cellophane leather (N45 for 100 pieces) and plaster.

Thanks to the co-operation of the nurses who diligently do this. This has proved to be quite cost effective and satisfactory.

Indications for surgery include fistulae that fails to close usually after about 4-6 weeks, complicated fistula with associated abscess or malignancy, or the presence of distal obstruction. Other known causes of failure to close include total disruption of anastomosis, muco-cutaneous epithelization, and presence of chronic inflammatory process such as tuberculosis or Crohn's disease. However, two of our patients with tuberculosis of the abdomen closed spontaneously on conservative management and anti-tuberculosis therapy. Surgery consists of exploratory laparotomy, resection and anastomosis of healthy segments of gut plus peritoneal lavage. Bypass surgery is not recommended as this may lead to chronic discharges and or blind loop syndrome. Also leaving behind the diseased bowel may act as a possible source of further complications^{13,14}.

Long hospital stay with the associated high cost, considering the low socio-economic status of most of our patients, remains a problem. Drugs like somatostatin, analogues that are known to reduce hospital stay by hastening closure of ECF is not available in our setting^{15,16}. Also non-availability of parenteral nutrition is a major handicap especially in the management of high output fistula and in the presence of abdominal sepsis^{1,17}. Of late we have used astymin SN as supplement during resuscitation, but the usefulness can best be determined by a prospective controlled study. The initiative of fidson health care Ltd in formulating protein supplements should be boosted by production of full time parenteral nutritional formulations. Fistuloclysis (intubating and feeding via distal lumen of an intestinal fistula) was not used in any of our patients, though this can be used in proximal fistula. Only few of our patients were noted to be depressed especially with worsening condition.

The main causes of death were sepsis and inanition in patients that were unable to eat due to anorexia and weakness. Background debilitating condition contributes to worse prognosis. Of the eight mortality recorded here, 6(75%) had background debilitating problems viz 2 had sigmoid colonic malignancy, 2 had tubo-ovarian malignancy, one had PTB and one had HIV infection.

CONCLUSION

The main cause of ECF in our environment is post-operative (94.4%) with post appendectomy cases alone accounting for 33%. Majority of our patients (66.7%) were managed conservatively.

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