

Enterocutaneous fistula: A review of 82 cases

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Abstract

Objective: Enterocutaneous fistula is an unpleasant and troublesome complication of abdominal operations. The objective was to review the outcome of treatment of patients treated for enterocutaneous fistula.

Materials and Methods: This is a retrospective study of 82 teenage and adult patients, who suffered from enterocutaneous fistula, seen over an 11 year period, in the University of Nigeria Teaching Hospital, Enugu. Patients' charts were reviewed for biodata, etiology of the fistula, volume of the fistula output, and result of treatment. Majority of the fistulas occurred after abdominal operations; many by general practitioners. After treatment for correction of fluid and electrolyte deficits, they were all tried on conservative therapy with enteral nutritional support as the main stay of management. Those, whose fistulas did not close, underwent surgical treatment. Total parenteral nutrition, octreotide, fibrin glue, and wound vacuum assisted closure (VAC) were not used for treating these patients.

Results: Spontaneous healing of fistulas occurred in 26 patients (31.7%), whereas 42 patients out of 50 (84%) healed after definitive operation. Fourteen patients (17%) in this study, died.

Conclusion: Proper management of fluid and electrolyte imbalances, enteral nutritional support, control of sepsis and correctly timed surgical therapy, resulted in this good healing rate and acceptable mortality, without the use of parenteral nutrition, biologic fibrin glue injection or VAC. Suggestions are offered about steps that may help in eradicating some of these enterocutaneous fistulas.

Key words: Enterocutaneous fistula, enteral nutritional support, operative or non-operative treatment

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Introduction

Enterocutaneous fistula is an unpleasant and frightening complication of operations on the digestive tract. It can also be caused by trauma, malignancy, or inflammatory bowel disease.^[1,2] The treatment can be tasking on account of weight loss from malnutrition, which leads to impairment of many components of the immune system; fluid and electrolyte disturbances, sepsis, and skin damage. Hospital stay for patients with this disorder is often long and uncomfortable. The principles of treatment for favorable outcome therefore include patient resuscitation, early control of sepsis, adequate nutritional support, skin protection, and care.^[3-5] By applying these principles, mortality rates have improved significantly, falling from 65% to as low as 20%; rates of less than 10% are rare.^[2,6,7] Treatment of these patients in

the developing countries is even more challenging than what is obtained in the developed countries, where total parenteral nutrition is well developed, and technical as well as pharmacological agents for manipulating fistula effluents are easily available. This study was undertaken to evaluate our management and outcome, without the use of total parenteral nutrition, biologic fibrin glue injection, or wound vacuum assisted closure (VAC), which are easily available in advanced countries. It is a retrospective study of 82 teenage and adult patients seen over an 11 year period in the University of Nigeria Teaching Hospital, Enugu, a major tertiary referral centre in south-eastern Nigeria.

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Materials and Methods

The charts of all patients with intestinal fistula seen at the University of Nigeria Teaching, Enugu, from 1998 to 2009 were analyzed. Patients with esophageal, gastric, enterovesical, and enterovaginal fistulas were excluded from the study. Each chart was reviewed for the following information; age and sex of the patients, origin of the fistula, volume of the fistula output, type of therapy received by the patient (i.e., operative or non-operative), and treatment outcome.

Patients were managed in a standard manner by different surgical units, with the help of hospital dieticians. On arrival in the units, blood was taken for assessment of the hemoglobin, serum proteins, urea, electrolytes, and creatinine. Urine and fistula outputs were recorded. Treatment was started by administration of intravenous fluids and electrolytes. The fluid volume was replaced by addition of the recorded fluid losses and another 1.7 liters for insensible loss. Particular attention was paid to nutritional support, which was given as high calorie-high protein diets orally. This was occasionally supplemented by enteric feeding via a nasogastric tube. These diets were prepared by the hospital dieticians, to ensure these patients got up to 3000 calories daily. There was no attempt at feeding the distal limb of the fistulas. These patients had daily enemas to ensure there was no distal obstruction by fecaloma. Pharmacological agents were not used to decrease fistula output.

Fistulography was the radiological investigation of choice, but some of the patients had barium enema. Abdominal ultrasonography was carried out especially when intra-abdominal abscess was suspected. Sources of infection were identified and treated expeditiously, while intra-abdominal collections when present were explored and evacuated. Skin protection was achieved using zinc oxide paste and frequent wound dressings as needed daily; depending on the output of the fistula.

Surgical operations were undertaken for non-healing fistulas after a minimum period of 6 weeks of conservative therapy; once patients were found medically fit. Surgical treatment comprised laparotomy and resection of the bowel bearing the fistula, with end to end anastomosis.

Results

Of 82 patients comprising 40 males and 42 females studied, the median age was 31.7 years (range 13–68 years). Seventy-two (87.8%) had hypoalbuminemia, as well as fluid and electrolyte imbalances, whereas 16 (19.5%) were anemic. The anemic patients got blood transfusion for correction of anemia. Intravenous infusion and adequate feeding corrected the fluid and electrolyte deficits and hypoalbuminemia

in all but six patients who died before they could be stabilized. Most of the fistulas occurred in patients aged below 41 years- [Table 1], and the small bowel was most commonly affected [Table 2]. Majority of the fistulas resulted from surgical operations [Table 3] and fistulas secondary to appendicectomy, predominated, followed by operations for bowel obstruction and typhoid perforation. A few resulted from cesarean sections. These appendicectomy were performed by nonsurgical specialists in private practice. Sixteen patients had fistulas unrelated to surgical operations including induced abortion, hysterosalpingography, strangulated hernias, colonic carcinomas, and trauma [Table 2]. Although every patient was tried initially on non-operative therapy, only 26 had spontaneous closure.

Fistula description and characteristics

There were 57 low output and 25 high output fistulas. The small intestine was the origin of fistula in 55 patients, that is, the jejunum accounted for 6, the ileum for 21, and unclassified small bowel for 28. The cecum was responsible in 14 and the colon in 13 patients. The most common cause of these fistulas was a recent abdominal operation especially appendicectomy, followed by operations for small bowel obstruction and closure of the ileum for typhoid perforation. Other causes are shown in Tables 3 and 4.

Operative treatment

Patients whose fistula did not closure after a minimum period of 6 weeks of conservative therapy were operated upon, provided they were fit. Fifty patients fell into this

Table 1: Age distribution

Age in years	Number
11–20	21
21–30	21
31–40	18
41–50	11
51–60	8
61–70	3

Table 2: Origin of enterocutaneous fistulas

Location	No. of fistulas
Small bowel	55
Cecum	14
Colon	13

Table 3: Etiology of fistulas

Postoperative	66
Strangulated hernia	2
Perforated colonic carcinoma	4
Trauma	6
Induced abortion	3
Hysterosalpingography	1

Table 4: Operations

Closure of typhoid perforation	10
Caesarean section	2
Operations for intestinal obstruction	10
Appendicectomy	33
Colectomy for cancer	4
Total	66

category and they required operative resection for the fistula bearing segment and restorative anastomosis. This was successful in healing the fistula in (84%) 42 patients.

Mortality

Out of the 82 patients, 14 (17%) patients died. Thirteen had high output fistula, whereas one had the low output variety. Six of these died while on conservative therapy due to a combination of hypovolemia sepsis and multiorgan failure. The remaining eight had surgical operations; whereas one had a cardiac arrest and died 24 hours after operation, another died 24 days after operative treatment. They all died from a combination of peritonitis and multiorgan failure.

Discussion

Enterocutaneous fistula remains a challenging problem to manage. The results of 82 patients managed for enterocutaneous fistula over an 11 year period were analyzed. The fistulas were often complications of previous operations, many from private hospitals run by nonsurgical specialists. Others were caused by some form of trauma [Table 3] but there were a few spontaneous cases that resulted from strangulated inguinal hernias, and perforated colonic carcinomas. The dominant role of appendicectomy and private hospitals in the causation of enterocutaneous fistula noted in this study, had been recorded elsewhere in Nigeria.^[8,9] Forty-two females and 40 males studied were afflicted by this disorder, and their ages ranged from 13 to 68 years with a median age of 31.7 years. Majority of the patients were young people [Table 1] who generally belonged to the group that underwent many of the operations, which led to enterocutaneous fistula.

During the period of non-operative therapy, 6 very ill patients died whereas 26 had spontaneous fistula closure. Consequently, 50 patients had elective surgical treatment for closure of their fistulas. During the period of conservative therapy, these patients received 3000 calories daily, as high calorie–high protein diet, because adequate nutritional support is recognized as a key factor in reducing the mortality rate in this disorder. This nutritional support was given by the enteral route. Enteral feeding has a trophic effect on the bowel and prevents mucosal atrophy. It also plays an important role in immune system preservation, while preventing the translocation of bacteria.^[10]

Many workers in this field agree that immediate surgical correction of the fistula is usually not a treatment priority.^[11] Apart from the time taken to ensure adequate nutrition, appropriate delay of at least 6 weeks is needed for resolution of the accompanying intra abdominal inflammation. The 31.7% healing rate seen in those managed non-operatively, is in keeping with spontaneous closure rates reported in literature; which varies from 17% to 75%, depending on a number of factors.^[12] These factors include the etiology, free distal flow, size of the enteral defect, healthy bowel, fistula output, associated co-morbidity, and epithelialization of the tract.^[12,13] A review of the literature^[14] suggests that, whereas spontaneous closure occurs in about 30% of patients with enterocutaneous fistulas; 90-95% of fistulas that spontaneously resolve do so within the first 4-5 weeks. Therefore it is surgically unwise to operate within this period. The healing rate after definitive operation in this study was 84% (42 patients), and for the entire group of 82 patients the overall fistula healing rate was 82.9%. This compares favorably with findings of Draus *et al.*^[11] and Taggarshie *et al.*,^[15] who recorded healing rates of 82% and 85%, respectively, after using total parenteral nutrition, octreotide, fibrin glue, and VAC to treat fistulas of diverse etiologies, including inflammatory bowel diseases and radiotherapy. Octreotide a synthetic analogue of somatostatin, inhibits gastro-intestinal, and pancreatic secretions. It should therefore decrease fistula output and lead to spontaneous closure. It also inhibits gall bladder contractility and motility. Gall bladder sludge or asymptomatic gallstones occur in 20-50% of patients treated with synthetic analogues of somatostatin.^[16] Thus, although this hormone may reduce fistula output, simplifying care of these patients, routine use is controversial.^[14,17]

Fourteen patients (17%) in this study, died and this is within the quoted mortality rate of 5-20%.^[1,2]

Early institution and correction of fluid and electrolyte imbalances, nutritional support, control of sepsis and correctly timed surgical therapy, resulted in this good healing rate and acceptable mortality which is within the quoted rate in literature.^[6,7] The absence of facilities which reduce fistula flow and, total parenteral nutrition, biologic fibrin glue injection or wound VAC should not deter surgeons in developing countries from treating these patients, and getting results comparable to what is found in literature. A major challenge is how to eradicate postappendicectomy fistulas, which accounted for 33 of the cases (40.2%). One option is to suggest that nonsurgical specialists should not perform any surgical operation. This is the stand of the National Health Insurance scheme presently, as it does not pay general practitioners fees for surgical operations, no matter how minor, because they are only allowed to register as primary care providers. The scheme only pays qualified and registered. surgeons for surgical operations, because they register as secondary care providers.^[18] This option

may increase the difficulties of sick patients in search of surgical treatment on emergency basis. Therefore, another suggested option is for Nigerian medical and dental council to instruct non-specialist (surgical) private practitioners to get hands on training in operations for common surgical disease, as part of their continuing medical education. This step will in all probability eradicate post-appendicectomy enterocutaneous fistulas.

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