ENTEROCUTANEOUS FISTULA: A REVIEW OF LITERATURE

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Abstract

Enterocutaneous fistula carries a high morbidity and mortality; it is preventable with good surgical decision making. It is common with emergency abdominal procedures but could arise from trauma or spontaneously. Complicated hernias still cause this condition in tropical Africa.

The management requires early recognition and control of ongoing metabolic and nutritional abnormalities. Enteral nutrition is adequate in distal fistulas. Surgery is not considered a priority in management; it is reserved for complex fistulas.

***Key words**: Enterocutaneous fistula, high morbidity, emergency procedure.*

Introduction

Enterocutaneous fistula is an abnormal communication between the intestinal tract and the skin. Most arise as a complication of difficult and/or emergency abdominal surgery. This ailment remains a challenge to the abdominal surgeon and could cause extreme distress to the patients, relations and the attending surgeon.[1-3] The morbidity and mortality remain high due to the associated malnutrition, sepsis, fluid and electrolyte abnormalities.[4-6]

Increasingly though, and with a better understanding of the ongoing anatomic, physiologic and metabolic abnormalities in these patients, hope of successfully managing fistulas conservatively leading to spontaneous closure is rising. Most fistulas will close spontaneously if there is no distal obstruction, epitheliazation of the tract, abscess cavity or malignancy. High output fistulas often require surgical intervention after the initial conservative approach.

Post-operative fistulas account for as much as 90% of fistulas[3]; perhaps higher in tropical Africa because of poor health care access and scarce qualified manpower[7]. Unfortunately, the era of complicated abdominal hernias with resultant faecal discharge from the abdominal wall and scrotum is yet to be history in much of rural Africa[8]. This is a great challenge to the health profession on the continent.

Prompt and adequate management with prevention of the associated malnutrition, sepsis and metabolic abnormalities, as well as carefully planned surgical intervention where necessary, can significantly reduce the morbidity and mortality from enterocutaneous fistulas.

This review is an attempt to highlight trends in managing enterocutaneous fistulas and provides practitioners with information on a subject fast disappearing from recent publications.

Historical perspective

Enterocutaneous fistula has a long and disturbing history separated into eras based on advances attained in its management[1]. The first era (1945 - 60) coincided with the introduction of antibiotics into medical practice. The reported mortality at that time was 45%. The second era (1960 -70) emphasized respiratory and nutritional support as well as intensive care. This caused the mortality to drop to 15%. The third era (1970 -75) was the deployment of parenteral nutrition in management of fistulas. This increased the spontaneous closure rate to 25% (from 15% previously) but without a change in mortality.

Currently, octreotide, a long acting somatostatin analogue is widely used in conservative management

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of fistulas. It reduces fistula output thus accelerating closure. Other experimental therapies include the use of fibrin glue to seal the tract, wound Vacuum-Assisted Closure (VAC) and vascularized muscle flap closure for large abdominal wall defects.

Aetiology

The aetiology of enterocutaneous fistula is varied. Approximately 50%- 95% are iatrogenic, arising secondary to difficult abdominal surgical procedures such as anastomosis failure and accidental bowel injuries. They are commonly encountered with intestinal inflammation such as perforated typhoid ileitis and extensive adhesiolysis especially under emergency conditions with sub-optimal preparation of the patient.[1,3,4,8]

In developing countries strangulated abdominal hernias (inguinal, femoral and umbilical), criminal abortions, poorly executed appendicectomy, herniorrhaphy, and anastomosis are common causes of post operative fistulas.

Chronic granulomatous infections, especially caused by tuberculosis and schistosomiasis are rare causes of fistulas. Traditional interventions for groin swellings by puncture may lead to complex fistulas[8]. Spontaneous fistulas are due to intra-abdominal malignancies, diverticulitis, radiation enteritis and Crohn's disease. These are rare in the tropics. Persistent vitello- intestinal duct causes a congenital fistula.

Classification

Fistulas are classified based on anatomical site, character of the tract (simple, complex), physiology (high or low output), or aetiology. They could further be described as end fistula (the entire bowel diameter is involved) or lateral fistula (involving the sides).

The modified Sitges- Serra classification of post operative fistula proposed by Schein and Decker[9] has four types:

-Type I- involves the abdominal oesophagus, stomach and duodenum

-Type II- involves the small intestines

-Type III- involves the large intestines

-Type IV- involves any of the above with a large abdominal wall defect.

A high output fistula produces an effluent greater than 500 ml in 24 hours and likely originates from the small intestines with marked physiological derangements, while a low output fistula produces less than 500 ml in 24 hours and often originates in the large bowel.

Diagnosis

The diagnosis of enterocutaneous fistulas is made clinically based on history and physical findings. There is discharge of intestinal content externally through the abdominal wall post-operatively. In circumstances of doubt, excretion of an orally administered dye such as Congo red, methylene blue or charcoal through the fistula easily gives away the diagnosis by the bedside.

A predictable sequence of events occurs in post-operative fistulas: post-operative fever, wound infection and resolution of fever on draining the wound. Serosanguinous wound discharge and pus precedes the egress of intestinal contents through the wound on the 7^{th} to 10^{th} post-operative day; usually on removal of skin sutures.

Complex fistulas present with large abdominal wall defects, intra-abdominal abscesses and multiple internal and external drainage channels; these are particularly difficult to manage and call for ingenuity and experience on the part of the surgeon[4].

A fistulogram with water-soluble contrast is invaluable in managing fistulas; it maps out the

tracts, demonstrates an abscess cavity and may determine the management protocol. When adequately done, it may exclude the need for other gastro-intestinal tract investigations[5]. Other radiological investigations like barium series, CT and MRI scans are employed when the diagnosis is difficult or to outline intra-abdominal abscess cavities. Serum electrolyte, complete blood count and serum protein assessment are also required and may be of prognostic value[1].

Treatment

Treatment of intestinal fistulas is divided for convenience into phases; with priorities clearly spelt out in each phase. The treatment options depend on the number of complicating factors. Prevention remains the best treatment.

Phase I (Stabilization phase):- Priorities in this phase are to correct ongoing metabolic derangements and skin care to prevent skin contact with effluent which could be corrosive in high output fistulas. Aggressive fluid and electrolyte therapy is required especially in high output fistulas because of the enormous fluid loss and lack of absorptive surface because of the high location of fistula.[5] Controlled drainage of the effluent preferably with a sump drain allows for accurate measurement of fluid loss and precise fluid replacement. Blood is transfused to correct severe anaemia which is invariably present; albumin alone is transfused where hypoalbuminaemia is the problem[1].

Enteral nutrition, through a tube or oral, is preferred to parenteral by some authors; it is trophic to the gut and does not prevent spontaneous closure. It is particularly indicated in distal fistulas[1]. Where full enteral nutrition is not practicable, a portion of the nutrient may still be given enterally[5]. Total parenteral nutrition is employed if there is practically no absorptive surface in the gut.

Skin care requires a stoma bag and karaya gum to collect the effluent. However, dressings changed at regular intervals have also been successfully used in distal fistulas. Applying zinc oxide paste protects the exposed skin from excoriation by acid and enzymes.[1]

Phase II (Investigation and Diagnosis): This phase seeks to delineate the character and aetiology of fistula as well as formulate a management plan. It identifies factors which preclude spontaneous closure such as distal obstruction, foreign body, malignancy and a large opening greater than 1cm in diameter[10]. Presence of these factors are indications for surgery. Specific imaging modalities include plain abdominal x-ray and fistulogram.

Phase III (Conservative management): This phase aims at devising ways to close fistula and re-establish continuity of the gastro-intestinal tract. Spontaneous closure is often desired though not feasible with high output fistulas[5]. Conservative management allows time for adequate nutritional rehabilitation, correction of metabolic derangements and skin sepsis, and may optimize the patient for surgery or spontaneous fistula closure. Ihekwaba and Shittu[11] however do not recommend conservative management in poorly equipped hospitals with limited resources because of its uncertain outcome; they favour operative closure while patient condition is still near optimal.

Phase IV (Definitive therapy): Surgical intervention is not a priority in managing fistulas; it is reserved for fistulas that fail to close spontaneously[4]. It requires meticulous attention to technique, and in the presence of adhesions or radiation enteritis the risk of further injuries at surgery must be considered.

Drainage of abscess cavity is done in the stabilization phase after injecting water soluble contrast into the cavity to provide a better anatomic image of the cavity and tracts. Drainage is advised under antibiotic cover because of associated bacteremia. [5]

Resection with end -to-end anastomosis carries the best prognosis of restoring anatomical continuity. By-pass procedures are done but not recommended in radiation induced injuries because of the difficulty in predicting the extent of injuries leading to high failure rates, high mortality and creation of blind loop syndrome[5,10].

Cases with large abdominal wall defects are rare and difficult to manage. Such may require vascularized muscle or omental flaps to close the defects.[4,12]

New Therapies

Octreotide: A long acting somatostatin analogue used in conservative management of fistulas along with other treatment modalities. It is reported in some studies to rapidly reduce fistula output within 24 hours and accelerate spontaneous closure of fistula[13-15]. It is administered at a dose of 100 micrograms eight hourly, no glucose intolerance was observed during treatment.[1,15]

Adhesives: Fibrin glue has been used to seal the fistula tract with very limited success; it is not widely employed in the management of fistulas[13].

Wound VAC: The wound VAC system improves skin care; the vacuum sucks the effluent into a receptacle away from skin.[13]

Conclusion

Enterocutaneous fistula remains a challenge to the abdominal surgeon, with a high morbidity and mortality. It can be prevented by good surgical decision making and execution as well as provision of adequate health facilities with qualified manpower.

A conservative approach emphasizing correction of the associated metabolic and nutritional abnormalities will lead to spontaneous closure in most instances. Few will come to surgery.

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