High Output Enterocutaneous Fistula: A Case Report

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Abstract

Enterocutaneous fistula (ECF) is an abnormal communication of the gut with the external environment through the skin.¹,² The most successful surgical intervention for the treatment of an enterocutaneous fistula is excision and end to end anastomosis.³,⁴ We discuss a successful surgical procedure for the high output fistula in a severely malnourished adult.

Twenty three years old male presented to Trauma Center Combined Military Hospital Rawalpindi with a midline discharging abdominal opening, later on found to be a high output enterocutaneous fistula associated with severe excoriation of the skin. He was a victim of a road traffic accident after which multiple laparotomies resulted in enterocutaneous fistula formation. The output was more than 6 times the intake per day. He was facing extreme malnutrition even after intake of high protein diet. An exploratory laparotomy was carried out; previous gastrojejunostomy and hepatico-jejunostomy freshened with 15cm of jejunum resected, which formed the fistulous opening. Enteroentrostomy (Rouxen Y) and appendicetomy were done. The patient was closely monitored post operatively, his gut was working properly and no discharge was seen at the previous site of the enterocutaneous fistula.

High output enterocutaneous fistula is a very difficult condition to manage and the morbidity of this condition is very prolonged. It is recommended to opt for surgical intervention in severe malnutrition cases after conservative management for better outcomes.

Keywords: Enterocutaneous fistula, high output fistula, surgical intervention, malnutrition cases.

Introduction

Enterocutaneous fistula (ECF) is an abnormal communication of the gut with the external environment through the skin.¹ Any part of either small or the large gut can be involved in the formation of the enterocutaneous fistula. The most common site which forms an abnormal opening to the exterior is the ileum.²

The most successful surgical intervention for the treatment of an enterocutaneous fistula is excision of the part of the gut where the fistula is present and end to end anastomosis between the remaining gut.³,⁴ Surgical intervention can be done in a patient who has no sepsis and is able to bear the consequences of the resection surgery of the bowel where the fistula is located.¹,⁴,⁵

Case Report

Twenty three years old male presented to Trauma Center Combined Military Hospital Rawalpindi on 4th November 2014 with a midline discharging abdominal opening, which was later on found to be a high output enterocutaneous fistula. The fistula was associated with severe excoriation of the skin. He was a victim of a road traffic accident in Saudi Arabia on 28th May 2014, after which an exploratory laparotomy was done for liver repair to stop extensive liver hemorrhage. Whipple’s procedure (pancreatico-duodenectomy) was also done on 29th May 2014. On 6th June 2014, re-exploratory laparotomy was carried out which showed internal hernia and bile leakage. T tube was inserted and end site jejunal anastomosis was done during this second laparotomy. Another re-exploratory laparotomy was performed on 11th June 2014 for the resection anastomosis of the obstructed afferent gut loop. On 20th August 2014, he was operated for closure of small gut fistula along with mesh repair for...
the burst abdomen. Therefore the enterocutaneous fistula was a result of multiple laparotomy procedures. The discharge from the fistula consisted of food particles and fluid. The intake was initially 2100ml whereas the output was more than 6 times the intake per day. The output from the fistula was cleared by applying suction. The patient was facing extreme malnutrition (34kg) even after intake of high protein diet. His albumin levels and total protein levels were low i.e.23g/l (reference range 35-50g/l) and 58g/l (reference range 65-80g/l) respectively before undergoing surgical intervention. VAC pack was applied to the site covering the fistula in order to prevent further excoriation of skin. The patient was put on conservative treatment for 4 months in the hope that the enterocutaneous fistula may close spontaneously. High protein diet was administered to the patient through total parental nutrition with proper hydration and strict antibiotics cover. Blood transfusions were done regularly in order to correct the underlying anemia. The fistula didn’t heal and further two smaller sized fistulas developed near the original midline fistula. A fifth exploratory laparotomy was done on 18th March 2015, the findings after the opening the abdomen included:

- Adherent gut loops with one another
- Previous functional hepatico-jejunostomy
- Fistulous opening at the loop forming hepatico-jejunostomy
- Small stricture seen at gasterojejunostomy site

The gastrojejunostomy and hepatico-jejunostomy were freshened with 15cm of jejunum resected, which formed the fistulous opening. Enteroentrostomy (Roux en Y) was made and appendicetomy was also carried out. The patient was closely monitored and was able to pass flatus on 3rd post-operative day. He was vitally stable. After keeping the patient nil per oral till 5th post-operative day, oral sips were initiated. His gut was working properly and no discharge was seen at the previous site of the enterocutaneous fistula. Thus a successful surgical procedure was carried out for the high output fistula in a severely malnourished adult.

**Discussion**

Road traffic accidents in which bowel are injured can lead to the formation of an enterocutaneous fistula. The spontaneous closure of an enterocutaneous fistula after any trauma is only 25% and only 21% of the high output fistula closed spontaneously. Therefore, an early surgical intervention is required for closure of the fistula in majority of the cases.

The enterocutaneous fistulas are divided into three main subclasses according to the daily output from their external opening. These include

- a. Low output fistula (<200ml/day)
- b. Moderate output fistula (200-500ml/day)
- c. High output fistula (>500ml/day)

A mortality rate of 10-30% for ECF patients is due to the presence of hypoalbuminaemia, malnutrition, sepsis and electrolyte imbalances in cases of high output fistulas.

High protein and carbohydrate diet can help in the spontaneous closure of the fistula without the requirement of any surgical intervention. The main factors determining the non-spontaneous closure of ECF are the presence of the hypoalbuminaemia and the site where the fistula is located (i.e. anywhere in the loops of jejunum). Vacuum assisted closure (VAC) system plays role only to prevent any further skin excoriation and sometimes may help in wound healing, but surgical closure is still required in most cases of the ECF which use VAC system.

Definitive surgical treatment is achieved with resection of the bowel containing the fistula and anastomosis of healthy normal bowel. After surgery, mortality rates are low and patients having a recurrence of fistula may still be cured. Surgical management is safe and is improving over time with healing rates after surgery over 94%. Well timed surgery has been found to be the most effective treatment. Post operatively the patient needs a good nutritional regime for ECF to heal properly.

The surgical management for enterocutaneous fistula is demanding, requiring preoperative optimization, intra-operative judgment and postoperative care but has better outcomes.
Conclusion

High output enterocutaneous fistula is a very difficult condition to manage and the morbidity of this condition is very prolonged. After an adequate duration of conservative management of ECF, it is highly recommended to go for early surgical intervention especially in cases of severe malnutrition and hypoalbuminaemia in order to have better post-operative outcome and low chances of mortality.

References