HIGH-OUTPUT EXTERNAL DUODENAL FISTULA TREATED CONSERVATIVELY WITH FEEDING JEJUNOSTOMY - A CASE REPORT

N.S. Kannan¹, Jayakarthik Y.², M. Palaniappan³, K.L. Janaki⁴

¹Associate Professor of General Surgery, Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Pondicherry, India; ²Assistant Professor of General Surgery, Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Pondicherry, India; ³Professor of General Surgery, Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Pondicherry, India; ⁴Post Graduate Student, General Surgery, Mahatma Gandhi Medical College And Research Institute, Pillaiyarkuppam, Pondicherry, India

ABSTRACT

High-Output External Duodenal Fistula (EDF) is a challenging condition to treat. It is associated with significant morbidity and mortality. Sepsis, malnutrition, and electrolyte abnormality due to high output fistulae is the classical triad of complications of External Duodenal Fistula. To reduce the severity of malnutrition, and electrolyte abnormality and to hasten the recovery at lesser cost with less morbidity and no mortality, it is suggested that all patients of duodenal perforation in whom high-output external duodenal fistula is expected, be provided with feeding jejunostomy. We are presenting a case of High-Output External Duodenal Fistula following duodenal perforation closure treated conservatively with feeding jejunostomy designed with forethought at the time of duodenal perforation closure itself.

Key Words: High-Output External Duodenal Fistula (EDF), Conservative Treatment, Feeding Jejunostomy

INTRODUCTION

High-Output External Duodenal Fistula (EDF) is a challenging condition to treat. It is associated with significant morbidity and mortality. Sepsis, malnutrition, and electrolyte abnormality due to high output fistulae is the classical triad of complications of External Duodenal Fistula. To reduce the severity of malnutrition, and electrolyte abnormality and to hasten the recovery at lesser cost with less morbidity and no mortality, it is suggested that all patients of duodenal perforation in whom high-output external duodenal fistula is expected, be provided with feeding jejunostomy. We are presenting a case of High-Output External Duodenal Fistula following duodenal perforation closure treated conservatively with feeding jejunostomy designed with forethought at the time of duodenal perforation closure itself.

CASE REPORT

A 70-year-old male presented to the casualty with a history of abdominal pain, obstipation, fever and vomiting for three days. Pain was sudden in onset, over epigastrium to begin with and progressed to involve the entire abdomen. Vomiting was containing food particles, spontaneous, non projectile, non-bilious and non-blood stained. Fever was low grade with no chills and rigors. He was a known alcoholic for the last 30 years. No previous history of surgeries. On examination, he was having tachypnea and tachycardia with normal blood pressure. Per abdomen examination revealed mild distention, diffuse tenderness with rigidity. Plain X ray abdomen revealed massive air fluid levels under both domes of diaphragm suggestive of hollow viscus perforation (Figure 1). Routine blood investigations revealed total WBC count of 1000 cells/ cumm with hemoglobin levels of 7g%, hypoalbuminemia and mild jaundice. Ultrasound abdomen revealed mild ascites. He was given two units of whole blood and taken up for emergency laparotomy under epidural anesthesia On laparotomy through mid midline incision approximately one litre of bilious peritoneal fluid was sucked out and found to have a large duodenal perforation of size 2.5 x 2 cm in the anterior aspect of first part of duodenum (Figure 2). The perforation was closed with interrupted through and through sutures using 1-0 vicryl reinforced with live omental patch. Since a high output external duodenal fistula was anticipated...
in view of the old age, large perforation, severe anemia, hypoalbuminemia, low total WBC counts, a feeding jejunostomy was designed in the same sitting after perforation closure to ensure early enteral nutrition. Closed tube drains two in number one in each flank were placed, to drain sub-hepatic and pelvic collection (Figure 3). Peritoneal toileting done with three liters of normal saline. Then laparotomy wound was closed in layers. Immediate post operative period was managed with routine orders including antibiotics, intravenous fluids, blood transfusions and other supportive measures. Jejunostomy feeding using commercial enteral feeding products was initiated on day six after delayed return of bowel sounds. On the fourth post operative day, bile staining was noted in the dressing for the right sub hepatic drain which gradually increased in quantity in the next few days resulting in a high output external duodenal fistula. Right drain was removed on day twelve and a colostomy bag was placed to collect the output which was quantified and fed through feeding to replenish the lost electrolytes and protein. Total parenteral nutrition (TPN) was avoided and supportive intravenous fluid with electrolytes correction was done through central venous line. Intravenous octreotide was also used to reduce the biliary and pancreatic secretions. Meanwhile, patient developed surgical site infection and partial dehiscence which was treated with appropriate antibiotics based on culture and sensitivity report and subsequent secondary suturing. With this conservative line of management the high output external duodenal fistula slowly got converted into low output fistula and finally spontaneous closure was achieved within forty days of post operative period. The patient was discharged from hospital on forty fifth post operative day after proper weaning out from jejunostomy feed to oral feeding with usual advice for a case of emergency duodenal ulcer perforation closure.

**DISCUSSION**

High-output external duodenal fistula (EDF) remains a challenging condition to treat. Prakash K et al\(^1\) in their study from South India have also derived similar inferences: Enterocutaneous Fistula (ECF) is a difficult condition managed in the surgical wards and is associated with significant morbidity and mortality. Sepsis, malnutrition, and electrolyte abnormality due to high out put fistulae is the classical triad of complications of Enterocutaneous fistula. The reported mortality rates in these patients are 32-33%\(^2,3\). Sitges-Serra A et al\(^3\) in their study proved that parenteral nutrition has substantially improved the prognosis of fistulous patients by increasing the rate of spontaneous closure and improving the nutritional status of patients needing repeated operations. Despite advances in metabolic and nutritional care, morbidity and mortality from both prolonged parenteral nutrition and surgical intervention in the treatment of external duodenal fistulae are high\(^2,3,4,5,6,7,8,9,10\).

William et al\(^7\), in their retrospective case note review of patients managed on a specialised unit, thirteen of 388 admissions, 3.4% had an external duodenal fistula. Management was by eradication of abdominal and systemic sepsis and maintenance of nutritional status by the administration of total parenteral nutrition. The majority of fistulas followed surgery for peptic ulcer disease. Eight of 13 fistulas closed spontaneously. Their conclusion was, enterocutaneous fistulae arising from the stomach and duodenum are associated with significantly greater morbidity and mortality as the surrounding tissues are exposed to large volumes of enzyme rich secretions and such high-output external duodenal fistula may be successfully managed in a specialised unit.

Alivizatos et al\(^{11}\) in their study have concluded that as an adjunct treatment to total parenteral nutrition, octreotide reduces rapidly the fistula output without significant influence in the spontaneous closure rate. A mean reduction of 50% of fistula output was noted in all the patients who received octreotide, within 24 hours of its administration. Spontaneous closure was achieved in 13 patients of the octreotide group (mean closure time: 15.3 days, range: 6-35) and in 12 patients treated only with total parenteral nutrition (mean closure time: 13.9 days, range: 7-25); this difference was not significant ($P = 0.5$). Also, the fistula closure rate was not influenced by the anatomic site, the high or low output, and the age of the patient. Currently, most authors recommend a trial of conservative management before surgical therapy is attempted; accurate fluid and electrolyte replacement and prevention of malnutrition are combined with attempts to reduce the drain- age of intestinal contents by nasogastric intestinal intubation\(^12,13,14,15,16,17,18\).

Definitive surgical closure of the fistula should only be performed when the patient is afebrile and in good nutritional status, and if the fistula effluent shows no signs of decreasing in volume after 4-6 weeks of nutritional support\(^19\). Provision of appropriate nutritional support and prompt control of sepsis has been associated with a low mortality rate and high rate of spontaneous fistula closure\(^20\).

Verma et al\(^{21}\) in their study of 31 patients with external duodenal fistula, none could afford TPN for optimum time. All patients received hospital-based enteral nutrition through nasojejunal tube, besides supportive medical treatment and/or surgery. External Duodenal Fistula can be satisfactorily managed without Total Parenteral Nutrition. Successful placement of enteral feeding line, supportive treatment and delayed surgery can achieve survival in 85% of patients. Minimum intervention is recommended when early surgery is performed in peritonitis or to establish enteral feeding line.

Chapman et al\(^{22}\) emphasized the importance of adequate nutrition in the care of these patients and outlined a set of priorities for treatment. Fistula closure was more than twice as likely (89% versus 37%) in a group of patients that received over 1600 calories a day compared with those that did not. A follow-up report by Sheldon et al\(^{23}\) documented the success
of this treatment regimen, noting that most patients could be given adequate nutrition by standard methods such as tube and enterostomy feedings. Nutritional needs can be met in several ways other than through Total Parenteral Nutrition by feeding of commercially available liquid diets by a tube passed beyond the fistula or through surgically created enterostomies has been used most widely as reported by Bowlin et al24 and Webster et al25. Reber et al6 in their study inferred that Total Parenteral Nutrition is fairly of high cost and frequently leading to catheter related septicemia and thromboembolism. Total Parenteral Nutrition per se had no impact on fistula mortality, and that maintenance of adequate nutrition using more conventional methods was equally as effective. Large fluid and electrolyte losses often persist in patients with a proximal intestinal (e.g., gastric, duodenal, proximal jejunal) fistula even when the patient is fasting and receiving Total Parenteral Nutrition.

CONCLUSION

In all cases of duodenal perforation potentially prone to develop high-output external duodenal fistula it is better to spare just five more minutes to provide feeding jejunostomy at the time of perforation closure itself, to ensure cost effective conservative management with the aim to hasten fistula closure, reduce morbidity and avoid mortality.

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors/editors/publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed. Authors are grateful to IJCRR editorial board members and IJCRR team of reviewers who have helped to bring quality to this manuscript.

REFERENCES

Figure 1: Plain X ray Abdomen Erect Showing Massive Air Fluid Levels Under Both Domes of Diaphragm.

Figure 2: Per Operative Picture Showing Duodenal Perforation of 2.5x2 cm Size.

Figure 3: Picture Showing Patient in Post Operative Ward with Bilateral Loin Drain, Feeding Jejunostomy and Mask Ventilation.