ORIGINAL ARTICLE

FEASIBILITY OF EARLY SURGICAL INTERVENTION IN POSTOPERATIVE ENTERO-CUTANEOUS FISTULAE

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Objectives: To study the out come and benefits of an early surgical intervention in postoperative entero-cutaneous fistulae. **Methods:** It's a retrospective descriptive study conducted at department of surgery LUMHS from Jan 2001 to November 2008. Two hundred and thirteen (213) post-operative fistulae are included as study subjects while those due to inflammatory bowel diseases, road traffic accidents or following blunt, stab or gunshot abdominal trauma are excluded. An aggressive treatment to build up nutritional status, correction of anaemia and control of sepsis was followed by surgical intervention as soon as the patient's condition permitted. Variables such as type of fistula, out put per 24 hours, duration since development , complications due to fistula, nutritional status, operative procedure, operative time, post-operative complications, total post-operative stay, follow up schedule, outcome. The results were statistically analysed on SPSS-12. **Results:** A total 213 patients comprising 184 males (85.6%) and 29 (13.5%) females with a mean age of 36.08 years and a range of 64 (78–14) years presenting with post-operative enter-cutaneous fistula are included in the study. Maximum number of patients (171, 79.5%) developed fistula between 4^{th}–6^{th} postoperative day and a vast majority of fistula occurred in the ileum (207, 97.18%) either as a result of anastomotic failure (103), leak from primary closure (99) or from un-noticed missed perforations (5). Of the total number, 24 patients eventually died making a mortality of 11.2%. Early surgical intervention proved life saving (p<0.001**).** A strong relation was found pre-operative albumin levels and surgical closure of the fistula (p<0.001) and associated mortality (p<0.001). **Conclusion:** High out put fistula is unlikely to close spontaneously on conservative measures. Early surgical intervention can be life saving.

Keywords: Entero-cutaneous fistula, early surgical intervention, morbidity, mortality

INTRODUCTION

Entero-cutaneous fistula is the most dreaded complication of abdominal surgery and is associated with a substantial risk of morbidity and mortality despite an overall global improvement in patient care.[1] The skin sepsis, malnutrition and fluid and electrolyte imbalances are well known complications and are the main reasons for an increased morbidity and mortality associated with such fistulae.[2] An entero-cutaneous fistula resulting after surgery is a real challenge for the surgeon as far as management is concerned. Aggressive approaches with effective control of sepsis, adequate nutritional support as well as fluid and electrolyte balance are the key to successful management of these fistulae.[3]

Only conservative management in the hope that fistula will close spontaneously is an expensive option with unpredictable and at times, lethal outcome. An improvement in the rate of spontaneous closure of such post-operative fistulae on conservative measures only is also denied by many studies.[4–5] More than 80% of such fistulae develop post-operatively as a consequence of anastomotic leak or repair failure, missed perforations or iatrogenic perforations which remain un-noticed during operation.

Conventionally such fistulae are treated by an aggressive control of sepsis and restoration of the nutritional status of the patients in the form of total parenteral nutrition (TPN), Octerotide, antibiotics etc. hoping that it will close spontaneously while surgical intervention to restore the gut continuity is delayed for 3–6 months.[5,6] This leads to a considerable financial burden as most of the patients can not afford TPN which is a requisite for spontaneous healing of such fistulae.[7]

Despite tremendous improvement and optimization of treatment of entero-cutaneous fistulae, the mortality has fallen between 5–25% only as reported by many similar studies.[8–11]

More proximal fistulae are usually of high out put variety and pose a real difficult situation for the surgeon.[10] All such high out put fistulae have an out put over 500 ml in 24 hours and are associated with such complications like skin sepsis malnutrition and its consequences. Many centres believe that conservative measures would bring spontaneous closure of such fistulae but in majority of the instances such a treatment causes total economical exhaustion and a fatal outcome.[11]

This study focuses to establish the role of an early surgical intervention in post-operative fistulae once the condition of the patient is nutritionally and metabolically improved to an extent that an attempt at restorative surgery can be attempted and proves beneficial and without undue risk.

PATIENTS AND METHODS

It was a retrospective descriptive study of 213 patients who developed entero-cutaneous fistula from different sites following abdominal surgery either in our hospital or referred from other centres. The study population included all those cases of entero-cutaneous fistula which resulted either as anastomotic failure, un-noticed iatrogenic injury, missed perforation or leakage from primary closure of perforation. Entero-cutaneous fistulae due to other causes such as post-traumatic fistulae (Gun shot, Stab injury etc.), road traffic accidents, secondary to inflammatory bowel diseases and post-radiotherapy were excluded from this study. All patients were kept on an aggressive treatment comprising TPN, antibiotics, local control of skin sepsis and correction of anaemia to build up the patient for surgical intervention as soon as it could be possible. The patients were operated and different surgical methods were employed depending upon the condition of the peritoneal cavity and general state of patient. The outcome was measured by variables such as post operative morbidity and mortality. The results were analysed using SPSS-12.

RESULTS

A total of 213 patients with entero-cutaneous fistula treated in 8 years in a tertiary care hospital were included in this study. The mean age of the study population, 184 males (85.6%) and 29 (13.5%) females, was 36.08±13.201 years. Of the total fistulae, 207 (96.3%) were found to be located in the ileum (Table-1).

Majority of the fistulae developed between 4th to 10th days after primary surgery for different abdominal conditions (Table-2). The output of faecal contents during 24 hours had a very significant relation with general nutritional status of the patient (p<0.001) (Table-3). Almost all patients had one or the other complications associated with fistula such as skin excoriation with sepsis and fluid and electrolyte imbalance (96 patients), while a vast majority had multiple complications (101 patients). Of the total number, 92 (43.19%) patients were referred from different places while remaining 121 (56.80%) patients had their primary surgery in hour hospital.

In 11 (5.16%) patients the fistula closed spontaneously on conservative measures while remaining 202 (94.8%) patients were operated and different procedures were adopted. Due to delayed referral and time spent to built up the unstable condition of the patients, there was a time lag between the development of fistula and surgical intervention and this relation was found to be highly significant statistically (p<0.001) (Table-4).

The mortality increased with increasing time lag between onset of fistula and surgery. Various surgical procedures performed in operative cases included exteriorisation of the fistula, primary repair and others (Table-5).

Exteriorisation of the fistula was done in majority (147) of the patients and was found to be life saving. Most of the patients with exteriorisation of fistulous segment were discharged when they were found stable and re-admitted after an average of 8–10 weeks for elective closure. In reasonably stable patients we performed primary closure and resection anastomosis after peritoneal lavage with good outcome. Failure in surgical process was associated with severe sepsis, and severe malnutrition and preoperative albumin levels (p<0.001).

The results of early surgery after resuscitation and control of sepsis were much promising if the albumin levels were >25 G (p<0.001), while delayed surgery with albumin <25 G showed an increase in mortality (p<0.001).

Table-1: Site and cause of fistulae

Site of Fistula	Mechanism of fistula				Total
	Anastomotic failure	Leak from primary closure	Un-noticed missed perforation	Slip ligature from appendicular stump	
Duodenum	0	3	0	0	3
Jejunum	1	0	0	0	1
Ileum	103	99	5	0	207
Caecal fistula	0	0	0	2	2
Total	104	102	5	2	213

Table-2: Conditions for primary operation

Pathology	Frequency	Percent
Typhoid perforation	107	49.8
Duodenal perforation	3	1.4
Acute intestinal obstruction with gangrene of bowel	101	47.0
Acute appendicitis	2	0.9
Total	213	100.0

Table-3: Output in 24 hours compared with Nutritional status at presentation

	Nutritional status at presentation			Total
	Stable	Moderately stable	Unstable	
100–300 ml	4	6	10	20
301–500 ml	3	45	92	140
>500 ml	0	6	47	53
Total	7	57	149	213

p<0.001

Table-4:Time lag between fistula development and surgery and mortality and morbidity

Time lag between fistula development and surgery	Mortality and morbidity			Total
	Died	Recovered completely	went into crippled state again	
2–8 days	0	17	0	17
9–15 days	6	134	0	140
16–25 days	18	26	1	45
Total	24	177	1	202

p<0.001

Table-5: Procedure performed and the outcome

Procedure performed	Mortality and morbidity			Total
	Died	Recovered completely	went into crippled state again	
Laparotomy with drainage and feeding jejunostomy	5	18	0	23
Laparotomy with exteriorization of fistula	13	134	0	147
Excision of fistula with re-anastomosis	4	14	1	19
Primary closure of perforation	2	11	0	13
Total	24	177	1	202

DISCUSSION

Entero-cutaneous fistulae are the most dreaded and catastrophic complications of abdominal surgery.[12–13] An incidence in the range of 75–85% has been described.[14] Our experience of entero-cutaneous fistula shows that an aggressive operative strategy in postoperative entero-cutaneous fistulae can be life saving provided an adequate nutritional and septic control is achieved by vigorous parenteral nutrition, broad spectrum antibiotics and skin care. Our results show an overall mortality of 11.2% which is very much consistent with the results of other similar reports.[15–16] This study presents majority of fistulae to be arising from Ileum as a result of leakage of primary repair or failure of resection and anastomosis which is performed when multiple perforations were present closely.

The common pathologies for which primary operations were performed included typhoid perforation and intestinal obstruction demanding resection of non-viable segment followed by end to end anastomosis. We adopted an initial vigorous treatment with TPN, control of sepsis. Octreotide was used in selected cases of low out put but in all the cases with high out put as recommended by many reports.[17–19] A number of prognostic factors were found to be crucial for both spontaneous closure and surgical closure alike. These include site of fistula, output of contents in 24 hours, time since development, state of nutrition, pre-operative albumin levels, whether operated in the same hospital or a referred case and presence of septic complications. These findings are consistent with the observations made in different similar reports.[20–25]

Sepsis is the commonest and most important to control before a fistula can be expected to heal regardless of the mode of treatment. Many studies suggest a prolonged trial of conservative treatment in the hope that the fistula will heal spontaneously.[26–28] Although there is a controversy as to the timing of definitive surgical repair[29], we adopted an early surgical approach believing that an early surgical intervention would effectively control the sepsis and malnutrition associated with fistula. Prolonged non-surgical treatment is usually associated with ongoing contamination of the peritoneal cavity by the faecal contents leading to frank sepsis. There is also rapid loss of weight and patient becomes severely emaciated due to nutritional deficit. This is contrary to the belief that there should not be any stitches in pus.[30] There is a trend towards this early surgical intervention as evident from different reports.[31]

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