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Entrocutanaeous Fistula in Patients undergoing Exploratory Laparotomy as Emergency Surgery: Five Years Experience

Yatin Ghosh[1], Navneet Kaur[2], Gurinderjit Singh Nagi[3], Tejinder Pal Singh[4], R. Katoch[5]

[1,3]Associate Professor [2]Assistant Professor [4]Senior Resident [5]Professor, Department of Surgery, Punjab Institute of Medical Sciences, Garha Road, Jalandhar City, Punjab 144006, India.

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Abstract

A fistula is an abnormal connection between two epitheleal surfaces. Enterocutaneous fistula could result from intestinal disease extending to adjacent viscira, extraintestinal diease spreading to intestines, injury to intestine or from anastomotic dehiscence. Most of these fistulas are acquired and occur in the post operative period. These fistulas could be due to various causes such as low immunity of the patient at the time of presentation, complications of inflammatory bowel disease , adhesiolysis , resection and anastamosis of the bowel or may the result of faulty surgical technique resulting in anastomotic leak. Whatever be the reason, entero-cutnaeous fistulae are the most dreaded complication feared by surgeons and increases chances of litigation. Management of these fistulas require a multidisciplinary approach.

Keywords: Enterocutnaeous; Epithelized Surface; Acquired Fistula; Management; Multidisciplinary.

Introduction

The word fistula is from the Latin word meaning pipe or flute and is an abnormal connection between two epithelized surfaces [1]. Majority of these fistulas are acquired and result from surgical intervention, although spontaneous enterocutaneous fistulae may occur in inflammatory bowel diseases like Crohn's disease, ulcerative colitis, appendicitis, diveriticulitis or in cases of pancreatic necrosis treated with repeated dressings or ischaemic bowel, malignancy or in the post irradiation period. Usually more than one such conditions may be present in the patient. Previously mortality associated with fistula used to be 40% to 60%; now with better understanding of the pathogenesis of the condition and better management strategies like critical care, parenteral nutrition for nutrional management and antibiotics, mortality rate has dropped to 10% to 15% [1]. Presently the cause of mortality in patients of enterocutaneous fistulae is sepsis in 80% cases [2] while previously it was more because of malnutrition and electrolyte imbalance. In spite of improvement in the outcome of enterocutaneous fistulae, they still increase financial burden; and are an increased source of morbidity.

Fistulas are classified according to their anatomic location, physiology and etiology [3]. As per the anatomical classification fistulas are either internal or external, internal fistulas are communication between two epitheleal surfaces and external fistulas are communication between the concerned organ and surface. Based on the output from the fistula they can be divided into low output (<200 ml/per day), moderate (200 to 500 ml/day) and high output (>500ml/per day) [4,5]. Majority of the fistula are iatrogenic and caused by procedures such as cancer surgery, adhesion lysis, inflammatory bowel disease [6], anastomotic dehiscence during emergency and trauma surgery. Technical failure of anastamosis occur in situations where bowel injury is complete or through and through or there is damaged to the mesenteric blood supply, multiple serosal injuries, tight anastomosis or tension on the suture line [7].

In our series of patients there were certain factors which showed association with formation of

Corresponding Author: Gurinderjit Singh Nagi, Associate Professor, Department of Surgery, Punjab Institute of Medical Sciences, Garha Road, Jalandhar City, Punjab 144006, India.
E-mail: nagigurinder@gmail.com

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enterocutaneous fistulae, though it was difficult to prove cause and effect relationship. These are long standing abdominal insult, which was either diagnosed late or where intervention was delayed, Long standing peritoneal abscesses, massive dilatation of the bowel due to any cause or moribund patient. One of the notable thing in our series was these patients were hypoproteinemic (low total protein and albumin), had raised total leucocyte count (>1500mm) and were smokers. Poor or rough handling of the bowel during surgery or repeated serosal tears can increase the chances of enterocutaneous fistula.

Materials and Method

A total of twenty six patients treated over a period of six years were included in the study.. The patients age was between 29 years and 70 years with maximum number of patients were between the age of 51 to 70 years (Table 1). Most of the patients in the study were males with a male female ratio of 24:2 (Table 2). These patients were operated as emergency. The patients had presented to the emergency department with intestinal obstruction. 19 (73.1%) of the patients had intestinal perforation while 7 (26.9%) cases had history of previous exploratory for pain abdomen (Table 3). Five of the patients underwent laparotmy for a second time,the first laparotomy was carried out more than one year before. (Table 5). Two patients presented with enterocutaneous fistulae on the 2nd and 3rd day of laparotomy, which was done else were 18 patients (69.2%) were in a state of shock at the time of Admission. Their systolc B.P. was below 90mm of Hg and a heart rate (HR) was more than 100 beats per minute. Hemoglobin was less than 8 gm% in 9 patients (Table 4). Serum albumin levels were low in 20 (76.9%) out of total of 26 case, range 2.5 to 3.0 gm%. Total leucocyte count was raised in all the patients and varied from 16000 ccm to 23000 ccm. Those who were anaemic blood transfusion was administered in preoperative period. Blood transfusions were also given postoperatively as needed. Those with low serum albumin levels were given total parenteral nutrition.

Table 1:

S. No.	Age in years	No of patients (% age)
01	29 to 40	04 (15.40%)
02	41 to 50	03 (11.53%)
03	51 to 60	10 (38.46%)
04	61 to 70	09 (34.61%)
05	Total	26 (100.00%)

Table 2:

S. No.	Sex	No. of Patients (% age)
1.	Males	24 (92.30%)
2.	Females	02 (07.70%)
3.	Total	26 (100.00%)

Table 3: Diagnosis on admission

S. No	Diagnosis	No of Patients (%age)
1.	Intestinal Perforation	19 (73.10%)
2.	Intestinal obstruction secondary to previous laparotomy	07 (26.90%)
3.	Total	26 (100.00%)

Table 4: Parameters at the time of admission

1.	B.P. Less than 90 mmHg	B.P. More than 90 mmHg	Total
	18 patients	08 patients	26
2.	HR more than 100 beats/mt	HR less than 100beats/mt	
	18 patients	08 patiens	26
3.	Hb less than 8 gm%	Hb more than 8 gm%	
	09 patients	17 patients	26
4.	S.Albumin less than 3 gm%	S.Albumin more than 3 gm%	
	08 patients	18 patients	26

Table 5: (Previous laparotomy in pts with obstruction without perforation

S. No.	Duration	Number of PTS
01.	> 1 year	05
02.	Recent(2-4 days)	02
03.	Total	

Results

Out of all the case seven patients developed enterocutaneous fistulae, out of whom the fistula fluid was positive for tuberculosis on PCR test. There was neither history nor examination findings suggestive of tuberculosis in them. widal test positive was positive in 2 patients, suggesting salmonella infection. Those who developed enterocutaneous fistula, six patients had intestinal perforation at the time of admission while one had previously undergone exploratory laparotmy. In two case no specific cause was found. Accordingly the patients were put on specific therapy and they responded well, and finally recovered. In two patients re-laparotomy was done for fecal diversion and ileostomy was created. Those who developed enterocutaneous fistula were managed conservatively with monitoring fluid/electrolyte requirements, nutritional suppliments with total parenteral nutrition, blood transfusion, antibiotics and control of the fistula. Those in whom ileostomy was done recovered and ileostomy was closed after 10 to 12 weeks.

Discussion

Fistulas usually seen in the post operative period following laparotmy . Technical error in the surgery may play a part in the development o enterocutaneous fistula. poor genral condition of the patient in the preoperative period has a very important role for the development of fistulas. The literature is strife with small bowel fistulas occurring in the ileum [8] but in our series, jejnum was also involved in two patients where we had to do re-laparotomy and creating ileostomy after closure of the jejunal fistula. Re-laparotomy was under taken for closure of ileostomy after a period of eight weeks keeping in view of the improve out comes [9]. The management of enterocutaneous fistula should be done after assessing the patient through an orderly sequence of steps [10] like stabilization, investigation. Four of the fistulas were high output fistulas (> 500ml/ day). As Polk et al found that high output fistulas were associated with greater morbidity and mortality due to electrolyte imbalances and malnutrition [11]. The fistula incidence in our study increased in patients who reported late and in those who underwent emergency surgery with out adequate bowel preparation. Majority of these patients had come late more than three days after and were in a moribound state at the time of presentation with bowel showing some ischaemic changes and very friable to touch.

At the time of laparotomy it is always a difficult or a tricky situation for the surgeon to decide whether to do primary anastomosis or bring out the perforated part as a stoma. In our series of patients with intestinal perforation that is 19 cases, primary end to end anastomosis was done and abdomen closed after putting in drains in the right para colic gutter and in the left side of pelvis. In remaining seven cases of post operative intestinal obstruction, adeisiolysis was done and abdomen closed after putting in drains. In two cases where gut did not look healthy, ileostomy was performed and abdomen closed after putting the drains. Direct closing of fistula has a high rate of failure and recurrence of fistula [2]. Some of these patients who had presented with septic shock were optimized after adequate fluid resuscitation, blood transfusion and ionotropic support ; and afterwards were taken up for surgery when they were found reasonably fit to withstand anaesthesia.

As compared to the western world were nutritional deficiencies are very rare, in our set up majority of our patients were undernourished. They also had comorbidities such as uncontrolled diabetes mellitus, chronic smoking, IV drug abuse, atherosclerosis, sedentary lifestyle, obesity, chronic alcoholic intake. In 1964 Chapman et al. reported that fistulas could be combated successfully by treating sepsis adequately and with proper nutrition [12]. 1971 Sheldon et al. reported adequacy of this treatment in the management of intestinal fistulas [13]. Roback and Nicholoff reported closure of 73% of enteric fistula following adequate nutritional supplements vs 19% of non –closure just by nutrition alone [14].

Conclusion

Laparotomy in patients presenting with acute abdomen due to peforation or intestinal obstruction caused by adhesions resulting from previous abdominal surgery pose a challenge to the surgeon because of high chances of entrocutaneous fistula.There is always an increased risk of developing enterocutaneous fistula following emergency laparotomy if the patient is anaemic with haemoglobin less than 8 gm% and serum albumin level less than 3 gm%. The risk can be lessened by optimizing the patient's condition with blood transfusions, looking for specific causes which may result in intestinal perforation and possibly by raising serum albumin level.

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