

Experience Of Postoperative Enterocutaneous Fistulae at Mayo Hospital, Lahore

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Enterocutaneous fistula is a drastic complication of gastrointestinal surgery. During 39 months 41 patients were managed. Age of the patients ranged from 16 to 65 years. Thirteen patients were referred from peripheral centers for further management. Trauma (31.7%) followed by tuberculosis (1.9%) malignancy (71.1%) were main etiologic factors. In 21 patients ostomy was performed. Anasomotic breakdown was the commonest cause for fistula formation. Morbidity was 64.3% mortality was 26.8%. Judicious use of ostomy fashioning in malnourished and septic patients can reduce morbidity and mortality.

Key words: Enterocutaneous fistula, ileocolostomy, tuberculosis, missed injuries.

Enterocutaneous fistula is a dread complication of gastrointestinal disease and gastrointestinal surgery¹. It arises from a diverse array of pathophysiological states. Classification by anatomic, physiologic and etiologic systems is critical to both nonoperative and operative treatment planning².

External fistulae usually occur after surgery and along the scar incision. Associated intra abdominal abscesses frequently complicate them³.

Enterocutaneous fistulae that develop in patients with cancer represent a difficult management situation that is often complicated by prior treatment including surgery, radiation therapy, and chemotherapy. A fistula may in turn delay potentially beneficial treatment of the underlying malignancy⁴.

Significant reduction of mortality and morbidity has been attained but they still remain high⁵. This retrospective study is carried out to look into the outcome of management of post-operative enterocutaneous fistula at Mayo Hospital, Lahore.

Material and methods

This study was carried out in North Surgical unit of Mayo Hospital, Lahore from January 1998 to March 2001. All patients who presented or developed enterocutaneous fistula were included in the study. They presented in the emergency with enterocutaneous fistulae or developed enterocutaneous fistulas during their management in the unit. All these patients were interviewed, examined, investigated and managed either conservatively or surgically.

The investigations included hematological, ultrasonography, barium studies and fistulogram. Specific investigations and histopathology to diagnose the underlying disease were also performed.

Once the diagnosis confirmed and the condition of the patient assessed regarding malnutrition, fistula output, site of fistula and skin excoriation, the management plan was outlined to treat the patient surgically or

conservatively.

The patients who were put on conservative management were treated by total parenteral nutrition to give rest to the bowel and to decrease the bowel secretions. Octreotide was given to reduce the secretions of gastrointestinal tract in patients with high output fistula. If the patient had sepsis due to abscess formation, they were drained and antibiotics started. Skin excoriation prevented by the application of stomahesive paste, stomal appliances and postural drainage. Daily progress of the patient assessed and if their condition worsened or not improved over a period of 4-6 weeks surgical intervention was carried out.

Surgical management was offered to the patients who had missed injuries, very high output fistula, associated, peritonitis, distal obstruction and failure of conservative management.

Record of the patients maintained regarding operative findings, operative procedure, postoperative complications, chemotherapy, subsequent procedures, morbidity and mortality.

Results

During the study period of 39 months 41 patients were managed. Age of the patient ranges from 16 to 65 years. As shown in Table 1.

Table 1: Age Incidence.

| Age | n= | %age |
|-------------|----|------|
| 12-20 years | 09 | 21.9 |
| 21-30 | 12 | 29.3 |
| 31-40 | 06 | 14.6 |
| 41-50 | 06 | 14.6 |
| 51-60 | 04 | 09.8 |
| >61 | 04 | 09.8 |

Table 2: Sex distribution.

| Sex | n= | %age |
|--------|----|-------|
| Male | 25 | 60.97 |
| Female | 16 | 39.02 |

Twenty-five patients were male and 16 females as shown in Table 2. Thirteen patients were referred from peripheral hospitals for further management. The details are shown in Table no 3.

Table 3. Peripheral referral

| Etiology | n= | %age |
|--------------------|----|------|
| Missed injury | 1 | 07.7 |
| Firearm injury | 1 | 07.5 |
| Tuberculosis | 4 | 30.8 |
| Crohn's disease | 1 | 07.7 |
| Post appendectomy | 1 | 07.7 |
| Duodenal ulcer | 3 | 23.1 |
| Colonic malignancy | 2 | 15.4 |

Traumatic patients 31.7% lead followed by tuberculosis and colonic malignancy details are given in Table 4.

Table 4: Pathological distribution

| Etiology | n= | %age |
|---|----|------|
| Trauma | 13 | 31.7 |
| -Firearm injury | 05 | 12.2 |
| -Stab | 03 | 07.3 |
| -Blunt | 01 | 02.4 |
| -Missed injury | 04 | 09.8 |
| Typhoid perforation | 02 | 04.9 |
| Tuberculosis | 09 | 21.9 |
| Colonic malignancy | 05 | 12.2 |
| Carcinoma oesophagus | 02 | 04.9 |
| Post appendectomy | 02 | 04.9 |
| Duodenal ulcer perforation | 04 | 09.8 |
| Obstructive jaundice (Choledochal cyst) | 01 | 02.4 |
| Post radiation | 01 | 02.4 |
| Pressure necrosis | 01 | 02.4 |
| Crohn's disease | 01 | 02.4 |

Twenty four patients with high output fistula dominated the series as shown in Table 5.

Table 5. Fistula output

| Output | n= | %age |
|--------------|----|-------|
| Low output | 17 | 41.46 |
| High out put | 24 | 58.54 |

Table 6 shows the management details of the patient.

Table 6. Management

| Management | n= | %age |
|---|----|------|
| Conservative | 20 | 48.8 |
| Early surgical intervention | 21 | 51.2 |
| Surgical intervention after failure of conservative treatment | 07 | 17.0 |

Ileum was the commonest site for fistulation as shown in Table 7.

Table 7. Sites of fistula

| Sites | n= | %age |
|-----------|----|-------|
| Esophagus | 02 | 04.9 |
| Stomach | 01 | 02.4 |
| Duodenum | 06 | 14.6 |
| Jejunum | 03 | 07.3 |
| Ileum | 19 | 46.34 |
| Colonic | 10 | 24.4 |

Anastomotic breakdown was the commonest cause for fistula formation as shown in Table 8.

Table 8. Causes of Enterocutaneous fistula

| Cause | n= | %age |
|-----------------------|----|------|
| Anastomotic breakdown | 23 | 56.1 |
| Breakdown of repair | 14 | 34.1 |
| Missed injuries | 04 | 09.8 |

Table 9 shows the description of the surgical procedures carried out.

Table 9. Surgical procedures

| Procedure | n= | %age |
|------------------------------------|----|------|
| Primary repair stomach | 1 | 03.6 |
| Tube duodenostomy | 3 | 10.7 |
| Ileostomy | 6 | 21.4 |
| Resection and anastomosis of ileum | 5 | 17.9 |
| Primary repair of ileum | 3 | 10.7 |
| Ileocolostomy | 4 | 14.3 |
| Loop colostomy | 3 | 10.7 |
| Hartman's procedure | 1 | 03.6 |
| Feeding jejunostomy | 4 | 03.6 |
| Right hemicolectomy | 1 | 03.6 |

Mortality was high as shown in Table 10.

Table 10. Mortality

| Disease | n= | %age |
|----------------------------|----|------|
| Tuberculosis | 3 | 7.3 |
| Duodenal ulcer perforation | 2 | 4.9 |
| Postradiation | 1 | 2.4 |
| Postappendisectomy | 1 | 2.4 |
| Colonic malignancy | 2 | 4.9 |
| Firearm injury | 2 | 4.9 |

Discussion

Enterocutaneous fistulae are not a minor problem in gastrointestinal surgery⁵. No age group or sex is immune to this complication as is evident from this series.

A primary gastrointestinal fistula arises as a consequence of disease in the wall of the gut (e.g. tuberculosis, Crohn's disease, malignancy). A secondary gastrointestinal fistula occurs as a consequence of injury to otherwise normal gut (e.g. surgical resection). Postoperative gastrointestinal fistulas arise as a result of gut injury from one of three possible mechanisms during

abdominal surgery, unrecognized intestinal injury, breakdown of serotomy repair and break down of anastomosis⁶.

In our study all the patients belong to the group of postoperative gastrointestinal fistulae and the commonest cause being the break down of the anastomotic line 56.2% followed by breakdown of repair 33.2% and missed injuries 9.8%, this is in line with other studies⁷.

Trauma (31.7) was the leading factor for fistulation followed by tuberculosis 21.9% and malignancy 17.1%. This is in contrast to other studies⁸. This is due to the reason that there is marked increase in the civilian violence due to firearm injuries and resurgence of tuberculosis in our part of the world^{9,10}.

The postoperative presentation of an intestinal leak is determined by the degree of septic insult. A low volume leak, walled off from the peritoneal cavity, may produce only minimal systemic upset with the discharge of small amounts of enteric contents through the abdominal wound. At the other end of the spectrum, postoperative intestinal fistulation can be heralded by peritonitis, multiple organ failure and complete disruption of the abdominal wound with the discharge of liters of enteric fluid^{6,7}.

The global management of the postoperative fistula patient can be summarized in the '4Rs' resuscitation, restitution, reconstruction and rehabilitation⁶. We also stick to the same treatment plan. Patients were resuscitated and then assessment was made whether patient has got localized or generalized intraabdominal sepsis. On the basis of this patients were managed either conservatively or by surgical intervention.

In our study 20 patients were put on conservative treatment including aspiration of abscess under ultrasound guidance, antibiotics, total parenteral nutrition, octreotide derivatives, prevention of skin excoriation and management of the effluent. In eight patients fistula healing took place; all of these had proximal gut fistulation. This was also observed in other studies¹¹.

We observed that octreotide decreases the fistula output and is helpful in closing the fistula in patients having proximal gut fistula with high output. This is same as in other series^{11,12,13,14}. On the other hand patients with distal gut fistula (ileum and colon) with low output did not benefited much by octreotide¹⁵.

Total parenteral nutrition is an important adjunct for nutrition and rest to the gut¹¹ but unfortunately it has its own morbidity¹⁶. Most of our patients belonged to low socioeconomic group and they refused to have treatment due to high cost of total parenteral nutrition. Feeding jejunostomy was performed in three patients with proximal fistula and healthy distal gut. We observed hundred percent closure rate of fistula in these patients¹¹. The use of parenteral and enteral nutrition facilitated the spontaneous fistula healing and allowed the elective reconstruction to

be scheduled at an optimal time^{11,16}.

Seven patients were operated after putting on conservative treatment as they were deteriorating or not improving^{6,17} and some not able to afford parenteral nutrition.

The more fancy techniques to aid spontaneous closure such as percutaneous catheterization, biological glue and fibrin glue plugs were not available and hence not used^{5,6,18}.

In our series 51.2% patient were managed by early surgical intervention. They were resuscitated and operated within forty-eight hours after developing fistula or being received in the emergency from peripheral referral. Most of these patients had peritonitis or unidentified injury. This is in line with other studies⁶.

Surgical and radiological findings (Barium meal, fistulograms) revealed that the commonest site for fistulation was ileum followed by colon and duodenum. This is also seen in other studies^{11,17}.

Most common procedures carried out were controlled diversion of the fistulous contents in the form of loop ileostomy (21.4%), ileocolostomy (14.3%), tube duodenostomy (10.7%), loop colostomy (10.7%) and Hartman's procedure (3.6%). It is safe not to make anastomosis in a septic, malnourished and debilitated patient as shown by other studies as well^{11,17,19}.

But in patients who have localized peritonitis, have healthy gut and are not malnourished one can safely perform intra-abdominal repair of injury or perforation and anastomosis^{11,17}.

We had a very high percentage of mortality. This is comparable with other studies^{11,14,17}. This high mortality is due to the reason that these patients either had debilitated disease or multiple organ injuries. The other contributing factors were the junior level of surgeon leading to missed injuries or wrong decision of making repair or resection anastomosis in a debilitated, septic patients and poor surgical technique.

Conclusion

Observing following precautions can attain significant reduction of morbidity and mortality.

- Proper pre operative resuscitation.
- Expertise must be available to deal debilitated and septic patients.
- Detailed identification of per operative anatomy.
- Judicious use of ostomy fashioning in malnourished and septic patients.
- Early identification and management of missed and iatrogenic injuries.
- Assessment of the patient for enteral or parenteral feeding.
- Vigilant nursing care and physiotherapy.

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