ORIGINAL ARTICLE

GASTRO INTESTINAL FISTULA

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ABSTRACT: Gastrointestinal fistula is a common problem faced by General and Gastrointestinal surgeons. Many times it is a disaster after abdominal operation. Though conservative management heals many fistulae, it is sometimes necessary to do surgical intervention. An attempt has been made in this article to discuss when to intervene surgically and different types of surgical procedures required in selective cases of gastrointestinal fistulae.
KEYWORDS: Gastrointestinal fistula, closure of fistula, predictors of healing for fistula, surgeries in fistula.

DISCUSSION: Gastrointestinal fistulae commonly occur as a complication of abdominal surgery but some fistulae may also occur secondary to intestinal disease like Chron's disease or diverticulitis, very rarely a gastrointestinal fistula can be sequelae of abdominal trauma. Whatever the cause, gastrointestinal fistulae are usually difficult to treat. The patient suffers a lot from severe pain and discomfort and it is very painful to see such a patient remaining wet and yelling with pain.

Though Nutritional management, maintenance of fluid and electrolyte balance, skin care, control of sepsis and maintenance of patency of the distal tract are the basic principles of management of any gastrointestinal fistula, surgery plays key role in some cases.

Following are the situations where one has to intervene surgically.

1. **Early postoperative anastomotic leak with peritonitis:** Sometimes there is a gross gastrointestinal anastomotic dehiscence with frank peritonitis. In such situation when patient is toxic, surgeon has to do a quick laparotomy so as to bring both the ends of leaked anastomosis outside the abdomen.

   Very rarely in a stable coma minimally compromised patient, when peritonitis is macroscopically minimal and when serum albumin levels are reasonable, one can excise the involved the segment and do re anastomosis.(1)

2. **Surgery for drainage of intra peritoneal abscess:** Many times gastrointestinal fistulae leak inside the peritoneal cavity and form intra peritoneal abscess. It particularly occurs when there is long deep tract traversing through the coils of small intestine. Sepsis is the most common complication of gastrointestinal fistulae. It is also the most common cause of death in a case of G.I. fistulae. Such patient may show clinical picture of sepsis in form of spikes of fever, tachycardia, leukocytosis and eventually may go in multi organ failure CT scan of

abdomen, MRI abdomen or indium scan should be used liberally to localize sepsis. Intra peritoneal abscess can be drained per cutaneously under sonography or CT guidance. In case such facilities are not available or if such drainage fails to clear the sepsis, laparotomy remains the only alternative to evacuate the pus.

3. Surgery for closure of well-formed fistulae:

Aims of surgery for entero cutaneous fistula are:

1. Re functionalization of entire bowel
2. Resection of fistula with end to end anastomosis of bowel
3. Secure abdominal bowel closure [(2)]

Surgery is necessary for 20 to 30% entero cutaneous a fistula which doesn't heal spontaneously. Surgical closure of a gastrointestinal fistula is a challenging job; it is characterized by recurrence rate from 20 to 40 %[(3)] It is associated with 3.9% of mortality within 30 days of surgery and 15% mortality within one year.[(4)] Therefore a surgeon should know which fistula will heal spontaneously and which fistula will require surgery. Anatomical delineation of gastrointestinal fistula is essential in accessing the likelihood of spontaneous closure and to plan surgical management.[(5)]

With good nutritional support and control of sepsis some fistulae will heal spontaneously but some fail to heal. After control of sepsis about 60 to 90% of external intestinal fistulae will heal if there are favorable factors.[(6)] A surgeon should know which fistula will heal spontaneously and which fistula will require surgery. A fistula gram is done to find out the predictors of spontaneous closure of fistula. After improvement in general condition; pediatric feeding tube is passed in the fistula tract and water soluble contrast material is injected through the tube.

Following are the predictors to be seen on the fistulogram.

1) **Continuity of the bowel:** Continuity of bowel is must for fistula to heal. If there is complete disruption of the continuity, then the fistula will never heal on its own and surgery is must in such cases to restore the continuity.
2) **Associated Abscess cavity:** If there is a large abscess cavity and if fistula is leaking in that cavity, such fistula will rarely heal spontaneously.
3) **Distal obstruction:** A fistula will never heal in presence of distal obstruction.
4) **Origin of the fistula tract:** Fistulae arising from stomach, fistulae directly at Ligament of Treitz, ileal fistulae will rarely heal spontaneously.[(7)]
5) **Length of fistula, size of bowel wall defect:** Fistula tracts more than 2 cms in length and bowel wall defect more than $1cm^2$ usually does not heal spontaneously.

Other predictors-

1) **Etiology** also plays a significant role in determining chance of closure of a fistula. Fistulae arising from radiated intestine, inflammatory bowel diseases and recurrent cancer are unlikely to heal spontaneously.
2) **Chronicity of fistula:** A chronic fistula lined by epithelium is unlikely to close on its own.

Duration of fistula: In a sepsis free patient with good nutritional support if a fistula does not show signs of closure after 4 to 5 weeks—it is unlikely that it will heal spontaneously.

Considering all above mentioned predictors—surgery should be undertaken in following situations:

1) Nutritionally supported, sepsis free patients with unfavorable predictors on fistulogram
2) Fistulae secondary to malignancy, fistulae from radiated intestine, fistulae secondary to diverticulitis and inflammatory bowel diseases.
3) Chronic fistulae which fail to close after 4 to5 weeks of sepsis free nutritional support.

Pre op measures:

Fluid electrolyte balance: Attention should be paid to the circulatory volume and electrolyte balance. PCV should be kept ready and should be given when necessary. Swan—Ganz catheter should be placed as a guide for fluid administration if needed.

Skin care: Abdomen should be prepared by washing with antibiotic solutions, several days prior to operation.

Nutrition: If patient is on enteral nutrition, it should be stopped 1-2 days prior to the operation so as to avoid abdominal distention. Parenteral nutrition should be started before the operation and continued during and after operation.

General intra-operative considerations: The operative approach is preferably through a new incision so that major operative field remains relatively clean. The peritoneum should be entered through virgin area so as to avoid inadvertent injury to adherent viscera. All adhesions should be freed so as to have unobstructed gut. Definitive resection of the diseased segment and end to end anastomosis should be carried out whenever possible. The anastomosis should be done away from the abscess cavity. Abdomen wall closure should be meticulously done. In some cases abdomen wall may be partially destroyed by sepsis and sheath may not be available for tensionless abdomen closure. In such cases musculo cutaneous flaps can be used.

Prosthetic reconstruction should be avoided as there is a chance that it may get infected in such contaminated cases and it may also lead to recurrent fistulae. Gastrostomy tube should be placed to decompress stomach postoperatively. For postoperative nutritional support, feeding jejunostomy or nasojejunal tube should be used in all cases of G.I. fistulae.

Surgical management of specific fistulae:

Oesophageal fistulae: Oesophago-cutaneous fistulae that fail to close after 6-8 weeks of sepsis free non operative management should be subjected for operative management.

There are many techniques for closure of oesophago-cutaneous fistulae including primary closure, gastric, colonic interposition and free jejunal grafts.

Gastric fistulae: In 30-50% cases, spontaneous closure of gastro cutaneous fistulae occurs after 4 to 6 weeks of non-operative management. If closure does not occur after 4 to 6 weeks of conservative management, fistula resection and closure of stomach is done. Decompressive

gastrostomy and feeding jejunostomy or naso-jejunal tube should be placed in all cases. If gastric remnant is too small, complete gastrostomy should be done.

Duodenal fistula: Simple closure or repair of duodenal fistula carries high rate of failure. Therefore if primary closure is attempted, omental or serosal patch reinforcement should be done. But many times simple gastro jejunostomy done to bypass fistula along with Decompressive gastrostomy is preferred.

Small intestinal fistulae: Most of the small intestinal fistulae are of high output type. They are also associated with sepsis. Naturally small intestinal fistulae carry high morbidity and mortality.

Ileal fistulae: Ileal fistulae are notorious to heal. Smaller ileal diameter, vigorous ileal motility, ileocaecal valve obstructing the flow, inflamed Peyer's patches contribute to non-healing of ileal fistulae. Thus even in presence of favorable factors most of the ileal fistulae fail to heal spontaneously and require operation.

Timing of operation: The peritoneal cavity is full of adhesions within three months of primary operation. Therefore whenever possible, it is better to undertake operation three to four months after primary operation. The patient should be optimized metabolically before entering in the operation theatre.

Jejunal fistulae: Jejunal fistulae have a higher chance of spontaneous closure. Even if fistula is not closed after four to six weeks of medical management, conservative management should be continued if fistula output is decreasing, serum albumin is rising and bowel functioning is becoming normal. If fistula is not healing after eight weeks of medical therapy and anatomical factors are not favorable, surgical intervention should be considered.

Surgical principles during closure of intestinal fistulae: Preoperative measures should be taken as mentioned earlier. Incision should be taken away from the original contaminated scar and peritoneum should be entered through virgin area. Extensive adhesions are found in most of the cases destroying the normal anatomy. It is always better to start working where dissection is easy and proceed from known area. If dissection becomes difficult, the area should be packed with moist pad and dissection continued elsewhere. Fistula tract is excised and end to end anastomosis is done. Serosal tears occurred during dissection should be repaired. Irradiated bowel is best dealt with strict uroplasty after resection of fistula. In unfavorable condition like sepsis, it is wise to exteriorize the bowel ends. Decompressive gastrostomy and feeding jejunostomy or naso-jejunal tube should be placed in all cases. Abdomen should be meticulously closed after keeping a drainage tube.

Intestinal fistulae in recurrent cancer: Recurrent cancer resulting in fistula is difficult to close down. If possible tumour mass should be resected and the bowel free of the tumour should be anastomosed.

Colonic fistulae: Most postoperative colonic fistulae heal spontaneously within 40 to 5o days. Colonic fistulae secondary to cancer, diverticulitis and Chron's disease are unlikely to heal spontaneously and need surgical intervention.

Internal intestinal fistulae: Symptomatic patients with internal enteroenteral fistulas unresponsive to medical treatment will require operation. Chron's disease frequently results in internal intestinal fistulae resulting in mal absorption, intractable diarrhea, obstruction and urinary tract infection. All such cases require surgery. Diverticulitis complicated by abscess or fistula formation should be treated by resection of involved colonic segment.

Chron's disease: Chron's disease fistulae are treated with conservative resections. Sometimes stricturoplasty should also be done so as to avoid short bowel syndrome resulting from surgical excisions. When bladder is involved by fistula, primary bladder repair with interrupted layered absorbable sutures is recommended.

Diverticulitis: Fistulae associated with diverticulitis have a high spontaneous closure rate. In most patients, resection of the colon containing diverticulum and end to end anastomosis should be carried out.

SUMMARY: Aggressive medical management is the mainstay of fistula management, but in selected cases, surgery should be considered for exteriorization of bowel ends. In peritonitis drainage of intra peritoneal abscesses and for restoration of normal intestinal continuity.

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