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Complications of intestinal stomas – A Descriptive study

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A B S T R A C T

Intestinal stoma is a very commonly performed procedure with a high rate of complications. This study was undertaken to study the various types of complications in different types of intestinal stomas and their management. To study the various complications associated with the intestinal stomas. This was a prospective study involving 40 patients underwent stoma formation and its complications at Victoria hospital attached to Bangalore Medical College and Research Institute, Bangalore.. Both elective and emergency procedures were included in the study. Data was collected by following up the patient postoperatively either by phone or in person. A total of 40 patients were included in the study who underwent stoma formation at this hospital from October 2010 to September 2012. The study include both emergency and elective stoma formation. The most common indication for stoma formation was malignancy (n=14) followed by Bowel perforation(n=12).Complications were seen in 20 of the patients undergoing stoma formation. Local sepsis was seen in 10 patients stenosis was seen in 2 patients. Stoma formation is associated with a high rate of complication. Loop Colostomy is associated with highest rate of complications. Complications were more during emergency settings. Local sepsis was the most common complication. Parastomal hernia was a difficult complication to treat. Loop ileostomy seemed to have a lesser complication rate as a defunctioning stoma as compared to loop colostomy.

Introduction

A stoma formation is a lifesaving procedure, and as a surgeon we must realise and cope with the emotional as well the functional impairment that a patient having a stoma goes through particularly in the early post-operative stages. This is why any suggestions in the management of stoma, or

change in surgical technique which seem to have merit, thereby decreasing the difficulty in adjustment to a colostomy, are well received by the patients and surgeons, and hence is the need for study about the various stomas, the complications associated with it and their management.

Complications are divided into early and late. Early complications are frequently technical in nature and may require immediate intervention. Frequently, observation alone is adequate. Late complications may be the result of early complications but more often are part of the natural history of colostomy. Surgical intervention is frequently required, but enterostomal therapists provide much of the care. Risk factors are the same as for most of abdominal surgery: advanced age, obesity, poor wound healing secondary to diabetes, and poor nutrition. Disease process is not an independent risk factor, but the creation of an emergency colostomy is associated with a higher complication rate¹⁻³. By the time one is ready to mature the colostomy, the blood supply should have been unchanged for several minutes. Any demarcation or compromise from inadequate blood flow should be more than evident.

Despite this, some type of colostomy necrosis occurs in 2–17% of cases². The mucosa is more sensitive to arterial compromise, and this may become more apparent when the colon is opened. At this point, transillumination is a simple technique to establish adequacy. If the mucosa transmits light well, it will most likely continue to be fine. If blood flow was adequate prior to maturation or before passing the colon through the trephination, ischemia may be due to compromise at the fascial level. An effort can be made to enlarge the fascial opening slightly. If the patient or the colon is cold, arterial spasm may make the mucosa appear marginal. Holding the colostomy in a lap sponge soaked in warmed saline may improve its appearance. Small needle pricks may also demonstrate adequate arterial supply. More commonly, and far less concerning, the venous outflow of the colostomy may be compromised. This usually will not become apparent for many hours after completion of

the case. The colostomy appears dark and swollen, often with a purplish hue. Transillumination again is helpful. Despite a dark color, colon with adequate arterial inflow and compromised outflow will still transilluminate well. A colostomy with significant venous congestion may slough its mucosa and appear nearly necrotic but in the end may heal to a viable, well-functioning colostomy. If questions remain as to the colostomy's viability or if a return to the operating room is considered for revision, bedside endoscopy of the colostomy may be performed. This simple and most rapid technique is performed with a phlebotomist's test tube and a penlight. After removing the stopper top, a well lubricated tube is passed through the colostomy. It may be passed through the fascia. If the stoma is viable, shining the penlight down the tube should demonstrate healthy pink mucosa. A grossly ischemic or infarcted colostomy calls for a return to the operating room for revision. If the vascular compromise goes below the fascia, repeat laparotomy is in order. If the ischemia is limited to the distal most aspect of the bowel, it may be observed and allowed to demarcate. Eventually a skin-level revision should be performed if there is full thickness necrosis. This involves division of the sutures, debridement of the compromised tissue, and rematuration of the stoma. Circumferential ischemia left untended may result in stricture of the colostomy. Clinically, colostomy retraction is less consequential than ileostomy retraction. A flatostomy may be well tolerated by many patients. Still, a rise of 1/8 in. is preferred.

Retraction of the colostomy is approached similarly to ischemia. If the colostomy retraction approaches the fascia, relaparotomy is called for. Retraction below the skin level will frequently require surgical attention at some point to avoid stricture and hygiene problems. Prolapse of an end

sigmoid colostomy is a late complication and is less frequent than with loop sigmoid or loop transverse colostomies⁴. Surgical intervention is usually for psychological reasons or pouching difficulties. Rarely, prolapse may result in obstruction or vascular compromise. Simple skin-level revision is adequate in uncomplicated cases. For patients with permanent colostomies, the most common complication is a paracolostomy hernia. Reports vary from 1% to over 60%³.

The most common complaint is of pain. Incarceration and strangulation are rare complications. Mucocutaneous separation may occur secondary to ischemia or retraction. In their absence, however, separation is due to improper technique or inadequate closure. Partial separation will be self-limited with time and wound contraction. Complete separation can easily be managed by debridement and revision. Occasionally but surprisingly, contamination or infection of an hematoma or seroma results in an infection or abscess within the trephine. If the infection is limited to the subcutaneous tissue, simple drainage by dividing the maturation stitches will be adequate. A subcutaneous abscess with evidence of cellulitis requires systemic antibiotics. Signs and symptoms of sepsis should prompt a search for an intra-abdominal source.

Recurrent infections indicate a fistula. This may be the result of a full-thickness everting stitch or an amputated diverticulum. Once established, colostomy fistulas require stomal revision. Mortality obviously can occur in association with colostomy creation. In one review of 126 patients with 130 end colostomies, there were 7 mortalities. In all cases, deaths were related to emergent operations or comorbid, nonsurgical disease⁵.

Materials and Methods

A descriptive study was carried out among 40 patients undergoing intestinal stoma construction at Victoria Hospital, Bangalore Medical College and Research Institute as an elective procedure or as an emergency procedure. . Data were collected from patient records maintained prospectively, supported by information from operation notes and patient case records.

Data was entered in Microsoft excel and was analysed using SPSS. The data was presented as proportion.

Follow up of the patient was also done by patient interview in person or over the phone at 4, 8, 12, 14, 28 wks.

All patients male and female above the age of 18 years undergoing emergency and elective intestinal stoma construction were included and Patients undergoing urinary stoma construction were excluded

Results and Discussion

The maximum numbers of complications were found in loop colostomy and loop ileostomy.

Complications were more when the patients underwent stoma construction under emergency circumstances (n=12 out of 26, 46.15%) as compared to those undergoing stoma formation as an elective procedure (n=8 out of 14, 33.33%).

Complications were seen more in loop colostomies as compared to other stoma types. End ileostomy seemed to have more complications as compared to loop ileostomy. Most common colostomy associated complication was local sepsis followed by parastomal hernia.

Complications were seen in 20 of the patients undergoing stoma formation. local sepsis was seen in 10 patients stenosis was seen in 2 patients.

- Retraction was seen in 4 patients.
 - Parastomal hernia in 1 patient.
 - Mucosal prolapse in 1 patients
- Necrosis was seen in 2 patients.

The high prevalence of complications identified in this study is comparable with those reported by others (reviewed by Shellito¹). Local sepsis was the most frequent complication followed by retraction. Parastomal hernia found in 5% of complications. This remains a difficult complication to treat and, so far, no technical factors have been found to prevent hernia occurrence⁶. Patient with symptomatic parastomal hernia underwent local repair with prosthetic mesh or relocation of the stoma. Relocation of the stoma required formal laparotomy and hence higher morbidity. This repair was reserved for difficult hernias. Mesh repair was favoured with less recurrent rates. Both stoma relocation and prosthetic repair may be associated with significant morbidity and complications. In one published series, stoma relocation was associated with a 44% recurrence rate, and an additional 24% of these patients developed an incisional hernia. When a prosthetic repair was used, the recurrence rate was 43%, and 29% of patients required treatment for a postoperative parastomal infection⁷.

Stomal prolapse was found with equal incidence in colostomy and ileostomy. In general, loop colostomies tend to prolapse more often than do end colostomies⁵ and the distal limb is more often involved than the proximal limb. Both the prolapse were mild and asymptomatic and were managed conservatively.

Local sepsis was seen in 10 patients, 3 in loop colostomy, 5 in loop ileostomy, 1 each in end ileostomy and jejunostomy. Local sepsis included peristomal abscess, erythema, excoriation of skin, cellulitis, ulcer. They were treated conservatively.

Necrosis was seen in 2 patients 1 each in loop and end colostomy. Both of them were identified in the immediate postoperative period. Both of them required laparotomy and revision of stomas.

Stenosis of the stoma was seen in 2 patients, both in loop colostomy. Both required revision of the stoma which was done locally and none of them required a laparotomy. It is still thought by some individuals that stomas need to be dilated after construction to prevent stricture formation. This idea originated when stomas were not matured primarily. When stomas are constructed correctly and matured primarily, there is no reason for "dilatation" of the stoma. This practice is not only uncomfortable and unnecessary but can also cause strictures from the scarring that develops as a result of the repeated trauma caused by the dilatation.

When comparing stoma type, the loop ileostomy was found to have a lower complication rate than loop colostomy. This is consistent with most current trials and adds weight to the recommendation that loop ileostomies are to be favoured over loop colostomies in defunctioning low colorectal anastomoses. Although others⁸ have found no difference in complication rate between the two defunctioning stomas, the quality of life in patients with an ileostomy is enhanced over those with a colostomy⁹.

Emergency surgery resulted in a higher stoma complication rate than elective surgery, and a significantly higher morbidity for the patient.

Table.1 Different complications of stomas

COMPLICATIONS	NUMBERS	PERCENTAGE
LOCAL SEPSIS	10	50
STENOSIS	2	10
RETRACTION	4	20
PARASTOMAL HERNIA	1	5
MUCOSAL PROLAPSE	1	5
NECROSIS	2	10

Table.2 Procedure and complications

TYPE OF STOMA	NO. OF COMPLICATIONS	PERCENTAGE
LOOP COLOSTOMY	7	35
END COLOSTOMY	3	15
LOOP ILEOSTOMY	7	35
END ILEOSTOMY	2	10
JEJUNOSTOMY	1	5

Table.3 Complications in emergency and elective procedures

	COMPLICATIONS	PERCENTAGE
EMERGENCY (n=26)	12	46.15(of emergency)
ELECTIVE (n=14)	08	33.33 (of elective)
TOTAL	20	

These findings are consistent with those by Stothert et al¹⁰, who reported over 50% morbidity and 18% mortality following emergency surgery resulting in a stoma.

Although stoma complication is a novel risk factor for mortality, it is acknowledged that other established prognostic indicators hold stronger influence like age, urgency of surgery and diagnosis are found to influence morbidity and mortality rates. It is striking that these very factors are out of the surgeon's control, and may explain why improvements in surgical technique alone cannot prevent complications occurring. This argument is consistent with other

studies¹⁰, which suggested that patient factors were responsible for the high morbidity and mortality rates seen in emergency surgery, given no such association with elective surgery.

Conclusion

The result from this study shows that local sepsis was the most common type of complication seen following intestinal stoma formation treated conservatively. Parastomal hernia is a serious common complication seen in study group, which is a difficult problem to treat. They are best managed by prevention during construction of the stoma.

Also loop colostomy was the most common type of stoma that had complications during the course of study.

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