



ORIGINAL RESEARCH PAPER

General Surgery

A RETROSPECTIVE STUDY OF 50 CASES OF INTESTINAL STOMA WITH REGARD TO COMPLICATIONS AND ITS MANAGEMENT

KEY WORDS: Intestinal stoma, Colostomy, Ileostomy, Loop stoma, Stoma complications, Parastomal hernia, Stoma prolapse, Skin excoriation, Stoma closure

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ABSTRACT

Background: An intestinal stoma is a surgically created opening between the bowel and the abdominal wall, fashioned for faecal diversion, protection of a distal anastomosis or bowel decompression. Although life-saving, it is associated with a reported complication rate of 20–70%. **Aim:** To retrospectively evaluate 50 cases of intestinal stoma with regard to their indications, associated complications and outcome of management. **Methods:** This retrospective data-analytical study was conducted in the Department of General Surgery, New Civil Hospital, Surat, over a period of one year. Fifty patients aged 18–70 years who underwent elective or emergency intestinal stoma construction were included, and data on indications, complications and follow-up outcome were analysed. **Results:** Colostomy was the commonest procedure (64%), followed by ileostomy (28%) and double-barrel stoma (8%); 92% of stomas were temporary. Anorectal malformation (28.13%) and perianal abscess involving the sphincter (25%) were the leading indications for colostomy, while non-specific inflammatory ileal perforation (35.71%) and intestinal tuberculosis (28.57%) predominated for ileostomy. Complications occurred in 48% of cases, skin excoriation being the commonest (35.7% of ileostomies, 28.1% of colostomies); 87.5% of complications were managed conservatively, while stoma prolapse, necrosis, gangrene, retraction, bleeding and parastomal hernia required operative intervention. Stoma closure was successfully achieved in 59.57% of patients on follow-up. **Conclusion:** Colostomy was the most frequently performed and best-tolerated stoma in this series. Early recognition of complications, individualised stoma selection, meticulous surgical technique and structured postoperative stoma care are essential to optimising outcomes in patients undergoing intestinal stoma construction.

INTRODUCTION

An intestinal stoma is a surgically created opening between a hollow segment of the gastrointestinal tract and the body surface, and remains one of the most frequently performed life-saving procedures in general surgery, used to manage both congenital and acquired conditions of the gut [1,2]. Stomas are constructed when primary anastomosis is not feasible because of a high risk of anastomotic failure or the absence of a viable distal segment, and the principal indications include faecal diversion, protection of a distal anastomosis, and bowel decompression [3,4].

Globally, the United Ostomy Associations of America estimate that 7,25,000 to 10,00,000 patients live with an ostomy, with about 1,00,000 new ostomy-forming surgeries performed every year, while the Ostomy Association of India places the number of registered stoma patients in India at over 3,00,000, a figure likely to under-represent the true burden [5,6]. In adults, stomas are commonly fashioned for malignancy, perforation peritonitis, trauma, volvulus and inflammatory bowel disease, whereas in children congenital anomalies predominate [7,8].

Although stomas are indispensable for patient survival, they are associated with substantial morbidity, with complication rates reported between 20% and 70% in the literature. These complications are conventionally classified as early (within 30 days), such as ischaemia, necrosis, retraction and mucocutaneous separation, or late (beyond 30 days), such as parastomal hernia, prolapse, stenosis and peristomal skin breakdown [9,10]. Factors such as surgeon experience, emergency versus elective creation, preoperative stoma site marking and patient-related factors like obesity and diabetes influence the frequency and type of complications encountered [4]. This study was undertaken to retrospectively analyse 50 cases of intestinal stoma with regard to their indications, associated complications and outcome of

management, so as to provide insight that may help refine surgical technique, postoperative care and patient counselling.

AIMS AND OBJECTIVES

The aim of this study was to evaluate 50 cases of intestinal stoma with regard to complications and their management. The objectives were: (1) to assess the various types of complications related to intestinal stoma; (2) to study stoma care and its management; (3) to assess the postoperative complications of stoma; and (4) to assess the effectiveness of stoma creation among the study participants.

METHODOLOGY

Study Design, Setting and Sample Size

This was a retrospective data-analytical study conducted in the Department of General Surgery, New Civil Hospital, Surat, over a period of one year. All patients of either gender, aged 18 to 70 years, who underwent intestinal stoma construction as an elective or emergency procedure were included. Patients undergoing urinary stoma construction, stoma construction for gynaecological disorders, those with associated psychological or biochemical complications, and patients younger than 18 or older than 70 years were excluded. A total of 50 patients satisfying the inclusion criteria were enrolled.

Methodology

The study was approved by the Institutional Ethics Committee and written informed consent was obtained from all participants. Detailed preoperative assessment, indication for stoma construction, intraoperative findings, postoperative complications and follow-up outcome were recorded for each patient from the Medical Records Department and Surgery Department database.

Statistical Analysis

Data were coded, entered and analysed using Microsoft Excel

software. Qualitative data were presented as frequencies and percentages, with the Chi-square test applied for comparison, while quantitative data were summarised as mean and standard deviation using the Z-test for significance. A p-value of <0.05 was considered statistically significant.

RESULTS

Of the 50 patients studied, the majority (68%) were between 21 and 60 years of age (34% each in the 21–40 and 41–60 year groups), 28% were under 20 years and only 4% were aged 61–80 years. Males predominated, accounting for 82% (n=41) of cases compared to 18% (n=9) females, giving a male-to-female ratio of approximately 4.5:1.

Table 1: Distribution of stoma type according to part of bowel used

Part of Bowel Used	No. of Cases	Percentage
Ileostomy	14	28.00%
Colostomy	32	64.00%
Double barrel stoma	4	8.00%
Total	50	100.00%

Table 2: Distribution according to specific type of stoma

Type of Stoma	No. of Cases	Percentage
Ileostomy (loop)	14	28.00%
Sigmoid loop colostomy	13	26.00%
Transverse loop colostomy	11	22.00%
End descending colostomy	8	16.00%
Double barrel stoma	4	8.00%
Total	50	100.00%

Ninety-two percent (n=46) of stomas were temporary and 8% (n=4) were permanent. The commonest indications for ileostomy were ileal perforation due to non-specific inflammation (35.71%), intestinal tuberculosis (28.57%) and typhoid perforation (21.43%), while penetrating trauma and volvulus each accounted for 7.14%. Among colostomies, anorectal malformation (28.13%) and perianal abscess involving the sphincter (25%) were the leading indications, followed by carcinoma rectum (12.50%), blunt and intestinal-obstruction-related causes (9.38% each), and carcinoma sigmoid colon, penetrating trauma, diverticulitis and rectal perforation with non-specific inflammation accounting for the remainder. All four indications for double-barrel stoma (tuberculosis, ileocaecal perforation, previously operated ileal perforation and penetrating trauma) were equally represented (25% each).

Table 3: Overall incidence of stoma-related complications

Complications	No. of Cases	Percentage
Complication present	24	48.00%
No complication	26	52.00%
Total	50	100.00%

Table 4: Complications according to type of stoma

Complication	Ileostomy (n=14)	Colostomy (n=32)	Double Barrel (n=4)
Skin excoriation	5 (35.7%)	9 (28.1%)	0
Necrosis	0	1 (3.1%)	0
Gangrene	1 (7.1%)	0	0
Stoma prolapse	0	3 (9.4%)	0
Stoma retraction	0	1 (3.1%)	0
Stoma bleeding	0	0	1 (25.0%)
Fistula formation	0	1 (3.1%)	0
Parastomal hernia	0	1 (3.1%)	0
Obstruction	0	1 (3.1%)	0

Skin excoriation was the single commonest complication in both ileostomy (35.7%) and colostomy (28.1%) patients. Stoma bleeding was the only complication noted in the double-barrel stoma group, occurring in one of four cases.

Table 5: Management of stoma-related complications

Complication	Conservative Mgmt (%)	Operative Mgmt (%)
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Skin excoriation	14 (87.5%)	0
Necrosis	0	1 (12.5%)
Gangrene	0	1 (12.5%)
Stoma prolapse	0	3 (37.5%)
Stoma retraction	0	1 (12.5%)
Stoma bleeding	0	1 (12.5%)
Fistula formation	1 (6.25%)	0
Parastomal hernia	0	1 (12.5%)
Obstruction	1 (6.25%)	0

The majority of complications (87.5% of skin excoriation cases) were managed conservatively with barrier creams, ostomy powder and regular wound care, whereas more severe complications such as stoma prolapse, necrosis, gangrene, retraction, bleeding and parastomal hernia required operative intervention in each instance they occurred.

Table 6: Follow-up and outcome

Outcome	No. of Cases	Percentage
Stoma closure done	28	59.57%
In follow-up for stoma closure	8	17.02%
Permanent stoma (on follow-up for stoma care)	4	8.51%
Patient expired	7	14.89%
Lost to follow-up	3	6.00%

Of the 47 patients who remained in follow-up, stoma closure had been successfully completed in 59.57%, with a further 17.02% awaiting closure. Deaths (14.89%) were largely unrelated to the stoma itself and were attributable to the underlying primary illness or comorbid conditions.

DISCUSSION

The present study was compared with a similar tertiary-care study, "Indications and Complications of Intestinal Stomas – A Tertiary Care Hospital Experience," by Qamar et al [11].

- Faecal diversion remains an effective option for a variety of gastrointestinal and abdominal conditions, with ileostomy and colostomy being the commonest intestinal stomas performed in surgical practice.
- Males were 4.5 times more likely than females to require a stoma in the present study (82% vs 18%), compared with a male predominance of 3:1 reported by Qamar et al.
- Loop ileostomy accounted for 77% and double-barrel ileostomy 23% of ileostomies in the present study, closely comparable to 78% and 22% respectively reported by Qamar et al. Loop colostomy was more frequent in the present series (76%) than in the comparator study (60%), while Hartmann's procedure was less frequent (9% vs 20%).
- The leading indications for ileostomy in the present study were non-specific inflammatory ileal perforation (36%), intestinal tuberculosis (29%) and typhoid perforation (22%), in contrast to Qamar et al, where intestinal tuberculosis (58%) and typhoid perforation (31%) predominated. Tuberculous and typhoid perforation of the terminal ileum remain endemic causes of peritonitis on the Indian subcontinent, and simple proximal loop ileostomy with closure of the perforation, rather than a lengthy resective procedure, improves survival in this setting.
- Anorectal malformation (28%) and perianal abscess involving the sphincter (25%) were the leading indications for colostomy in the present study, whereas penetrating abdominal injury (33%) was the leading indication reported by Qamar et al, reflecting differences in the case-mix (a higher paediatric anorectal-malformation load) between the two centres.
- Blunt trauma accounted for colostomy formation in 9% of cases in the present study compared with 23% in the study by Qamar et al, consistent with the 2–15% range of colonic injury following blunt trauma reported by Bugis et al [12].
- Overall, 24 of 50 patients (48%) developed a stoma-related complication. Skin excoriation and peristomal

ulceration were the commonest problems, seen in 36% of ileostomies and 28% of colostomies, largely attributable to frequent appliance leakage and inadequate stoma-care support; these were managed successfully with barrier pastes, ostomy powder and meticulous peristomal skin care.

- Stoma retraction, necrosis, parastomal herniation and intestinal obstruction were each seen in 3% of colostomies, while stomal gangrene occurred in 7% of ileostomies. Stomal bleeding occurred in one of four double-barrel ileo-transverse stomas and was managed conservatively with blood transfusion support after exploratory enterotomies failed to localise a discrete bleeding point.
- Stoma prolapse occurred in colostomies at variable intervals (as early as the 4th postoperative day and as late as 4 months) and was managed by reduction under anaesthesia, with local refashioning or resection required in individual cases; stomal necrosis was managed by refashioning with relocation of the stoma.
- Of the 28 stomas that underwent closure, one patient developed an anastomotic leak with fistula formation and wound infection. Mortality in the cohort was largely unrelated to the stoma or its closure, being attributable to sepsis, ARDS, central nervous system events, diabetic ketoacidosis and prematurity-related causes in a paediatric patient.

These findings reinforce that, while stoma creation is a life-saving intervention, it carries its own risks and the cost of a second hospitalisation for closure. Local, largely minor complications such as skin excoriation are the most frequent problem encountered and are readily managed conservatively, whereas major complications such as prolapse, necrosis, gangrene and parastomal hernia, though less frequent, usually mandate operative correction. Careful patient selection, preoperative stoma site marking, meticulous surgical technique and structured stoma-care education are therefore central to minimising morbidity in these patients [9,13].

CONCLUSION

This retrospective analysis of 50 cases of intestinal stoma highlights that anorectal abnormalities and perianal abscess were the leading indications for colostomy, while non-specific inflammatory ileal perforation and intestinal tuberculosis were the leading causes of ileostomy. Complications occurred in 48% of cases, skin excoriation being by far the commonest, and were predominantly managed conservatively (87.5%), with operative intervention reserved for prolapse, necrosis, gangrene, retraction, bleeding and parastomal hernia. Nearly 60% of patients achieved successful stoma closure on follow-up. Colostomy emerged as the most frequently performed and best-tolerated stoma in this series. Early recognition and appropriate management of complications, combined with individualised stoma selection, meticulous surgical technique and structured postoperative stoma care, are essential to optimising outcomes in patients undergoing intestinal stoma construction.

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