

Original Research Article

An analysis of outcome of stoma formation, reversal and their complications

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Abstract

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To analyse the outcome of patients who had stoma formation done in a single institution. 210 patients underwent non-uological stoma formation in our hospital over a 4 year period out of which 16 died in the postoperative period within 48 hrs. We retrospectively analysed age, sex, indications, emergency or elective stoma formation, complications, reversal rate and complications of reversal in remaining 194 patients. Mean age of remaining 194 patients was 69 years (range 34-87 years). 112 out of these 194 patients were females and remaining 82 were males. Of the 194 patients 64 (32.9%) procedures were done as an emergency and 130 (67.1%) were done on an elective basis. Ninety four of these stomas were end colostomies, 10 were loop colostomies, 20 were end ileostomies and 70 were loop ileostomies. Of 138 patients who had temporary stomas only 70 (50.7%) subsequently had them reversed. Hernia at the stoma site occurred in 18 (25.7%) out of 70 patients. Patients who have stoma formation have a high mortality due to the primary disease. Parastomal hernia (PSH) is common and difficult to cure permanently. The morbidity of stoma reversal is appreciable with hernia at stoma site being most common.

Keywords: Stoma, formation, reversal, outcome, complications

INTRODUCTION

Stoma formation is a common procedure in surgical practice, particularly in colorectal surgery. They are relatively easy to form and are used for faecal diversion from a diseased distal bowel, avoidance of an intestinal anastomosis in cases of intra-abdominal sepsis or in cases where intestinal recontiguity is not possible or unsafe. From the patient's point of view, stoma is a major responsibility and requires a readjustment to their social, working and religious lives. We audited 194 patients in details who had stoma formation in a four year period from 1/1/2010 to 31/12/2013.

MATERIALS AND METHODS

We retrospectively reviewed 210 patients who had non

urological stomas created in a four year period from 01/01/2010 to 31/12/13. We excluded 16 patients who died within 48 hours of surgery. We included all remaining patients who had either emergency or elective stoma in this period. We recorded their age, sex and indication for which they had stoma formed. We also noted the type of stoma, whether it was end colostomy, loop colostomy, end ileostomy or loop ileostomy. We recorded the number of patients who developed ischaemia, stenosis, retraction, Prolapse and Parastomal Hernia (PSH). We also noted how many patients had intended temporary or permanent stoma and whether those patients who had intended temporary stoma subsequently had their stoma reversed. We recorded incidence of complications following stoma reversal in the form of anastomotic leakage, intestinal obstruction,

Table 1. Diagnosis/Indications of stoma formation in emergency

Indication	Number of Patients
Perforated Diverticular disease	28
Diverticular abscess	06
Perforated/ obstructed colorectal Ca	08
Palliative loop stoma	03
Small bowel resection	12
Anastomotic leakage	05
Ulcerative Colitis	02

Table 2. Diagnosis/Indications of stoma formation in elective basis

Indication	Number of Patients
Anterior resection	75
Abdominoperineal resection	18
Hartmann's Procedure	09
Palliative stoma	08
Panproctocolectomy	10
Faecal incontinence	04
Ileo- anal pouch formation	04
Ileocaecal resection	02

wound infection and incisional hernia at stoma site.

RESULTS

Of 210 patients, 16 died within 48 hrs of their surgery from their presenting illness. All of the 16 patients who died in 48 hrs had presented as an emergency. Out of the remaining 194 patients where we recorded details, 64 patients had stoma created in emergency and rest 130 patients had it done electively. We went through notes of these patients and recorded their details with regards to stoma and its reversal. Patients were aged within a range of 34 to 87 years with a mean of 69 years. 112 of the 194 patients were female, and the rest 82 were males. The most common diagnosis in emergency set up was perforated diverticular disease followed by recto sigmoid obstruction. Other common causes included ischaemic small bowel and ileocaecal resection. Among elective patients, 86 patients had rectal cancer, 16 had diverticular disease, 11 had ulcerative colitis and the rest had other causes like Crohn's disease or faecal incontinence. (Tables 1 and 2)

Complications of surgery for the creation of end and loop stoma were recorded in details. Ninety four of these 194 stomas were end colostomies, 10 were loop colostomies, 20 were end ileostomies and 70 were loop

ileostomies. (Figure 1) Out of 194 patients 25 developed PSH, five had prolapse, five had stenosis and three had stoma retraction. Only two patients in our series had early ischaemic complication of stoma formation. (Figure 2)

The most common operation performed was anterior resection followed by Hartmann's procedure. Seven patients had refashioning of stoma and 2 had resiting in a different place. Of 138 patients who had temporary stomas only 70 subsequently had them reversed. Average time of stoma reversal was 1 year with a range of 3 months to 8 years. The most common reason for non-reversal of a temporary stoma was co-morbid factors like stroke, myocardial infarction and angina. In 26 cases patients were considered fit and ready for reversal but they were happy with the stoma and chose not to have surgery for reversal. Eleven out of 194 had advanced malignant disease with a palliative stoma that was never reversed. In 31 out of 194 patients it was not clear why the stoma was not reversed. The most common complication following reversal of stoma was hernia at the stoma site. This occurred in 15 out of 70 patients. Other complications were anastomotic leakage in 2, intestinal obstruction in 4 patients that resolved spontaneously and wound infection at stoma reversal site in 12 patients.

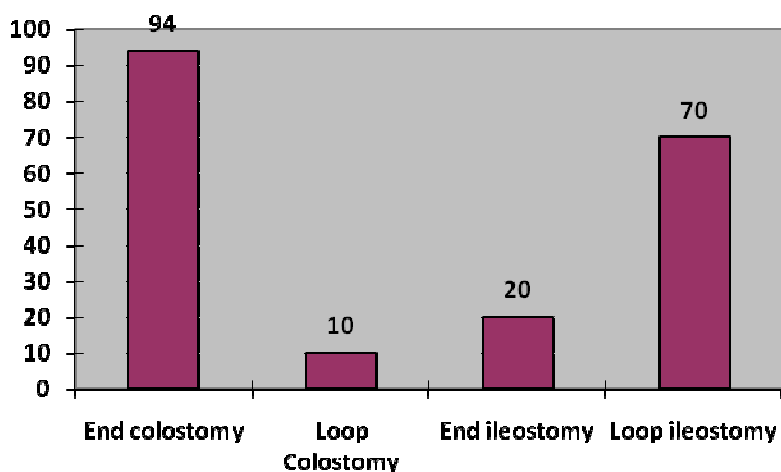


Figure 1. Different types of stoma

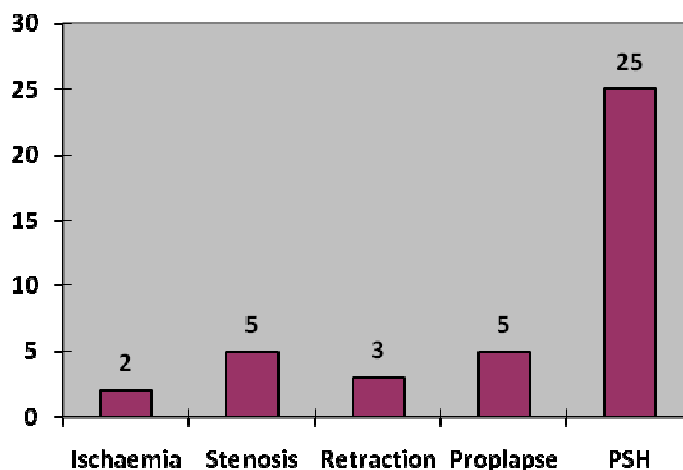


Figure 2. Complications of stoma

DISCUSSION

Creation of a temporary stoma is a surgical method to divert stool from a more distal area of concern like anastomosis or inflammation. To provide true benefit, the morbidity and mortality from the stoma itself should be minimal. Stoma creation is not a trivial undertaking and complications as a result of stoma surgery are not infrequent. Careful surgical technique minimizes complications and promotes good stoma function. Complications can be early like ischaemia or late complications like stenosis, prolapse and PSH. There are reported incidences of 66% overall complications with stoma formation. (Cheung, 1995) While PSH are difficult to cure permanently, morbidity of stoma reversal is also appreciable. (Shellito, 1998) Up to 30% of stomas may need surgical intervention in first 10 years of their formation (Kuijpers, 2001). It is preferred to reverse

stomas at three months after evaluation of the distal segment of bowel but in some cases stoma reversal is delayed up to a few years. In our series time of stoma reversal varied from 3 months to 8 years. Loop colostomy has been suggested as the preferred stoma following total mesorectal excision as intestinal obstruction is more common following loop ileostomy reversal (Law et al., 2002). A study from St. Marks' Hospital, London showed that complications of stoma are commonly associated with one another and 50% of colostomy prolapse were associated with para-colostomy hernia. In our series three out of five prolapses were associated with PSH. (Allen-Marsh et al., 1988). Though covering loop ileostomy is invaluable in reducing sepsis related complications in low anterior resection, it has shown to increase hospital stay and impair health related quality of life. (O'Leary et al., 2001) Prompt reversal of covering stomas should be a priority in these patients, as

this has shown to improve quality of life. Subclinical PSH may be present in many cases and may be detected with CT scan. (Williams et al., 1990) A retrospective study of resection for colorectal carcinoma showed that 5-year disease-free survival rate in 122 patients with a temporary stoma was reduced ($P < 0.01$) compared to those with no stoma. In patients with Dukes B tumours stoma reversal within 3 months was associated with a worse survival ($P < 0.005$) and a higher tumour recurrence rate ($P < 0.05$) than in those with no stoma. (Meleagros et al., 1995). Forty percent of stomas constructed are considered as temporary, but only two-thirds of temporary stomas are subsequently reversed. Particularly, end stomas tend to become permanent in patients over 70 years of age, although the morbidity rates of stoma reversal do not differ from those of younger patients. (Kairaluoma et al., 2002) A randomized trial from Basingstoke has shown that loop transverse colostomy was associated with complications in 10 out of 32 patients compared to none out of 31 in patients with loop ileostomy (Edwards et al., 2002). Twenty two (31.4%) out of 70 patients who had stoma reversed developed incisional hernia at the stoma site. It was more common in first year of follow-up and in patients with co-morbidities, especially diabetes (Guzmán-Valdivia, 2008).

156 patients with stoma reversal with a mean follow-up of 6 months showed that overall mortality rate was 0.65% and morbidity rate was 36.5%. Minor wound infection (34 patients) and postoperative ileus (9 patients) were the most common complications and resolved with conservative management. Colostomy reversal had nearly five times more complications as opposed to ileostomy reversal and had a higher impact than the type of stoma, end or loop, on the incidence and severity of complications. (Kaiser et al 2008) In a retrospective study of 114 patients aged 65 years and older who underwent covering loop ileostomy following rectal cancer surgery, complications developed in 24 (21.1%) patients and complications related to stoma reversal developed in 11 (9.6%) patients. Patients who experienced stoma related complications had lower albumin levels ($P = 0.016$), lower total lymphocytes ($P = <0.0001$) and had a more severe body weight loss ($P = 0.036$). Stoma reversal operation and proper nutritional support may be important for avoiding complications and improving patients' long-term outcomes and quality of life. (Kye et al 2013). A retrospective review determined the morbidity of a defunctioning loop ileostomy performed with a pelvic anastomosis during a 6-year period. Out of 123 patients, 64.2% developed ≥ 1 minor or major ileostomy complications. The ileostomy was reversed in 76.4% of patients with 8.6% requiring a midline laparotomy. The overall ileostomy-related reoperation rate was 10.4%. BMI ≥ 30 kg/m was associated with a higher overall ileostomy complication rate, outpatient complication rate,

decreased likelihood of ileostomy reversal and is an independent predictor of ileostomy complications. Age >65 years and hypertension increased the risks of high ileostomy output and dehydration. (Chun et al., 2012)

Stoma formation remains an often necessary surgical procedure which results in a dramatic change in the patient's life and needs careful planning together with nursing team and should follow the well-established surgical principles. A perfectly placed, technically correctly fashioned and easy to care for stoma is essential for a patient's good quality of life. (Renzulli et al 2007) The use of a loop ileostomy is an effective method to protect pelvic anastomoses, although a second operation is required to reverse the stoma, with potential complications. Fifty consecutive patients with a median age of 56 years underwent reversal of loop ileostomy, twelve patients (24%) developed complications: six had intestinal obstruction of which one required a laparotomy, four had wound infections of which one required re-operation, two died from ileal anastomotic leak and myocardial infarction respectively. (Williams et al., 2008) Structured patient education aimed at patient's psychosocial needs seems to have a positive effect on quality of life as well as on cost. The interventions may be performed before, during or after hospital stay. (Danielsen et al., 2013) In a retrospective study of seven hundred and eighty-two patients with a follow-up of 10.5 years, PSH was reported by 202 patients (25.6%) and appeared on average 18 months after creation of the stoma. Colostomy rather than ileostomy, age more than 60 years and peristomal complications at the time of stoma creation increased the risk. One hundred fourteen patients out of these 202 (56%) underwent operative repair and half of the patients had recurrence with an average of 6 months. PSH aggravates already diminished quality of life of stoma patients. (Ripoche et al., 2011)

A prospective audit of 3970 stomas of which 1329 (34%) were identified as needing one or more accessories to keep the patient clean and dry for a minimum period of 24 h studied causes of problems with stoma. They concluded that loop ileostomy, stoma of <10 mm, female gender and an emergency procedure caused more problems in patients who had stoma formed. They suggested that BMI of patient did not affect the outcome and because of significant variation of complications in different centres, surgical technique is the key factor in stoma formation and subsequent quality of life for the patient. (Cottam et al., 2007) A meta-analysis including three randomised controlled trials comparing ileostomy and loop colostomy to protect a distal colorectal anastomosis was performed. Outcome of a total of 1,204 patients of whom 719 (59.7%) underwent defunctioning loop ileostomy was analysed. Wound infections and incisional hernia following stoma reversal as well as overall stoma-related complications were less following

ileostomy except high stoma output and ileostomy is preferable to colostomy when used to defunction a distal colorectal anastomosis. (Tilney et al., 2007)

CONCLUSION

Stoma creation is not a trivial undertaking. Careful surgical technique minimizes complications which are relatively frequent and promotes good stoma function. PSH is common apart from other complications. The morbidity of stoma reversal is appreciable with hernia at stoma site being most common.

Conflict of Interest: None

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