ORIGINAL ARTICLE

Morbidity and mortality of colostomy closure

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Abstract

Objective: To Study The Complications and Mortality Associated with Reversal of Temporary Colostomy.

Design & Duration: Retrospective study January 1997 to December 2010.

Patients & Setting: All patients admitted for reversal of colostomy in Surgical Unit-III, Abbasi Shaheed Hospital Karachi.

Methodology: All patients with temporary colostomy, who underwent reversal of colostomy had a Barium study of distal bowel and sigmoidoscopy before admission. Bowel preparation was done with ORS solution and one gram sodium picosulfate dissolved in one litter water. Repair of the colostomy done using vicryl in two layers. All post operative complications & mortality reviewed.

Results: A total 131 patients underwent reversal of colostomy in 14 years Majority were male patients 113 (82.6%).Colostomies were made due to colon trauma in 119 (90.8%). Age between 21-40 years was seen in 86(65.6%) patients. In 98 (75%) patients the time of reversal was around 3 months. There were 21 complications in 14 patients thus morbidity was 10.6%. One patient died out of 131 and thus mortality was 0.76% and that was not related to reversal but due to postoperative cardiac ischemia

Conclusion: Colostomy reversal is a safe procedure with low morbidity and mortality.

Keywords: Colostomy closure, colon.

Introduction:

Temporary colostomy are of several types, loop transverse colostomy, loop sigmoid colostomy, exteriorization of injured bowel as colostomy and Hartmann's operation i.e. end colostomy and closure of rectal stump. Creation of temporary colostomy is a surgical tool to divert feaces from distal anastamosis, diseased bowel or exteriorization due to trauma not suitable for primary repair. It provides a true benefit and is life saving at the time of initial presentation. The morbidity and mortality of reversal of colostomy is insignificient[1,2]. The only drawback is patient requires a second admission and operation under general anaesthesia. The aim of our study is to evaluate our own experience and determine the complications and mortality that can occur due to colostomy reversal.

Patients and method:

All patients admitted for reversal of colostomy in surgical unit III, Abbasi Shaheed Hospital Karachi from January 1997 to December 2010 were included in the study. Patients with temporary Colostomy were admitted from the OPD one day before surgery. Preoperative barium study of the distal bowel was done in all patients except where exteriorization of injured colon was done. Sigmiodoscopy was done in patients where distal anastamosis or repair of colon was performed. Patients were kept on clear fluid diet only a day before surgery. Bowel preparation was done with ORS 1 sachet and sodium picosulfate 1 gram dissolved in one liter of water given orally a day before surgery. Kleen enema was given per rectal 12 hours before surgery. Intravenous

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line was maintained and serum electrolytes were checked in the evening.

Loop colostomy reversal was done intraperitoneally using vicryl no 2/0 in two layers. Only reversals of Hartman's procedure were performed through a midline incision.

The site, type and causes that led to making of temporary colostomy were studied. The time interval between construction and reversal of colostomy was recorded. All post operative complications and mortality if any due to the reversal of colostomy were studied.

Results:

A total 131 patients underwent reversal of colostomy in fourteen years. Majority of the patients were males 113(86.2%) and those between the age group 21 to 40 years were 86(65.6%) Table 1.

Colostomies were made in 119 (90.86%), patients with trauma to colon and 12 (9.1%) non-trauma cases. In trauma cases the firearm injuries were 105(80.1%) and 08 (6.1%) cases were due to blunt trauma abdomen. Table 2.

In non traumatic cases the majority were due to carcinoma colon 05 (3.8%). The sites of colostomy 50% in descending and sigmoid colon, 27% in transverse colon and 23% in ascending colon. Loop colostomy is the most common type of colostomy performed in 111 (84.7%) cases Table 3.

The reversals of colostomies were made mostly around 3 months 75% of cases Table 4. There were 21 complications that occurred in 14 patients who had reversal of colostomy. The resulting morbidity is 10.6%. In 9 patients there was superficial wound infection which was treated by removal of the stitches; antibiotics were given according to the sensitivity report. Secondary suturing was done when the wound was clean. There were 8 intra abdominal complications.

Two cases with anastomotic leaks were re-exteriorized as colostomy. One case developed intestinal obstruction post operatively which was explored and distal obstruction due to a band obstructing loop of small bowel was excised and patient recovered. One case with pelvic abscess respond to U/S guided aspiration. Two patients who had wound infections developed incisional

Table 1:

Age	Number of Patient	Percentage
<10 Year	0	0%
11-20 Years	18	13.7%
21-30 Years	50	38.1%
31-40 Years	36	27.5%
41-50 Years	11	08.4%
51-60 Years	5	03.8%
>60 Years	11	08.4%

Table 2:

Traumatic Causes	119 (90.8%)
Penetrating Injury	
Gunshot	105
Stab wounds	06
Blunt Trauma	
Road traffic Accidents	04
Fall	02
Foreign body in Rectum	02
Non Traumatic	12 (9.1%)
Anal Stenosis	02
Multiple Fistulae in Ano	01
Rectovaginal Fistulae	01
Carcinoma Descending & Sigmoid Colon	05
Angiodysplasia of Rectum	01
Ischemia of Descending & Sigmoid Colon	02

Table 3: *Types of Colostomy*

Loop Colostomy	111 (84.7%)
Double-barrel Colostomy	05 (3.8%)
Colostomy + Mucous Fistula	04 (3.1%)
Hartman's Procedure	11 (8.1%)

Table 4: *Timing of Reversal*

Less than 3 months	20 (15%)
3 – 6 months	98 (75%)
More than 6 months	13 (10%)

Table 5: *Morbidity*

Wound	
Wound infection	09
Intra Abdominal	
Anastamotic Leak	02
Intraabdominal Abscess	01
Intestinal Obstruction	01
Incisional Hernia	02
Prolonged Paralytic Ileus	01
Colicky Abdominal Pain	01
Others	
Urinary Tract Infection	02
Respiratory Tract Infection	01
Deep Venous Thrombosis	01

hernia subsequently which required repair on elective list. One patient develops prolonged paralytic ileus and colicky abdominal pain. It was managed by correction of electrolyte imbalance and giving analgesia.

The Mortality was 0.76%. A 65 years old diabetic male had a sigmoid colostomy after gunshot abdomen reversal done after 3 months developed localized peritonitis and on exploration leakage found at the anastomotic site which was re-exteriorized. He post operatively developed myocardial infarction and did not respond to treatment and died in ICU.

Discussion:

Colostomies are made for both traumatic and nontraumatic etiologies Majority of temporary colostomies were made in young males due to penetrating colonic injuries secondary to fire arm[3].

Colostomy reversal is an elective case; the patient is admitted 1-3 days before surgery. Gut is prepared preoperatively by both chemical and mechanical methods[4]. Preoperative barium enema and sigmoidoscopy is done prior to admission where required to check any distal pathology like stricture and leakage before reversal is performed.

Multiple factors influence the morbidity which occurs in patients with colostomy reversal. They are the surgeon's experience, bowel preparation, timing of the operation, the operative technique and the site of colostomy.

Timing of reversal of colostomy is a debatable issue among surgeons. Some advocate same admission colostomy closure (SACC) in selective patients over conventional delayed colostomy closure (CDCC)[5], others report that the colostomies closed after a minimum of 90 days have lower complication rate[6], as there is ample time for the patients to recover from the catabolic process inflicted by the original injury or disease.

Early closure is preferred by the patient as it reduces the expenses incurred due to colostomy appliances and the feeling of uneasiness due to having a stoma. An advantage of early reversal is that the passage of formed faeces can gently dilate the anastamosis and prevents stenosis and stricture formation.

Reversal of colostomy is delayed as time is required for edema, inflammation and congestion to settle. It is easier to find tissue planes during dissection and less chances of making further damage to the colon, a feature that most surgeons also recognize. It is preferable to delay reversal of colostomy for 3 months. Results suggest that colostomies closed after minimum 3 months has lower complication rates[6,7].

The stoma is usually closed with 2/0 vicryl in two layers, the first continuous and second interrupted. The stoma has been successfully reversed by single layer interrupted sutures. The colostomy wound is a potentially contaminated wound. It is traditionally closed with interrupted skin stitches with placement of intraperitoneal drain. A study shows colostomies closed by subcuticle skin sutures without a drain does not results in any increased incidence of wound infection and has better cosmetic results[8].

The loop colostomies appear to have fever complications at the time of closure then divided stomas and Hartmann's reversal[6]. The morbidity after colostomy closure ranges between 10% to 38%[1,2,6,9]. In our study the morbidity was 10.6%

and majority of the complications were minor and does not require any surgical intervention.

Complication included minor complications like wound infection urinary tract infection, ileus, respiratory tract infection and major complications like myocardial infarction, leaks, intestinal obstruction and incisional hernias. Mortality from colostomy closure is 0% to 3%[1,2,9,10].In our study the mortality was <1% and the single patient died post operatively was due to cardiac ischemia and not related to the reversal

Conclusion:

It has been concluded in this study that the most common indication for colostomy construction is the penetrating fire arm injuries of the abdomen. The loop colostomies are the commonest type of colostomy performed. The colostomy reversal is a safe procedure with low morbidity and mortality.

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