Early Stoma Closure in Patients with Temporary Intestinal Stoma's- A Hospital Based Study.

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ABSTRACT

Background: Intestinal stoma formation is beneficial in patients who cannot sustain prolonged surgery due to poor general condition, hemodynamic instability or other co-morbid conditions. Stoma formation decreases mortality and morbidity in such patients. However, stoma formation itself is associated with complications like skin irritation, prolapse, retraction, electrolytes loss etc. Early closure of temporary stomas will reduce patient's physical and psychological discomfort. Aim: - To study the feasibility and advantages/ disadvantages of early closure of temporary intestinal stomas i.e. within 3 weeks. Design and Place:-This is a prospective observational study which was conducted over one year (2011 to 2012) on thirty (31) patients with temporary stomas for various etiology admitted in Department of surgery, Government medical college, Jammu. **Methods:** Patients with temporary stoma for various reasons were subjected to early stoma closure i.e. within three weeks (21 days) after confirming distal patency. Merits and complications of early stoma closure were noted. **Results:** Out of 31 patients, early stoma closure was done in 30 patients. Intra-operatively one (3.33%) patient was found to have pus collections, so stoma closure was not done. Wound infection in 5(16.6%) patients, Paralytic Ileus in 2(6.66%) patients and wound dehiscence in 1(3.33%) patient were the noted complications, all of which were managed conservatively. One patient (3.33%) had post stoma closure intestinal obstruction for which re-laparotomy was done and stoma recreated. **Conclusion:** Early closure of temporary stoma offers improved quality of life to the patient with no significant post operative complications.

Keywords: Stoma, Ileostomy, Colostomy, Mucous Fistula.

INTRODUCTION

Intestinal Stoma is an opening of intestine on the anterior abdominal wall made surgically.[16]

Stomas can be classified as input stomas like Gastrostomy and Jejunostomy which are temporary and used mainly for enteral feeding; diversion stomas like Pharyngostomy, ileostomy (loop or split), colostomy (loop ,transverse or sigmoid) which are also temporary and output stomas like terminal ileostomy and terminal colostomy . The commonly performed procedures include colostomy and ileostomy.

Colostomy is a procedure wherein small portion of colon (large intestine)is brought to surface of abdominal wall to divert faeces and flatus to the exterior, where it is collected in an external appliance. Effulent is usually solid. It may be temporary or permanent.

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Ileostomy is defined as procedure when opening is created in the ileal part of small intestine and is brought to surface of abdominal wall to from stoma so as to bypass the colon for stool elimination. It can be end ilestomy in case where total proctocolectomy is done, for example ulcerative colitis, crohn's disease and familial polyposis coli and loop colostomy which is mainly for defunctioning and protecting distal bowel anastomosis.

Different type of bowel stomas are loop, end or terminal, double barrel and Paul- Miculikz in which two ends brought to the surface together where adjacent serosal surfaces are hitched by sutures and adjacent mucosal surfaces are sutured and separate with proximal faecal fistula and distal mucous fistula The first planned colostomy was performed in 1776 by French surgeon M.Pilore.[10] While first recorded operative ileostomy was performed in the year 1879 by Baum , a German surgeon.[21]

A defunctioning stoma is used primarily to protect the anastomosis and prevent sepsis. Several studies have shown that particular benefit of covering stoma was reduction in number of leaks requiring surgery.[19]

Creating a temporary defunctioning stoma reduces septic complications and rate of clinically relevant

anastomotic leakages requiring further laparotomy.[12-15,20]

However, temporary stoma is a morbid condition in itself with skin problems, application and cost of stoma devices, lack of working ostomy appliances and social as well as psychological discrimination severely affecting quality of life.

It also involves more patient morbidity because of its complications like wound infection, irritation, diarrhea, prolapse, retraction, parastomal hernia, ileus, increased salt and fluid loss and intestinal obstruction.[13- 23,20]

Stoma surgery is associated with high cost for patient and society alike. Patients experience a reduced quality of life due to feeling of physical and mental restriction. Ostomies are socio-economically expensive because they require training in ostomy care, multiple hospitalization and frequent contact with general practioners and hospital clinics. So it is needed that temporary stomas should be closed as early as possible to reduced physical and mental trauma to patient, morbidity and economical burden on patient and society.

The rationale is thus clear so as to create or determine an optimal time for closure of these stoma's in centre where lack of facilities and associated morbidity can be tackled by early closure exhibiting an improved effect on outcome of primary disease process.

Previously there was saying that " fortunate is the colostomy patient who can look forward to the day when his troublesome and foul artificial anus can be closed" .But now many studies have shown that more and more patients can be made fortunate by closing their stoma early if feasible.

There is evidence that early closure of stoma when done in selected patient is feasible and rate of postoperative complication is reduced in such patients as compared to those where delayed closure is done.[4]

Early and delayed closures are associated with same levels of mortality and re- laparotomies with same duration of total hospital stay- postoperative and duration of surgery.[18]

Early closure can be performed during same hospital admission as primary operation which will reduce patient's physical and psychological discomfort.

Thus, in our study early closure were assessed in more detail in terms of post closure complications and length of hospital stay including re-admission

Aims and objectives:

- To find out feasibility of early temporary intestinal stoma closure within 3 weeks.
- To study the advantages and disadvantages of early closure of temporary intestinal stomas.

MATERIALS AND METHODS

This prospective study was carried in 31 patients admitted in Post graduate Department of Surgery, Government medical college Jammu over a period of one year.

Inclusion criteria

All cases whether Elective or Emergency, in which stoma was created for temporary fecal diversion.

Exclusion criteria

Patients with known case of liver disease, bleeding disorder, Hypoalbuminemia, contraindications for Anaesthesia, permanent end stoma, stoma for enteral feeding and patients with sepsis.

Methodology

A written informed consent was obtained from all patients .Patients were subjected to detailed history taking and a complete clinical examination. All baseline investigation was done.

In all patients prior to stoma closure, distal obstruction was ruled out. Distal Patency was confirmed by contrast study. Preoperative bowel preparation was done with PEG (polyethylene glycol) Lavage solution along with preparation of distal bowel loop by rectal washes and enemas.

Operative Technique

The technique of stoma closure involved Peristomal incision which included excoriated skin. Peritoneum was opened from scar free area as it prevents excess bleeding and allows early abdominal entry which facilitates easy and rapid mobilization of stoma. It also prevents inadvertent injury to neighboring bowel. Stoma margins were freshened and anastomosis was done in single (20 patients) or double layer (10 patients). Suture material used for closure was vicryl 2-0, 3-0, 4-0 according to need. CRD or tube drain was kept in abdominal cavity depending on extent of contamination. Muscle and sheath closure was done with vicryl 1no/ PDS respectively. Skin was closed with silk.

Post Operative Care And Evaluation

Patient was kept nil per oral with intravenous fluid and antibiotics for 3-5 days and with nasogastric suction. Orals were started when bowel activity in the form of bowel sounds and passage of flatus or stools was present. Oral intake was increased as per progress of patient. Immediate complications were noted and dealt accordingly like wound infection with proper antiseptic dressing.

RESULTS

In order to study feasibility and advantages/disadvantages of early closure of temporary intestinal stoma i.e. within 3 weeks, 31 patients were selected on the basis of inclusion/exclusion criteria but stomas were closed only in 30 patients as one patient had intra-abdominal pus collection and closure of stoma was

aborted. All stomas closed were meant for fecal diversion.

Day of closure: In our study temporary intestinal stomas for diversion were subjected for early closure within 3 weeks. Stoma closure day was decided according to the condition of patient (radiological and clinical) in accordance with inclusion and exclusion criteria. In our study all stomas were closed between 14 to 21 days.

Method of Closure and Suture

Single layer closure was done in 20 (66.66%) patients and double layer technique was used in 10 patients (33.33%). Endostapler was used along with vicryl 3-0 in one patient. Intra-abdominal drain was kept in all patients (CRD or tube drain) to detect early leakage and prevent any abdominal collection.

Postoperative Complication

Specific stoma closure related complications observed were divided into early complications and late complications.

Early complications present were wound infection in 5 patients(16.6%), paralytic ileus in 2 patients(6.66) and wound dehiscence in 1 patient(3,33%).

Late complications were present only in one patient who presented with intestinal obstruction and was re-operated. Stenosis was seen at the site of closure where endo stapler was used which resulted in proximal gut ischemia and hence, resection with re-ileostomy was done.

It was seen that wound infection was the most common complication. This complication was managed by proper selection of antibiotics and above all proper antiseptic dressing.

Complication rate was more in patients with Co-morbid conditions. Wound infection in two patients and wound dehiscence in one patient who were having Diabetes Mellitus.2 patients with active pulmonary tuberculosis also had wound infection.

Table 1: Aetiological causes of stoma formation.

Indication	No Of Patients	Aetiology	Percentage
Intestinal obstruction	9	Worm obstruction.1 Adhesion obstruction.2 Others.6	29.03
Trauma	6	Penetrating.3 Blunt.1 Rectal.2	19.35
Perforation Peritonitis	9	Enteric perforation 8 Appendicular Perforation 1	29.03
Volvolus	3		9.67
Fournier's gangrene	2		6.45
Recto-vaginal fistula	1		3.22
Acute Mesenteric ischemia	1		3,22
Total	31		100

Hospital Stay

In our study stoma closure was done either as same admission stoma closure (SASC) or Re –Admission Stoma closure (RASC).

Duration of hospital stay in same admission stoma closure ranges from 22 to 32 days with average duration 26.38 days. Duration of hospital stay in re admission stoma closure ranges from 9 to 18 days with average of 12.76 days. But post closure hospital stay duration was same both in same admission closure group and readmission closure group. Thus more accurate assessment of total number of days in convalescence could be calculated by post closure hospital stay ranges from 4 to 11 days with average 7.46 days. As most of our complications of stoma closure were easily manageable by proper use of antibiotics and antiseptic dressing, they had little effect on total hospital stay duration.

Table 2: Types of Stoma for Closure.

Type	No. Of Causes	Percentage
Loop ileostomy	7	22.58
Ileostomy + mucous fistula	14	45.16
Transverse colostomy	4	12.90
Sigmoid colostomy	2	6.45
Sigmoid colostomy + mucous fistula	3	9.76
Jejunostomy	1	3.22
Total	31	100

Table 3: Timing of stoma closure.

Days	No	Percentage
<14	–	-
14-17	5	16.66
18-21	25	83.33

Table 4: Complication of stoma closure early complications.

Complication	No Of Cases	Percentage
Wound Infection	5	16.6%
Intra Abdominal Abscess	-	-
Paralytic Ileus	2	6.66%
Anastomotic Leak	-	-
Wound Dehiscence	1	3.33%

Late Complication

Intestinal obstruction	1	3.33%
Incisional hernia	-	-

DISCUSSION

It is seen that various etiological conditions warrant the formation of intestinal stoma for survival of patient and to prevent various complications. Thus it is most commonly performed procedure in the world. Stomas are created both in emergency and elective setting, but have been notorious with surgeons for their high rates of morbidity and mortality and also for the patient who experiences a reduced quality of life due to feeling of physical and mental restriction. Thus there is need that temporary stoma should be closed as early as possible.

In our study, 31 patients selected on the basis of inclusion and exclusion criteria underwent closure of their temporary intestinal stomas early within 3 weeks. Stoma was closed only in 30 patients as one patient was left out due to presence of intra-abdominal pus collection.

Specific stoma closure related complications observed were divided into early complications and late complications. Early complications seen were wound infection in 5 patients (16.6)%, paralytic ileus in 2 patients (6.66)% and wound dehiscence in 1 patient(3.33)%. Late complication was present only in one patient who presented with intestinal obstruction and was re operated. Duration of hospital stay in same admission stoma closure (SASC) was 22 to 32 days with average duration of 26.8.days. Duration of hospital stay in readmission stoma closure (RASC) was 9 to 18 days with average of 12.76 days. Most of our complications of early stoma closure were easily manageable by proper use of antibiotics and antiseptic dressings; they had little effect on total duration of hospital stay.

CONCLUSION

No doubt intestinal stoma formation is necessary for various reasons in patients who have poor general condition and cannot withstand long duration surgery thereby decreasing their morbidity and mortality. Early stoma closure gives the advantage against stoma-related complications by reducing their time frame. Finally conclusion can be made that to give a better care to stoma patient both after creation and after early closure, there is need of set-up involving dedicated team of doctors especially for appropriate selection of patient for early closure, stoma therapist, nurses, physiotherapists and intensive care specialist in making the outcome of early closure of stoma better.

REFERENCES

1. Adam Lewis and David Weeden. Early closure of transverse loop colostomies. Annals royal college of surgeons England 1982; 64:57-8.
2. Adnan Aziz, Irfan sheikh , Masood Jawaid et al Indication and complications of loop ileostomy. Journal of surgery Pakistan 14 (3) July- September 2009.
3. Akram Rajput, Abdul Samad, Tariq Wahab Khanzada. Temporary loop ileostomy: prospective study of indications and complications. Rawal medical journal 2007; 32: 159-162.
4. Alevis A. Panis Y, Lelong B et al. Randomized clinical trial of early versus delayed temporary stoma closure after proctectomy. British journal of surgery 2008; 95: 693-8.
5. Bax TW, McNevin MS. The value of diverting loop ileostomy on high risk colon and rectal anastomosis. American journal surgery 2007; 193: 585-588.
6. BM Renz, D V Felciano and R Sherman. Same admission colostomy closure (SAAC). A new approach to rectal wounds: a prospective study. Annals of surgery, 1993; 218(3): 279-293.
7. Bozzetti F, Nava M, Bufalino R. Early local complications following colostomy closure in cancer patients. Diseases colon and rectum 1983; 26: 25-29.
8. Brennan JC, Steele RJ, Prospective analysis of quality of life after reversal of a defunctioning loop ileostomy. Colorectal disease 2001; 4: 167-7
9. Caroline M Aston , William G Everett. Comparison of early and late closure of temporary loop colostomies. Annals of the royal college of surgeons of England 1984; 66: 331-333.
10. Cromar CD. Evolution of colostomy. Disease of colon and rectum 1968; 11 (4): 256-80.
11. Freund HR, RanielJ, Muggia S ulam M. Factors affecting the morbidity of colostomy closure: a retrospective study. Diseases colon and rectum 1982; 25: 712-715.
12. Gastringer I, Marusch F, Steinert R et al. Protective defunctioning stoma in low anterior resection for rectal carcinoma. British journal surgery 2005; 92 : 1137-42
13. Gooszen AW, G eelkerken RH, Herman Jet al. Temporary decompression after colorectal surgery : randomized comparison of loop ileostomy and loop colostomy. British journal surgery 1998; 85: 76-79.
14. Griffth CN, Berne TV , Hill J et al. Colostomy wound closure. Archives surgery 1985; 120: 957-959.
15. Huser N, Michalski CW, Erkan M et al. Systematic review and meta- analysis of role of defunctioning stoma in low rectal cancer surgery. Annals of surgery 2008; 248: 52- 60.
16. Irving MH Hulme O. Intestinal stomas British medical journal 1992; 304: 1679-1681
17. Karanjia ND, Corder AP, Hold worth PJ et al. Risk of peritonitis and fatal septicemia and need to defunction the low anastomosis. British journal surgery 1991; 78: 196-198.
18. Krand O ,Yalti T, Berber I et al. Early versus delayed closure of temporary covering ileostomy: a prospective study. Hepatogastroenterology 2008; 55:142-5
19. Marusch F, Koch A, Schmidt U et al. Value of protective stoma in low anterior resection for rectal cancer. Disease colon rectum 2002;45: 1164-1171.
20. Mathiessen P, Hallbook O, Rutegard J et al. Defunctioning stoma reduces symptomatic anastomotic leakage after low anterior resection of rectum for cancer. Annals surgery 2007; 246:207-14.
21. Mc Garity W. Salute to et nurses. Journal of enterostomal therapy 1992;19(2) 40-41
22. Poon RT, Chu KW, H complications. Prospective evaluation of selective de functioning stoma for low anterior resection with total mesorectal excision. World journal surgery 1999; 23: : 463-467.
23. Robertsen I, Leung E, Hughes D et al. Prospective analysis of stoma –related complications. Colorectal disease 2005; 7: 279-85.