Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Surgery

Loop Sigmoid Colostomy Vs Laparoscoic Diversion Colostomy in Management of Ano-Rectal Pathology: A Clinical Study

Anurup Saha[1], Sandip Majumdar[2*]

[1]Post graduate trainee, Department of General Surgery, [2]Professor, Department of General Surgery, Calcutta National Medical College, Kolkata India

***Corresponding author:** Sandip Majumdar

| **Received:** 20.05.2019 | **Accepted:** 04.06.2019 | **Published:** 19.06.2019
DOI: 10.36347/sjams.2019.v07i06.010

Abstract | **Original Research Article**

Introduction: Anorectal pathologies whether benign or malignant often require a faecal diversion before a definitive management is carried out. The various options available are midline laparotomy, laparoscopic diversion and diversion through a small transverse incision over the left iliac fossa. ***Aims and objectives:*** The aim of this study is to evaluate the benefits of a loop sigmoid colostomy through a small LIF transverse incision as compared to a diversion done through a laparoscopic approach. ***Method:*** A prospective clinical study was carried out on sixty patients with benign anorectal pathologies requiring faecal diversion. Thirty patients were randomly assigned to undergo loop sigmoid colostomy through a small LIF transverse incision and the remaining was assigned to undergo laparoscopic diversion. Patients with acute intestinal obstruction and anorectal malignancies were excluded from the study. ***Results:*** The patients who underwent sigmoid colostomy through a small transverse LIF incision had reduced hospital stay with less post-operative morbidity, early return to feeding, with minimal incidence of post-operative sub-acute obstruction due to adhesions. In addition, this procedure could be done under spinal anaesthesia and even safe in the hands of surgical residents and easy to learn. It can even be undertaken in patients in whom laparoscopy is contraindicated. ***Conclusion:*** Though laparoscopy is now the preferable mode of surgery over open procedures this study reveals that the sigmoid colostomy through a small transverse LIF incision has definitive advantage over laparoscopic diversion.

Key words: Loop Sigmoid Colostomy Diversion Colostomy in Management.

INTRODUCTION

Traditionally anorectal pathologies of diverse etiology often demand a short duration faecal diversion before a definitive management is carried out. The options are: 1.) midline laparotomy 2.) Laparoscopic diversion 3.) Diversion through a small single transverse incision over the left iliac fossa TREPHINE STOMA.

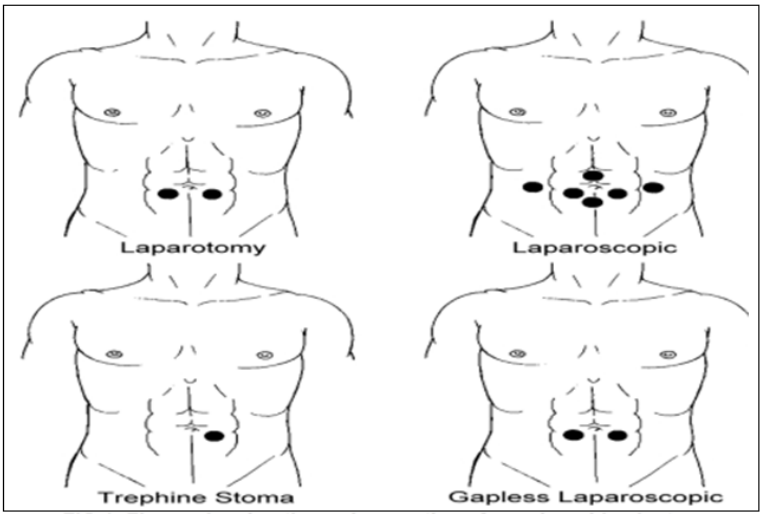


Fig-1: Figure showing the various options for a sigmoid colostomy

Open stoma creation through a lower midline laparotomy has been traditionally considered to be superior for temporary faecal diversion, as it allows a thorough examination of the abdomen.

However, exploration of the abdomen may result in post-operative adhesions. This can result in increased morbidity due to sub-acute intestinal obstruction and increase the operative time for the definitive procedure undertaken later on.

Laparoscopic stoma (LS) creation in the present era of minimal access surgery for faecal diversion is being executed with reasonable success. However it can extend the operative time because the technique is challenging with a longer learning curve and not readily accessible to residents who are commonly entrusted with this procedure [4]. Laparoscopic surgery enables detailed intra-abdominal inspection, accurate biopsy, and bowel selection that can be easily pulled to the desired stoma site.

Trephine open stoma (TOS) through a LIF transverse incision is an alternative which avoids the morbidity of the laparotomy approach and at the same time provides the benefits of LS like lesser operating time and better cosmesis. It provides a virgin abdomen for the surgeon undertaking the definitive procedure later.

Each approach has benefits, but comparative analyses of these techniques are scarce [7, 8]. We have compared the clinical outcomes and advantages of LS and TOS creations through a single LIF transverse incision.

AIMS AND OBJECTIVES

The aim of this study is to evaluate the clinical outcome of a loop sigmoid colostomy through a small LIF transverse incision as compared to a diversion done through a laparoscopic approach based on the following parameters:

a.) Indication of stoma creation, b.) Mean operating time c.) Average blood loss d.) Postoperative appearance of bowel sounds, e.) Postoperative day on which diet can be allowed, f.) Incidence of postoperative sub-acute intestinal obstruction, g.) Stomal complications h.) Length of hospital stay and i.) Type of anaesthesia

METHODS

Type of study: Prospective clinical study
Study Period: Eighteen month period from January 2017 to June 2018.
Study Population: Sixty (60) patients. Thirty patients were randomly assigned to undergo loop sigmoid colostomy through a small LIF transverse incision (TOS group) and the remaining was assigned to undergo laparoscopic diversion (LS group).
Study Place: Department of General Surgery at Calcutta National Medical College.
Inclusion Criteria: Benign anal strictures arising out of a.) overzealous haemorrhoidectomy b.) Inflammation of the anus in inflammatory bowel disease c.) radiotherapy d.) Tuberculosis e.) Chemical burns f.) Recto-vaginal fistula Diagnosed by CT/MRI scan and colonoscopy

Exclusion criteria: a) acute intestinal obstruction. b) Ano-rectal malignancy. c) Patients with bleeding diathesis

SURGICAL TECHNIQUES

Mostly, TOS creation through a LIF transverse incision was performed through a single 2-3 cm incision at the preoperatively marked stoma site using the “trephine stoma” single-incision open OS technique as reported by Senapati and Phillips [7].

The bowel intended for the stoma was pulled up and the stoma was created at the planned site.

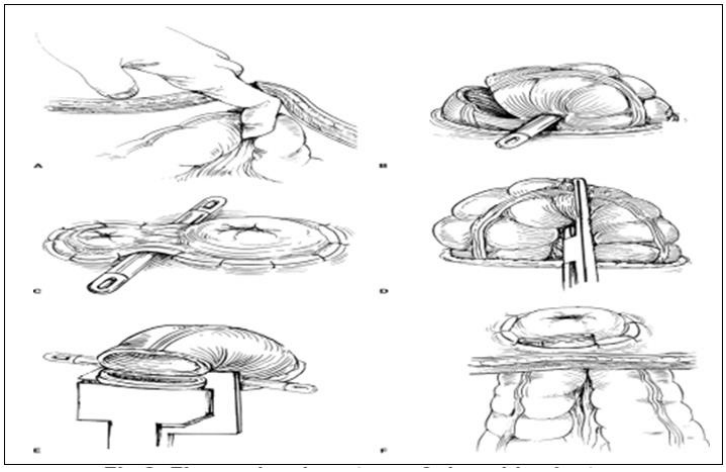


Fig-2: Figure showing steps of sigmoid colostomy through a single LIF transverse incision

In LS creation, three ports were routinely used. First, a 12-mm port was placed at the umbilicus, and then two 5-mm ports were made in the upper- and lower-lateral quadrants. The 5-mm ports were placed on the opposite side of the planned stoma site, and one or two ports were added, if necessary. In this approach, four stoma sites were marked but not incised, and the bowel most suitable for placement at one of the planned sites was chosen. After selecting the stoma site, the site was incised and the bowel was extracted. In all procedures, the extracted bowel was sutured and fixed to the fascia and skin with 3-0 polyglycolic acid sutures [9,10,13].

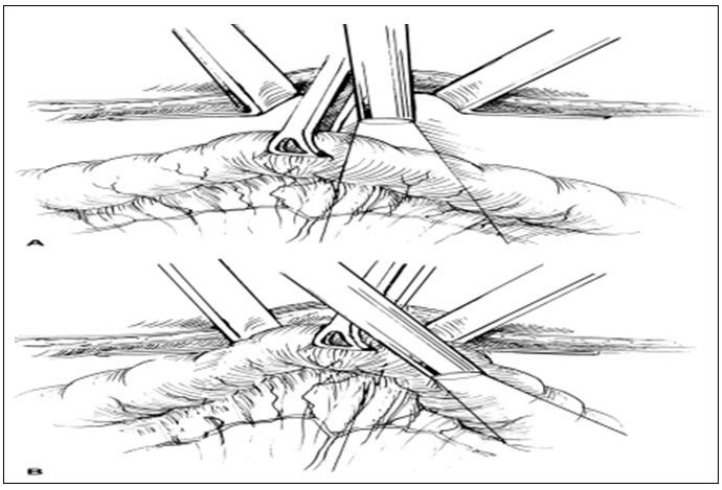
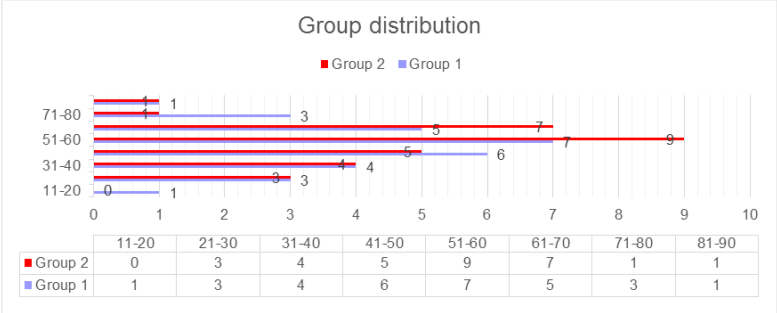


Fig-3: Figure showing steps of laparoscopic stoma creation

RESULTS

AGE: The age group of 40-60 years has the highest incidence as compared to the extremes of age.

Patient demographics



	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Group 2	0	3	4	5	9	7	1	1
Group 1	1	3	4	6	7	5	3	1

Fig-4: Age distribution of patients across both study groups

SEX DISTRIBUTION

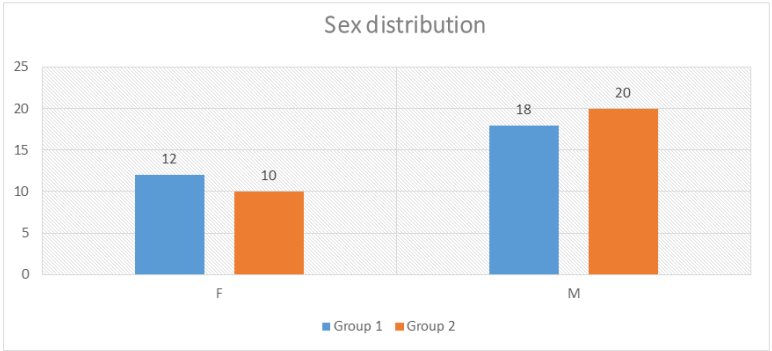


Fig-5: Sex distribution of the patients

Group-1: TOS Group, Group 2: LS Group

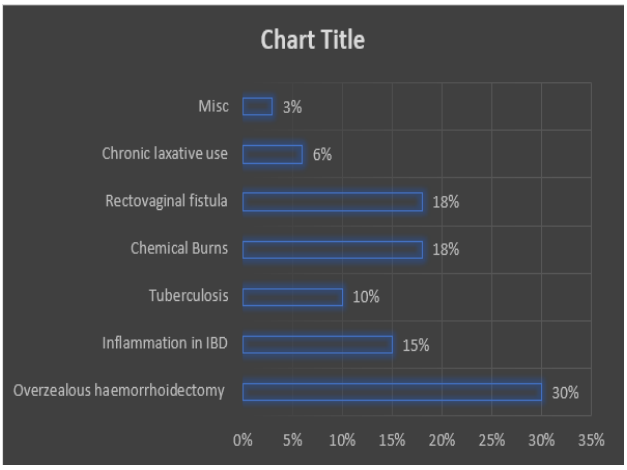


Fig-6: Statistical representation of causes of faecal diversion

The TOS group had less operating time with a mean of 25.2 mins as compared to the LS group with a mean of 61 mins, (p=0.23).

The mean blood loss was comparable, in the LS group 18.4 ml and in the TOS group 15.1ml (*p*=0.12). There was one conversion in the LS group.

Bowel sounds returned earlier in the TOS group with a mean of 1.5 days as compared to 2.33 days in the LS group post-operatively.(p=0.01)

Earlier return of bowel sounds facilitated earlier allowance of diet to the TOS group with a mean of 2.63 days as compared to the LS group at 3.67 days.(p=0.02)

The incidence of stomal complications like stomal prolapse and dehiscence was significantly lesser in the TOS group (p=.40)

Similarly the incidence of postoperative complications like wound infection and post-operative sub-acute intestinal obstruction was significantly lesser in the TOS group than the LS group (p=0.04).

Fig 7: Stomal prolapse in the TOS group

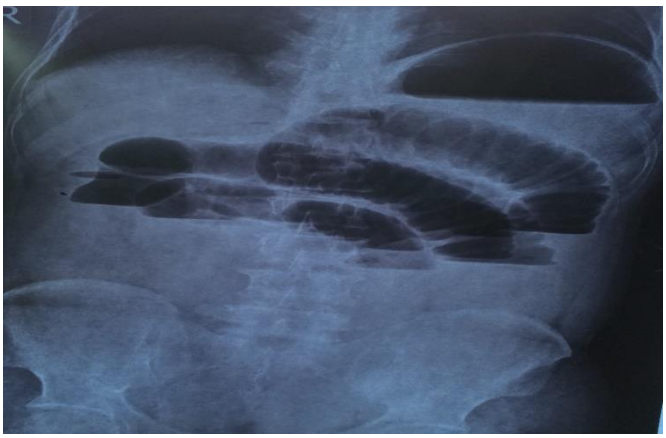


Fig-8: Radiograph showing post-operative SAIO

With a reduced incidence of stomal and post-operative complications the TOS group had a reduced hospital stay with a mean of 4.5 days as compared to the LS group with a mean of 6.1 days.

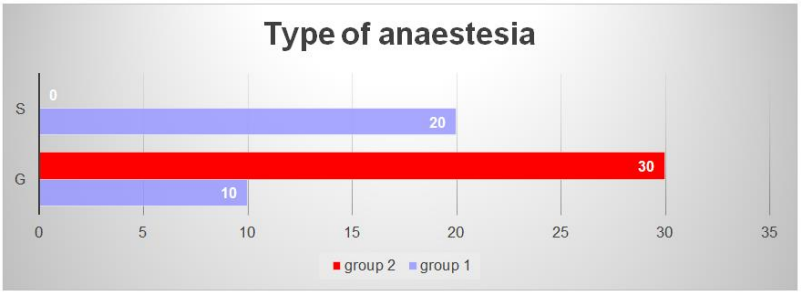


Fig-9: Bar diagram showing the type of anaesthesia

As evident, pneumopertitoneum and general anaesthesia are pre-requisites for laparoscopy, in the TOS group it can be carried out under regional anaesthesia in whom GA /pneumoperitoneum is contra-indicated (33.33%).

DISCUSSION

Conventional approaches for stoma creation require an open laparotomy incision; however, less invasive techniques, such as single-incision stoma creation, termed "trephine stoma" technique, have become popular[1,5]. In recent years, laparoscopic techniques have been adopted for various surgeries, including stoma creation. Since Khoo *et al.* first reported the technique of laparoscopic stoma.

Many less invasive techniques for stoma creation, including SILS and gasless LS creation, have been described. In our study, the average operative time, in the TOS group was less as compared to the LS group. The blood loss in the LS group was comparable to the TOS group.LS is a useful approach for patients who require biopsies or intra-abdominal inspection. The TOS group had earlier return of bowel sounds, early return to feeding, less incidence of stomal complications and sub-acute intestinal obstruction and duration of hospital stay.

In addition, the LIF transverse incision approach could be undertaken on patients under spinal anaesthesia and hence could be undertaken on patients with contraindication to general anaesthesia. In addition the LIF incision stoma does not create any additional scar and its cosmesis is comparable to the LS group.

Fig-10: Laparoscopic Stoma Creation

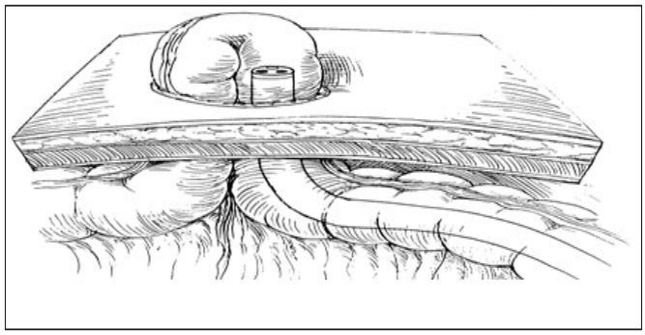


Fig-11: Trephine Open Stoma (TOS) Creation

LIMITATIONS OF THE STUDY

- Patients with acute intestinal obstruction were excluded from this study because it is difficult to maintain a good visual field amongst the dilated bowel.
- This is a single-center study on a small population. Therefore, more randomized controlled studies with additional cases from multiple centers are required to fully evaluate the safety and feasibility of this technique.

CONCLUSION

Though laparoscopy is now the preferable mode of surgery over open surgery in most abdominal procedures this study reveals that the sigmoid colostomy through a small transverse LIF incision has definitive advantage over laparoscopic diversion and can be safely executed by residents.

REFERENCES

1. Hayashi K, Kotake M, Hada M, Sawada K, Oshima M, Kato Y, Oyama K, Hara T. Laparoscopic versus Open stoma creation: A retrospective analysis. Journal of the Anus, Rectum and Colon. 2017 Jul 27;1(3):84-8.
2. Clinical Outcomes of Surgical Therapy Study Group. A comparison of laparoscopically assisted and open colectomy for colon cancer. N Engl J Med. 2004 May;2004(350):2050-9.
3. Oliveira L, Reissman P, Nogueras J, Wexner SD. Laparoscopic creation of stomas. Surgical endoscopy. 1997 Jan 1;11(1):19-23.
4. Schwandner O, Schiedeck THK, Bruch HP. Stoma creation for fecal diversion: is the laparoscopic technique appropriate? Int J Colorect Dis. 1998 Dec;13(5-6):251-5.
5. Lucia O. Laparoscopic stoma creation and closure. Semin Laparosc Surg. 2003;10:191-6.
6. Subhas G, Kim E, Gupta A, Mittal VK, Mckendrick A. Laparoscopic loop ileostomy with a single-port stab incision technique. Techniques in coloproctology. 2011 Sep 1;15(3):337-9.
7. Senapati A, Phillips RK. The trephine colostomy: A permanent left iliac fossa end colostomy without recourse to laparotomy. Ann R CollSurg Engl. 1991 Sep;73(5):305-6.
8. Hellinger MD, Martinez SA, Parra-Davila E, Yeguez J, Sands LR. Gasless laparoscopic-assisted intestinal stoma creation through a single incision. Diseases of the colon & rectum. 1999 Sep 1;42(9):1228-31.
9. Liu J, Bruch HP, Farke S, Nolde J, Schwandner O. Stoma formation for fecal diversion: a plea for the laparoscopic approach. Techniques in coloproctology. 2005 Apr 1;9(1):9-14.
10. Karen N, Zuri M, Phillip R. Scarless single-incision laparoscopic loop ileostomy: A novel technique. Dis Colon Rectum. 2011 Dec; 54(12):1542-6.
11. Nguyen HM, Causey MW, Steele SR, Maykel JA. Single-port laparoscopic diverting sigmoid colostomy. Diseases of the Colon & Rectum. 2011 Dec 1;54(12):1585-8.
12. Subhas G, Kim E, Gupta A, Mittal VK, Mckendrick A. Laparoscopic loop ileostomy with a single-port stab incision technique. Techniques in coloproctology. 2011 Sep 1;15(3):337-9.
13. Hasegawa J, Hirota M, Kim HM, Mikata S, Shimizu J, Soma Y, Nezu R. Single-incision laparoscopic stoma creation: Experience with 31 consecutive cases. Asian journal of endoscopic surgery. 2013 Aug;6(3):181-5.
14. Miyoshi N, Fujino S, Ohue M, Yasui M, Noura S, Wada Y, Kimura R, Sugimura K, Tomokuni A, Akita H, Kobayashi S. Standardized technique for single-incision laparoscopic-assisted stoma creation. World journal of gastrointestinal endoscopy. 2016 Aug 10;8(15):541.
15. Michael K, Michitaka K. Avoidance and management of stomal complications. Clin Colon Rectal Surg. 2013 Jun;26(02):112-21.