ORIGINAL ARTICLE

Closure of Loop Ileostomies: is Early Discharge Safe and Achievable?

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Abstract

A prospective audit of the complications associated with reversal of a loop ileostomy was carried out between March 2000 and March 2005. The complication rate, length of inpatient hospitalisation and re-admission rate were assessed in 100 patients, in a single clinical practice. The median (interquartile range) length of time between the primary procedure and closure was 133 days (120 – 270) days. Median length of inpatient stay was two days (one - three) days. The overall complication rate was 18 %. One patient had a post-operative leak leading to local abscess formation. This was drained surgically after initial failure with radiological drainage. A second patient had a late leak, three weeks after closure, leading to fistula formation. This patient required surgical resection of the anastomosis after failure of conservative management. Twelve patients were re-admitted with small bowel obstruction (12%), of whom 11 were managed conservatively, while one underwent further surgery. There was one post- operative death as a result of acute cardiac failure secondary to undiagnosed hypertensive cardiomyopathy.

Thus early discharge following closure of a loop ileostomy, can be achieved with an acceptably low serious complication rate.

Introduction

Temporary loop ileostomies are being used increasingly in colorectal surgery and are now the stoma of choice in defunctioning a distal anastomosis.[1,2] Traditionally, closure has required hospital admission with observation until return of bowel function. While closure is simple and usually does not require a laparotomy, complications do occur which could affect the length of inpatient hospitalisation following both construction and subsequent closure. With increasing pressure on the NHS to reduce length of hospitalisation, it is important that the pre-operative, operative and post-operative periods are managed actively. Accelerated recovery programs for major surgery have demonstrated the benefit to patients of early mobilisation, early introduction of diet and early discharge without compromising patient care.[3,4] In addition, a shorter inpatient stay, if shown to be safe, reduces exposure to hospital acquired infection.

This audit analyses prospectively the complication rate, length of inpatient hospitalisation and re-admission rate in patients undergoing closure of loop ileostomy in a single clinical practice. The results are presented as a median (interquartile range).

Patients and Methods

Between March 2000 and March 2005, 100 patients (57 males) underwent reversal of loop ileostomy. Median age at admission was 56 years (47-67) years.

A proforma was devised to include patient admission details, indication for surgery, complications and readmissions. All patients had pre-operative, operative and post-operative data collected prospectively and entered into a database.

All patients were fasted for surgery from the night before, but bowel prep was not used.

Surgical Technique: The area of skin around the stoma was infiltrated with 15 - 30 mls of 0.5 % marcaine/adrenaline (1 in 200 000). This reduced intra-operative bleeding and helped clarify the anatomy. The ileostomy was mobilised in an anatomical fashion, preserving the architecture of the sheath and rectus muscle. All intraperitoneal adhesions in immediate relation to the mobilised stoma were divided. Following full mobilisation of the ileostomy, care was taken to preserve the spout which was subsequently reverted. A Cheadle slit (a longitudinal cut in the anti-mesenteric border) was performed occasionally in the distal segment to prevent narrowing of the distal lumen. This had the effect of widening the lumen of the bowel at the anastomosis. The bowel was closed transversely with interrupted sutures, using 3.0 biosyn (monofilament glycomer). The wound was closed with two interrupted sutures to the muscles (No 1 polysorb: braided lactomer), looped maxon (monofilament polyglyconate) to the sheath, and a subcuticular purse string suture (3.0 biosyn: monofilament glycomer) to the skin. This acted as a drainage well. Post-operatively, patients were allowed to commence on light diet immediately after surgery, if tolerated. Diet for the next five days was restricted to soups, ice-cream, yoghurts etc. A more solid diet was introduced after day five. Patients were given written dietary advice on discharge.

Results

One hundred consecutive patients (57 males) underwent reversal of loop ileostomy during the study period. The median age at admission was 56 (47 - 67) years. The indications for

ileostomy construction are listed in Table 1. Over half of our patients presented with colon cancer.

Table I: Indications for ileostomy construction

Indication	n	%
Cancer	52	52
Sphincter Repair	15	15
IBD	14	14
Diverticular Disease	12	12
Large bowel obstruction	4	4
Colovesical fistula	3	3

Reversal was performed in all the patients after a median period of 133 (120 - 270) days. The median length of inpatient hospitalisation was two (one - three) days from admission to discharge. Forty-two patients (42%) were discharged home within 24 hours of reversal. Most patients tolerated a light diet, six hours post operatively. Only two of the 100 reversals required surgical resection of the loop ileostomy.

Twelve patients (12%) were re-admitted with subacute obstruction of which 11 settled with conservative measures (nasogastric decompression and intravenous fluids) while one underwent further surgery. One patient was re-admitted with a late leak and subsequent fistula formation which required surgical resection after failure of conservative management. This patient had gross faecal loading radiologically, due to the prolonged outpatient use of opiate based oral analgesia.

One patient had a post-operative anastomotic leak leading to local abscess formation which was drained surgically. There were two cases of urinary retention requiring catheterisation and one case of post-operative ileus which was managed conservatively. One male died due to acute cardiac failure. The post mortem revealed the presence of a hypertensive cardiomyopathy.

Readmissions did not appear to be related to the date of discharge (Figure 1). There was no difference in re-admission rates between patients discharged within 24 hours and those discharged after this.

Figure 2 compares complication rate with time. Patients were grouped chronologically into four sections (25 in each group). The audited complication rate seems to be falling with time which suggests that there may be a learning curve for this operation even in experienced hands.

Figure 1: Table comparing time of discharge with re-admission rate

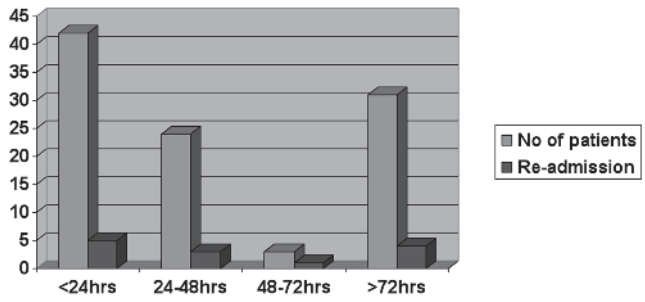
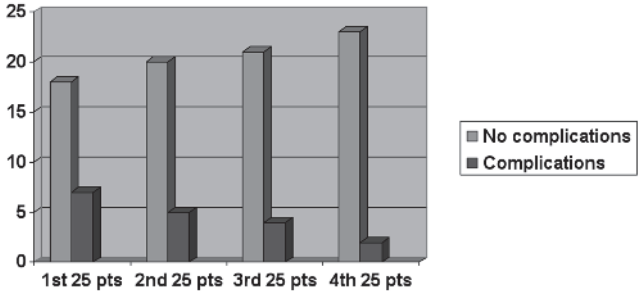


Figure 2: Table comparing complication rate with time



Discussion

Loop ileostomies have become popular amongst colorectal surgeons because of the apparent ease of formation and closure. It is considered a safe way to achieve faecal diversion.[5] Previous reports of loop ileostomy closure conclude that the procedure is associated with low morbidity.[6]

Complications can occur following construction and closure, most commonly dehydration and intestinal obstruction.[5]

In our series, the overall complication rate after closure was 18% which is consistent with the published literature. Several authors have reported complication rates ranging from 10 to 30%.[5,6,7]

Small bowel obstruction was the main post-operative complication recorded in our series (12%). This compares favourably with other reported series.[6,7,8] The reason why patients develop bowel obstruction following ileostomy closure is unclear. Following closure, adhesions may occur at the site, possibly as a result of difficulties in fully mobilising the ileostomy. However, fixation of the small bowel to the deep aspect of the abdominal incision is a common occurrence[8,9] and it is this which is probably the cause of obstruction, rather than narrowing of the lumen secondary to swelling of the anastomosis. Some authors have advocated that stapled closure of a loop ileostomy may reduce the complication rate from bowel obstruction because the lumen created using a stapled side to side technique may be wider than that created by sutured closure.[10]

We observed a low incidence of anastomotic leak after closure with two patients only developing this complication.

Peritonitis is a rare complication that occurs shortly after closure in one to seven per cent of patients.[6,7] A proportion of cases are thought to arise from iatrogenic occult enteric tears. None of the patients in this series developed this complication. During surgery, particular attention was paid to oversewing even the most minor serosal tear.

The wound infection rate in our series was low (1%) and is probably due to a deliberate policy of not closing the wound. The insertion of a purse string suture, leaves a central drainage well.

From these results, it appears that early discharge after ileostomy closure can be achieved with an acceptably low serious complication rate. A pilot study in the Netherlands has shown that further reductions in hospital stay may be achieved by use of local anaesthetic techniques.[11] However, a larger randomised, control study on use of local anaesthetic techniques is still awaited.

Conclusion

This audit has shown that loop ileostomy closure is a safe and effective procedure which can be carried out with an acceptable complication rate and short inpatient hospitalisation. Complications which occur are unrelated to length of hospital stay. Sound post-operative advice (re diet) and appropriate analgesia allows many patients to be discharged in the early post-operative phase.

References

1. Kalady M, Fields R. Loop ileostomy closure at an ambulatory surgery facility - A safe and cost-effective alternative to routine hospitalisation. Dis Colon Rectum 2003; 46 (4) : 486-490.
2. Khoo R E, Cohen M M, Chapman G M, et al. Loop ileostomy for temporary faecal diversion. Am J of Surg. 1994; 167(5) : 519-22.
3. Basse L, Jacobsen D H, Billesbolle P, Kehlet H. Colostomy closure after Hartmann's procedure with fast- track rehabilitation. Dis Colon Rectum. 2002; 45(12) :1661-4.
4. Kehlet H, Wilmore D W. Fast- track surgery. Br J of Surg. 2005 ; 92(1): 3-4.
5. Steven D, Wexner M, Douglas A. Loop ileostomy is a safe option for faecal diversion. Dis Colon Rectum. 1993; 36(4): 349-354.
6. Van de Pavoordt H D W, Fazio V W. The outcome of loop ileostomy closure in 293 cases. Int J Colorectal Dis. 1987; 2: 214-217.
7. Metcalf A M, Dozois R R, Beart R W. Temporary ileostomy for ileal pouch-anal anastomosis. Function and complications. Dis Colon Rectum 1986; 29: 300-303.
8. Feinberg S M, Mcleod R S, Cohen Z . Complications of loop ileostomy. Am J Surg. 1987; 153: 102-106.
9. Ellis H. The causes and prevention of intestinal adhesions. Br J Surg. 1982; 69: 241-243.
10. Hasegawa H, Radley S, Morton D G. Stapled versus sutured closure of loop ileostomy - A randomised controlled trial. Annals of Surgery. 2000; 31(2): 202-4.
11. Mark J, Haagmans M D, Willem B, Rob P, Bleichrodt. Short-term outcome of loop ileostomy closure under local anesthesia - Results of a feasibility study. Dis Colon Rectum 2004; 47: 1930-1933.

Book Review

Practical Radiotherapy Planning

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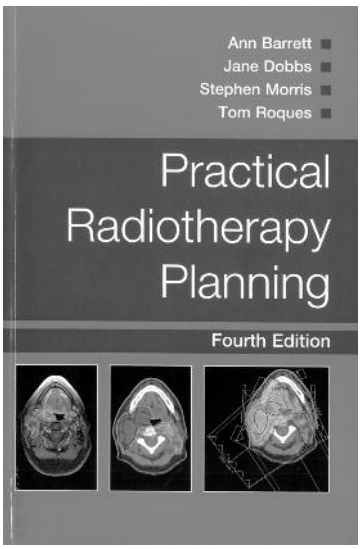
Fourth Edition, Hodder Arnold, 2009



For many years, *Practical Radiotherapy Planning* has been a popular choice fro those studying for the FRCR Part 2 in Clinical Oncology. However, there have been several major advances in radiotherapy planning in the ten years since the last edition of the book was published. Therefore, the authors have to be congratulated on their work in updating the book to show these changes in practice. A major plus point of the book is the much improved introductory section which acquaints the reader with the idea of 3-dimensional radiotherapy planning. It provides an easy to follow explanation of the process of CT planning. New techniques such as intensity modulated and image gated radiotherapy are discussed. The importance of having a thorough knowledge of cross sectional imaging is stressed. As for the main chapters, the skin chapter includes a new section on total skin electron beam therapy for cutaneous lymphoma with useful diagrams. The head and neck chapter has been extensively revamped and updated with colour diagrams to illustrate the major points.

One criticism of the book is that, in parts, it may be too modern. Some centres will still be using planning methods based on simulator images or bony landmarks, as was included in the previous edition.

In conclusion, although radiotherapy planning has become significantly more complex in the last ten years, this new edition continues to stress the importance of the underlying principles of treatment that can be applied to conventional, conformal and complex treatments, taking into account advances in imaging and treatment delivery.

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