ISSN: 2753-7919
British Journal of Healthcare and Medical Research; Vol. 13 No. 06 (2026) (197-201)
https://doi.org/10.14738/bjhr.1306.12759

Cephalad Versus Conventional Placement of Diverting Loop Ileostomies Following Low Anterior Resection: A 100-Patient Comparative Case Series

Ali Mahmood[1], Michael Yaakovian[2], Aman Barkat Ali[3], & Aiva Mariam Mahmood[4]

1. Underwood Digestive Disease Center, Houston Methodist Sugar Land Hospital, Department of Surgery, Clinical Assistant Professor, Weill – Cornell College of Medicine, 16605 Southwest Freeway, Suite 430, Sugar Land, TX 77479, USA
2. Houston Methodist Sugar Land Hospital, Institute of Academic Medicine, Division Chief, Department of Surgery, 16605 Southwest Freeway, Suite 450, Sugar Land, TX 77479, USA
3. Houston Methodist Sugar Land Hospital, Division of Bariatric Surgery, Department of Surgery, Houston Methodist Hospital, 16651 Southwest Freeway, Suite 450, Sugar Land, TX 77479, USA
4. Houston Methodist Sugar Land Hospital, Department of Surgery, 16605 Southwest Freeway, Suite 430, Sugar Land, TX 77479, USA

Abstract: Background: Diverting loop ileostomies protect distal colorectal anastomoses but may introduce complications related to appliance management, dehydration, and subsequent reversal. Cephalad placement in the right upper quadrant (RUQ) may increase separation from the midline abdominal incisions (for extraction) and improve stoma visibility. We describe outcomes of RUQ versus right lower quadrant (RLQ) placement following low anterior resection (LAR). Methods: A five-year observational series included 100 patients undergoing LAR and subsequent diverting loop ileostomy reversal: 50 with RUQ ileostomy placement and 50 with RLQ ileostomy placement. Patients were followed for 180 days after reversal. Reported outcomes included reversal success, intraoperative complications, dehydration-related readmissions, superficial wound infection, stoma-site hernia, and qualitative observations concerning appliance management and adhesiolysis. Results: All 100 patients underwent successful reversal, with no reported intraoperative enterotomies or other intraoperative reversal complications. Dehydration-related readmission occurred in 3 of 50 patients (6%) in each group; one RUQ patient required repeat admission. Superficial wound infection was reported in 0 RUQ patients and 2 RLQ patients (4%). One stoma-site hernia (2%) was reported in the RLQ group, compared with none in the RUQ group, pending confirmation of group assignment. Appliance leakage and adhesiolysis were described as less problematic in the RUQ group, although these outcomes were not quantified. Return of bowel function was described as similar between groups. Conclusions: In this observational series, cephalad RUQ ileostomy placement was feasible and compatible with successful reversal. The findings generate hypotheses regarding wound outcomes, appliance management, and technical ease of reversal, but do not establish superiority over RLQ placement.

Keywords: diverting loop ileostomy, stoma siting, right upper quadrant, low anterior resection, ileostomy reversal, colorectal surgery

INTRODUCTION

Diverting loop ileostomy is commonly employed following low anterior resection, particularly when a low pelvic anastomosis is considered at increased risk, including in selected patients treated with neoadjuvant radiation. Although diversion may mitigate the clinical consequences of an anastomotic leak, ileostomies carry their own morbidity,

including peristomal skin irritation, appliance leakage, dehydration, readmission, and complications associated with closure. Conventional ileostomy siting generally favors a location in the right lower abdomen, individualized to abdominal contour, skin folds, scars, belt line, and patient function. In minimally invasive colorectal surgery, a lower abdominal stoma may be relatively close to a periumbilical or infraumbilical specimen-extraction incision. Such proximity can complicate pouch adherence and expose adjacent incisions to effluent-associated skin irritation. In addition, patients with elevated body mass index or limited mobility may have difficulty visualizing and independently managing a lower abdominal appliance.

Placement of the diverting loop ileostomy in the RUQ, above the umbilicus and below the right costal margin, may provide additional separation from lower abdominal incisions and improve visibility for selected patients. The approach might also alter the extent of adhesiolysis required at closure, although this proposed benefit requires objective study. We compared clinical outcomes in 50 patients with RUQ ileostomies and 50 patients with RLQ ileostomies after LAR.

METHODS

A retrospective case comparative case series comprised 100 patients who underwent LAR with diverting loop ileostomy over a five-year period. Fifty patients had an RUQ ileostomy and 50 had an RLQ ileostomy. All patients subsequently underwent ileostomy reversal and were followed for 180 days after reversal. Stoma location and operative rationale. In the cephalad approach, the loop ileostomy was placed in the right abdomen above the umbilicus and below the costal margin, with the intent of separating the stoma from the usual periumbilical or infraumbilical extraction site and improving patient visualization. RLQ placement represented the conventional comparison approach.

Outcomes: Reported outcomes included successful reversal, intraoperative reversal complications, dehydration-related hospital readmission requiring intravenous fluids, superficial wound infection requiring antibiotics, stoma-site hernia within the reported follow-up, and qualitative observations regarding pouch changes, leakage, adhesions encountered at reversal, and return of bowel function.

Analysis: Outcomes are presented descriptively as counts and percentages. No inferential statistical testing or adjusted comparisons were undertaken because individual-level data and relevant baseline covariates were not available.

RESULTS

All 100 patients underwent successful ileostomy reversal. No intraoperative complications, including enterotomy, were reported during reversal in either group. Six patients (6% overall) required readmission for dehydration and intravenous fluid replacement: three in the RUQ group and three in the RLQ group (6% in each). One patient in the RUQ group required more than one dehydration-related admission. The affected patients reportedly recovered and underwent reversal without long-term sequelae attributed to these episodes.

Superficial wound infection requiring antibiotic therapy occurred in two RLQ patients (4%) and no RUQ patients. One postoperative stoma-site hernia was reported (2% of one 50-

patient cohort); in the RLQ group. All patients reportedly managed their own stoma appliances. Clinically, RUQ placement was described as allowing easier visualization and fewer leakage episodes for many patients, but standardized measures of independence, leakage frequency, or peristomal skin injury were not collected. The RUQ group was also described as requiring less adhesiolysis during reversal. Operative times were similar. Return of bowel function following reversal was reported as similar in both groups.

Table 1: Reported outcomes by ileostomy location

Outcome	RUQ (n = 50)	RLQ (n = 50)
Successful reversal	50 (100%)	50 (100%)
Intraoperative reversal complications	0	0
Patients readmitted for dehydration	3 (6%)	3 (6%)
Repeat dehydration admission	1 patient	Not reported
Superficial wound infection	0	2 (4%)
Stoma-site hernia*	0	1 (2%)
Patient-managed appliance	50 (100%)	50 (100%)
Adhesiolysis at reversal	Qualitatively less	Qualitatively more
Return of bowel function	Reported as similar	Reported as similar

*Hernia cohort assignment should be verified against the original records before journal submission. Qualitative comparisons were not supported by standardized measurements.

DISCUSSION

This 100-patient experience suggests that RUQ placement is a feasible alternative to conventional RLQ diversion after LAR. Both groups achieved 100% reversal, with no reported intraoperative reversal complications. Dehydration-related readmission occurred at the same patient-level frequency in each group. These findings are reassuring with respect to feasibility, although the sample size is insufficient to exclude uncommon complications or establish equivalence. The principal anatomical rationale for cephalad placement is increased separation from lower abdominal specimen-extraction incisions. Such separation may reduce interference between the stoma appliance and an adjacent incision and could simplify local stoma-site closure. However, the present dataset does not include measured stoma-to-incision distance, incision-specific infection outcomes, or operative complexity metrics, so this mechanism remains hypothetical.

Improved visualization may be relevant for patients with obesity, restricted mobility, or difficulty accessing a lower abdominal stoma. The observation that RUQ patients experienced easier appliance care and fewer leaks is clinically interesting, but it remains subjective without validated measures or documented event counts. Stoma siting must continue to account for individual anatomy, abdominal contour, the rectus muscle, patient dexterity, and preoperative ostomy assessment. The observation of less adhesiolysis during RUQ reversal is likewise hypothesis-generating. Adhesion burden may reflect the original operation, incision location, prior abdominal procedures, and other patient factors. Without adhesion scoring, operative time, conversion rates, or standardized technical endpoints, no causal conclusion can be drawn. The observed wound infections (0 versus 2) and hernia events (0 versus 1, subject to verification) are numerically different but too few to support claims of reduced risk.

The optimal positioning of a diverting loop ileostomy remains an important consideration in colorectal surgery, with implications for postoperative morbidity, patient quality of life, and subsequent stoma reversal. Established guidelines emphasize individualized preoperative stoma site selection, incorporating abdominal contour, body habitus, rectus muscle positioning, visibility, and the patient's ability to independently manage the ostomy (Aubert et al., 2024; Zwiep et al., 2022). Previous investigations have demonstrated that stoma location may influence ostomy-related quality of life and surgical site infection rates, underscoring the importance of careful anatomical planning (Mo et al., 2022; Nakagawa and Misao, 2013). Furthermore, parastomal herniation remains a recognized complication of intestinal stomas, with anatomical positioning and technical factors contributing to the broader discussion of prevention and long-term outcomes (Carne et al., 2003; Antoniou et al., 2018). Historical investigations into abdominal wall positioning and stoma-related complications further support the importance of considering stoma location as a component of operative planning (Ortiz et al., 1994; Porter et al., 1989). Although conventional right lower quadrant placement remains widely practiced, these considerations provide a rationale for evaluating alternative anatomical locations when patient-specific factors and anticipated subsequent procedures warrant modification.

Positioning a diverting loop ileostomy more cephalad in the right abdomen, superior to the umbilicus and inferior to the right costal margin, represents a potentially useful technical modification in selected patients undergoing minimally invasive colorectal surgery. This approach increases the anatomical separation between the stoma and the commonly utilized periumbilical or infraumbilical specimen-extraction incision, potentially reducing the proximity of scar tissue and overlapping abdominal wall dissection during subsequent ileostomy reversal. Previous descriptions of laparoscopic stoma construction highlight the feasibility of adapting stoma creation techniques to the operative approach, although they do not establish the superiority of cephalad positioning (Schlemminger et al., 1999). Importantly, any proposed modification must be evaluated in the context of established stoma-related morbidity, including dehydration, readmission, peristomal complications, and patient-reported outcomes (Cox et al., 2023; Wang et al., 2025). The proposed advantage of cephalad placement is therefore primarily technical rather than an assumed reduction in overall stoma complications. By providing greater separation between the ileostomy and the extraction incision, this approach may facilitate subsequent abdominal wall dissection and stoma closure while preserving the fundamental principles of safe ostomy construction. Further comparative investigation is necessary to determine whether these theoretical advantages translate into measurable improvements in reversal-related outcomes.

LIMITATIONS

The study is limited by its observational, single-surgeon nature; modest sample size; unclear cohort selection and baseline comparability; lack of adjustment for confounding; and absence of standardized measurements of leakage, skin injury, adhesion burden, operative time, and recovery. Because all included patients underwent reversal, the series cannot determine the reversal rate among all patients initially receiving diversion. Follow-up was limited to 180 days after reversal, which may under detect later incisional hernias.

CONCLUSION

Cephalad RUQ placement of a diverting loop ileostomy following LAR is a practical alternative to conventional RLQ placement in appropriately selected patients. In this 100-patient observational comparison, all stomas were reversed without reported intraoperative complications, and dehydration-related readmission rates were identical between groups. Potential advantages related to incision separation, appliance visibility, and ease of reversal warrant prospective evaluation using objective, predefined outcomes.

REFERENCES

1. Aubert M, Buscail E, Duchalais E, Cazelles A, Collard M, Charleux-Muller D, Jeune F, Nuzzo A, Pellegrin A, Theuil L, Toutain A, Trilling B, Siproudhis L, Meuretter G, Lefevre JH, Maggiori L, Mege D. Management of adult intestinal stomas: The 2023 French Guidelines. J Visc Surg. 2024:161(2):106-128. Doi: 10.1016/j.jviscsurg.2024.02.002.
2. Zwiep TM, Helewa RM, Robertson R, Moloo H, Hill R, Chaplain V, Harley. Preoperative stoma site marking for fecal diversions (Ilesotomy and colostomy): position statement of the Canadian Society of Colon & Rectal Surgeons and Nurses Specialized in Wound, Ostomy and Continence Canada. Can J Surg. 2022;65(3):E359-E363. Doi: 10.1503/chs.022320.
3. Mo J, Wendel C, Sloan JA, Sun V, Hornbrook MC, Grant M, Ercolano E, Malkowicz SB, Tallman NJ, McCorkle RC, Krouse RS. Stoma location and ostomy-related quality of life among cancer survivors with ostomies: A pooled analysis. AM J Surg. 2022;223(5):963-968. Doi: 10.1016/j.amjsurg.2021.09.023.
4. Nakagawa H, Misao H. Effect of stoma location on the incidence of surgical site infections in colorectal surgery patients. J Wound Ostomy Continence Nurs. 2013;40(3):287-96. Doi: 10.1097/WON.0b013e31828002ef.
5. Carne PWG, Robertson GM, Frizelle FA. Parastomal hernia. Br. J Surg. 2003;90(7):784-93. Doi: 10.1002/bjs.4220.
6. Antoniou SA, Agresta F, Alamino JM< Berger D, Berrevoet F, Brandsma HT, Bury K, Conze J, Cuccurullo D, Deitz UA, Fortelny RH, Frei-Lanter C, Hansson B, Helgstrand F, Hotouras A, Janes A, Kroese LF, Lambrecht JR, Kyle-Leinhase I, Lopez-Cano M, Maggiori L, Mandala V, Mieserez M, Monthgomery A, Morales-Conde S, Prudhomme M, Rautio T, Smart N, Smietanski M, Szczepkowski M, Stabilini C, Muysoms FE. European Hernia Society guidelines on prevention and treatment of parastomal hernias. Hernia. 2018;22(1):183-198. Doi: 10.1007/s10029-017-1697-5.
7. Ortiz H, Sara MJ, Armendariz P, Miguel M, Marti J, Chocarro C. Does the frequency of paracolostomy hernias depend on the position of the colostomy in the abdominal wall? Int J Colorectal Dis. 1994;9(2);65-7. Doi: 10.1007/BF00699414.
8. Porter JA, Salvati EP, Rubin RJ, Eisenstat TE. Complications of colostomies. Dis Colon Rectum. 1989;32(4):299-303. Doi: 10.1007/BF02553484.
9. Schlemminger R, Neufang T, Leister I, Becker H. Laparoscopic stoma technique. Chirug. 1999;70(6):656-61. Doi: 10.1007/s001040050702.
10. Cox J, Isip R, Reid M, Hulme D, Marra A. Predictors of Hospital Readmission in Patients Undergoing Creation of an Intestinal Ostomy. J Wound Ostomy Continence Nurs. 2023;50(3):215-221.
11. Wang U, Cheng L, Li W, Gao Z, Miao J, Zhang C, Zhu Z, Zhao F, Yi J, Liu C. A multidimensional comparison of the benefit degrees for patients between ileostomy and colostomy. Front Med. 2025;12:1610213. Doi: 10.3389/fmed.2025.1610213.