

A purpose of colorectal anastomosis

Danilo Coco ^{1,*} and Silvana Leanza ²

¹ Department of General Surgery, Ospedali Riuniti Marche Nord, Pesaro, Italy.

² Department of General Surgery, Carlo Urbani Hospital, Jesi, Ancona, Italy.

World Journal of Advanced Research and Reviews, 2022, 15(03), 135–138

Publication history: Received on 16 April 2022; revised on 27 August 2022; accepted on 29 August 2022

Article DOI: <https://doi.org/10.30574/wjarr.2022.15.3.0349>

Abstract

This review aimed to define and evaluate the new technique which telescopic anastomosis in managing intestinal injuries like leakages. The method gives a fast, secure, and easy approach in limiting intestine leakages. Moreover, the need to determine the credibility of telescopic anastomosis made the research focus on comparing the new technique with the suturing method. The study applied 18 dogs weighing approximately 20-30 kg and divided into two groups (A and B). All the animals were injected with intra-abdominal infection using small perforation in the bowel. Primarily, the animals were left to settle for almost 24 hours before closing the perforation by telescopic anastomosis in group B and simple hand suturing for group A. Notably, the animals were operated after some time, and the anastomosis regions have taken for radiologic analysis. The results showed stenosis in 6 animals of group B because of telescopic anastomosis even without a leakage. Thus, the outcomes provided telescopic anastomosis as an essential method to repair intestine leakages compared to other methods like a suture.

Keywords: Telescopic anastomosis; Intestinal leakage; Anastomosis regions; Review

1. Introduction

The globe perceived high cases of large-intestinal anastomotic leaks, which result from aspects like treatment of lower colorectal cancer. The increase in cases is associated with frequent postoperative mortality and morbidity because of colorectal surgery (1). Statistically, the incidence of the postoperative mortality caused by unsuccessful is estimated to rise by 30% every year across the globe (2). The increase of morbidity and mortality related to colorectal surgery leads to the development of different types of anastomoses like abdominoperineal resection and telescopic anastomosis. Generally, the intussusception of the bowel refers to the telescoping of a proximal section of the gastrointestinal tract, particularly in the area within the adjacent segment's lumen. The process led to the establishment of telescopic anastomosis, which exists as the most accurate, fast, secure, and cheap process in the surgery of the colon (3). Therefore, this paper evaluates the significance of telescopic anastomosis compared to simple suturing techniques in colon surgery.

2. Materials and Methods

2.1. Materials and sampling

From July 2010 to August 2019, 32 patients aged from 38 to 80 years (male=16, female=16) were sampled, and their tumors verified using preoperative pathology and colonoscopy biopsies. The individuals had tumors ranged from 4-7cm in length. Barium enema, rectal endoscopy, and magnetic resonance imaging (MRI) were used to define the distance of the tumor edge from the anal margin. Computed tomography and trans-rectal ultrasonography enhanced the determination of tumors' depths and the presence of lymph node enlargement (5 p408). Also, the preoperative analysis

* Corresponding author: Danilo Coco

Department of General Surgery, Ospedali Riuniti Marche Nord, Pesaro, Italy.

adhered to tumor-node-metastasis (T₁N₀M₀) staging for all sampled patients (stage I n=8; stage II n=18, and stage II n=6). Generally, 10 patients were above T₃, and they received capecitabine 1500 mg twice a day through oral processes for m₀. Also, there was radiotherapy, particularly during chemotherapy cycles for individuals above T₃ (45-50Gy in 25-28 fraction to the pelvis).

2.2. Surgical procedures

After the provision of anesthesia, patients were placed in a bladder lithotomy position and umbilical camera systems arranged by creating the operational port at the right lower quadrant. Through the middle techniques, there was freeing of sigmoid mesentery that occurred at the root using an ultrasonic scalpel, and dissection of lymph nodes and the adipose tissue near the roots of the inferior mesenteric vein and artery (4). Based on the total mesorectal excision (TME) concept, the process facilitated dissection of the rectum around the connective tissues, particularly between visceral and parietal sheets of the presacral regions after the rectum. The abdominal techniques led to the attainment of sufficient relaxation of the anal sphincter using a finger expansion through constant epidural anesthesia. Thus, exposing operative regions above the dentate line (5). Also, bleeding was controlled by the injection solution of 2-3 mL of saline adrenaline into the anal canal approximately 1.5cm above the dentate region, causing swelling of the mucosa.

After the swelling process, there was circumferential incision of the mucosa at almost 2.0cm above the dentate line. Besides, dissection occurred by mobilizing the rectum via the mucosa plane to approximately 2.4cm before clamping cutting the distal margin of the rectum while conserving the whole mucosal layer of the rectum (6). The pulling of the colon's distal end through the anus was followed by telescopic colorectal mucosa anastomosis (TCMA). The TCMA of the muscular sheath and seromuscular layer happened at approximately 2.0 cm above the dentate line. The four interrupted suture were places based on 10, 2, 4, and 8 clock positions based on lithotomy positions respectively to enhance relaxation and fixation. Also, the four interrupted absorbable suture in the distal edge of the colon and residual rectal mucosa was positioned at 10, 2, 4, and 8 clock's position proceeded by 3-6 additional sutures (6). Notably, a pelvic drainage tube was located before the abdominal wall's closures to enhance the removal of the decimal suture and repositioning of the anastomotic stoma to its initial location in the anal canal. After 4-5 days of the surgery, the pelvic drainage tube was eliminated to facilitate healing.

2.3. Postoperative adjuvant radiation and chemotherapy

Individuals occurring above the T₂ stage acquired 6-11 postoperative systemic chemotherapy cycles based on mFOLF-*OX4* procedure (5-fluorouracil, calcium folinate, and oxaliplatin). Generally, 6 patients with T₄ stage and 3 patients with positive circumferential margins received postoperative pelvis radiotherapy in a dose of 12-18 Gy after resection but before adjuvant chemotherapy (1)

2.4. Complication and follow-up

The operated patients were observed within one month after resectioning to facilitate monitoring of postoperative complications like anastomotic leakage, pelvic abscess, and bleeding. The follow-up occurred after 2 months for every two years, four months after 3 months, and finally after one year. Notably, the follow-up was attributed to laboratory analysis, digital evaluation, and imaging analysis (pelvic computed tomography, chest X-ray, and abdominal ultrasound) for all patients (6 p4971). Besides, colonoscopy occurred after every 5 months for 4 years, and anastomosis stenosis happened 1 year after the surgery. More so, local recurrence was outlined as the first radiological, clinical, or pathological evidence of a tumor of similar histological form 2-3 years after the operation. Distant recurrence depicted as a radiological or pathological representation of systematic condition outside the pelvis at the liver and lungs regions 5 years after surgery. Death indicated the end of a follow-up (2)

2.5. Outcomes

The follow-up occurred for approximately 6 years, and 95% of the operated patients were assessed because patients received radical resection. The distance between the tumor and distal margin ranged from 3 to 6 cm, and a negative distance margin was verified pathologically in 32 patients. Only 12 patients had positive circumferential margins (6 p4972). According to pathological testing, 14 patients had distinguished adenocarcinoma, 2 patients had adenomatous, and 4 patients had poorly differentiated adenocarcinoma. From TNM staging, stage I=8patients stage II= 17patients (IIa: 9patients, IIb: 5patients, and IIc: 3patients), and stage III= 7patient (IIIa: 4patients, IIIb: 2patients, and IIIc: 1patient)(3).

2.6. Mortality and morbidity

No postoperative death happened in the process, and anastomotic leakage occurred in 7 patients (4patient obtained conservative therapy, and 5patient experienced transverse colostomy). 5 patients had anastomosis stenosis and

recovered with constant enlargement of the anus for 2-4 months. 9 patients had postoperative local recurrence after 2-3 years. The postoperative survival was 75%, and almost 68% of individuals were disease-free after 5 years (4)

3. Results

3.1. Functional results

During the early stage of postoperative patients, individuals with poor continence of almost 5-8 bowels daily received enteral nutrition. Poor continence was limited by the administration of 2 pills of compound diphenoxylate orally three times daily. Primarily patients perceived better continence 6 months of operation, and recovery of anal function occurred of 14 months of surgery.

4. Discussion

4.1. Assessment of therapeutic results

For several years, several types of anus-preserving techniques for low rectal cancer therapy results in aspects like leakage, which is a vital health concern. However, this study's outcomes depict how the application of telescopic anastomosis in the therapy of lower colorectal cancer enhances control of anastomotic leakage (5 p3844). Clinical information from the research portrays TCMA as a safe, reliable, and superior surgical technique since it entails both physiological and sphincter reflection of the rectal mucosa. TCMA considers the operation of colorectal anastomosis on the rectum plan approximately 1-2cm above the dentate line. Thus enhancing the preservation of anal sphincter and vital remains of the rectum that conserve physiological nervous reflection. Significantly, the effectiveness of TCMA rests on the TME principles that facilitate aspects like radical resection of the tumor and effective dissection of lymph nodes. The use of TME facilitates the attainment of both the circumferential margin and negative distal that lessens local recurrence after the operation (6). Therefore, from the results, TCMA exists as a safe and feasible therapy for individuals with lower rectal cancer.

4.2. Skills and notes on the telescopic anastomosis

Primarily, practicing perianal dissection via the rectal mucosa require circumferential administration of saline adrenaline solution above the dentate line to limit bleeding. The management of internal sphincter injuries occurs through the exposure of the internal sphincter plan to attain the distal mucosa's excision. Also, relaxation and strengthening during surgery limit anastomotic leakages (6 p4972). However, during surgery of females, penetration to the entire layer of the bowel walls and posterior surface of the vaginal was limited to prevent vaginal fistula. Since TCMA entails telescopic anastomosis between the whole surface of the colon and residual mucosa, the distal margin of the colon was modified to conserve blood supply and enhance healing of the anastomotic stoma (5 p3844). Significantly, 5-suspension-stitches were eliminated, and anastomotic stoma relocated after TCMA (1-6).

5. Conclusion

Management of lower rectal cancer through the application of TCMA can make patients achieve essential recovery of anal function with limited possibilities of anastomotic leakage. Primarily, clinicians and other health professionals in the surgical room should focus on the application of telescopic anastomosis method because it is proved to improve patient's standard of life compared to other techniques like abdominoperineal resection (APR). Therefore, all surgical departments should adopt telescopic techniques to reflect on achieving complete healing of anal functions.

Compliance with ethical standards

Acknowledgments

Substantial contributions to the conception or design of the study were done by DC,SL. Acquisition, analysis, or interpretation of data for the study, drafting the work or revising it critically for intellectual content, final approval of the version to be published was done by DC,SL.

Disclosure of conflict of interest

All Authors declare no commercial associations that might represent conflicts of interest with this article and have nothing to disclose. All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/tcr-19-2421>).

References

- [1] Zeraatian S, Mesbah M, Hosseini M, Naseripour M, Kamalzadeh N, Pazooki D. Telescopic bowel anastomosis in the intra-abdominal inflammatory environment. *International Journal of Development Research*. 2018, 8(04):19911-3. <https://www.journalijdr.com/sites/default/files/issue-pdf/12824.pdf>
- [2] Burson LC, Berliner SD, Strauss RJ, Katz P, Wise L. Telescoping anastomosis of the colon: a comparative study. *Diseases of the Colon & Rectum*. 1979 Mar 1, 22(2):111-6. <https://link.springer.com/content/pdf/10.1007/BF02586775.pdf>
- [3] Bara T, Bancu S, György-Fazakas I, Podeanu D, Bara Jr T. Telescopic anastomosis in colorectal surgery. *Chirurgia (Bucharest, Romania: 1990)*. 2006, 101(6):647. <https://www.ncbi.nlm.nih.gov/pubmed/17283843>
- [4] Li SY, Chen G, Du JF, Chen G, Wei XJ, Cui W, Zuo FY, Yu B, Dong X, Ji XQ, Yuan Q. Laparoscopic resection of lower rectal cancer with telescopic anastomosis without abdominal incisions. *World Journal of Gastroenterology: WJG*. 2015 Apr 28, 21(16):4969.
- [5] Marinis A, Yiallourou A, Samanides L, Dafnios N, Anastasopoulos G, Vassiliou I, Theodosopoulos T. Intussusception of the bowel in adults: a review. *World journal of gastroenterology: WJG*. 2009 Jan 28, 15(4):407.
- [6] Li SY, Chen G, Bai X, Zuo FY, Chen G, Du JF, Wei XJ, Cui W. Anus-preserving rectectomy via telescopic colorectal mucosal anastomosis for low rectal cancer: Experience from a Chinese cohort. *World Journal of Gastroenterology: WJG*. 2013 Jun 28, 19(24):3841.