

Clinical experience on laparoscopic resection with primary anastomosis without stoma in Hinchey III and IV acute left colon diverticulitis (ALCD)

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Abstract

Introduction: Diverticular disease is the fifth most important gastrointestinal disease and is a major cause of hospitalizations. In urgency: Hartmann's procedure or primary anastomosis?

Objective: Report of a retrospective analysis of 129 cases who underwent emergency laparoscopic left hemicolectomy surgery for acute diverticulitis with primary anastomosis without ileostomy, reporting the results of major postoperative complications, from January 2006 to April 2025.

Results: The most significant complications were Anastomotic Leaks (AL=5.4%), Basal pneumonia (BA=4.5%), recurrent peritonitis due to intra-abdominal abscess (RP=4.5%), Wound Infection (WI=3.6%), the overall mortality rate was 2.7%; The reintervention rate was 5.4%. The most frequent complication was prolonged postoperative ileus (56%), which was generally managed with nonoperative treatment.

Conclusion: Although there is no consensus in literature, the minimally invasive and conservative laparoscopic strategy in the management of acute complicated diverticulitis is gaining more and more space. Resection and anastomosis can be considered a valid and safe surgical strategy in urgency, with complication rates in line with the literature. Although the data are comforting, the lack of studies makes further future studies necessary.

Keywords: Acute diverticulitis; Perforation; Primary anastomosis; Left colon.

Introduction

Diverticular disease is the fifth most important gastrointestinal disease and is a major cause of hospitalizations, contributing significantly to health care costs in industrialized countries [1,2].

The clinical presentation of acute diverticulitis depends on the severity of the underlying inflammatory process and the presence of associated complications.

Patients with acute diverticulitis may present with left lower quadrant pain, abdominal distension, and fever. Other symptoms may include anorexia, constipation, nausea, diarrhea, and dysuria. Initial laboratory studies include complete blood tests with measurement of C-reactive protein. The radiological examination of first choice is computed tomography [2,3].

Acute Left-sided Colonic Diverticulitis (ALCD) ranges in severity from uncomplicated phlegmonous diverticulitis to complicated diverticulitis including abscess and/or perforation.

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The Hinchey classification has been the most used classification in the international literature [4,5]: Stage I – Confined pericolic or mesenteric abscess (Ia: Phlegmon with inflammatory reaction in the adipose hazardous tissue and Ib Confined hazardous abscess (<5 cm) near the inflammatory site). Stage II - Walled-off pelvic abscess. Stage III – Generalized purulent peritonitis. Stage IV – Generalized feculent peritonitis [4,5].

Management of perforations depends on the grade of Hinchey. Hinchey I and II perforations can be managed nonsurgically (conservative treatment or medical therapy in the form of analgesia and antibiotics), while most Hinchey III and IV perforations require emergency surgery, treating patients with high incidence of mortality. To date, surgical resection is the established standard of care but the literature still disagrees on the best surgical strategy, as no clear advantage between Hartmann's procedure and primary anastomosis has been demonstrated [5,6].

Elective laparoscopic sigmoid resection has demonstrated several advantages over open surgery, so acute laparoscopic resection for perforated diverticulitis could have similar advantages.

In fact, the 2012 European Association of Endoscopic Surgeons (EAES) guidelines state that "in Hinchey stage IV, colon resection can be performed laparoscopically or by open surgery, depending on the patient's clinical stability [7-9]".

Primary anastomosis with or without diversion can be performed safely in urgency, and ileostomy reversal is significantly less morbid than Hartmann reversal (colostomy) [6,8,10].

The literature is unclear on the surgical management of perforated diverticulitis. Hartmann's procedure or primary anastomosis? This is the terrible doubt of the surgeon in emergency.

Since 2006 we've been performing laparoscopic left hemicolectomy with Primary Anastomosis (PA) without stoma in hemodynamically stable patients, ASA score ≤ 3 , for Acute Left Colonic Diverticulitis (ALCD), when surgery is indicated.

Objective

The purpose of the study is to report the results of a cohort of patients undergoing emergency laparoscopic left hemicolectomy surgery for acute diverticulitis, with primary anastomosis without ileostomy, reporting the results of major postoperative complications.

Material and methods

Retrospective analysis of 111 cases with ALCD, ASA ≤ 3 from January 2006 to September 2021. There were 61 females (mean age 78 years) and 50 males (mean age 76 years). After careful selection of the patient, necessarily hemodynamically stable, the standardized surgical technique was performed as follows: open laparoscopic access with 3/4 trocars, thorough toileting of the peritoneal cavity, also using saline mixed with antibiotics (in Hinchey IV, fecal material was removed with endobag), mobilization of the splenic flexure, complete mobilization of the left colon to the peritoneal reflex. Intestinal section at rectosigmoid junction with linear stapler, sigmoidectomy with section of sigmoid vessels clipped with Hem-o-lok or cut within inflamed edematous mesenteric tissue, extraperitoneal section of left colon distal to left colic artery, transanal colo-rectal anastomosis stapled, pneu-

matic testing and placement of perianastomotic/pelvic surgical drain tube [11].

Results

Almost all patients were admitted to the intensive care unit for at least the first postoperative day. The most significant complications were anastomotic leaks (AL=5.4%), basal pneumonia (BA=4.5%), recurrent peritonitis due to intra-abdominal abscess (RP=4.5%), wound infection (WI=3.6%), the overall mortality rate was 2.7%; The reintervention rate was 5.4%. The most frequent complication was prolonged postoperative ileus (56%), which was generally managed with nonoperative treatment.

Discussion

More than 80% of ASA 2 and 3 patients were hospitalized at least one night in intensive care unit. Although to date the Hartmann procedure is still the most performed, primary anastomosis (with or without protective stoma) is also proving to be a valid alternative to HP [12,13].

Our data are in line with the current scientific literature.

Taking inspiration from the title of the Shaban group's meta-analysis, "*Perforated diverticulitis: to anastomose or not to anastomose?*", currently for the literature and for surgeons the topic of anastomosis during resective surgery for diverticulitis seems to be a real problem. In their meta-analysis they examined 1933 abstracts including 14 studies, with 765 patients in total, 482 in the Hartmann group and 283 in the primary anastomosis group. This showed significantly lower mortality with primary anastomosis (10.6%) compared to Hartmann anastomosis (20.7%) ($p=0.0003$) and concluded that resection and primary anastomosis should be considered as a feasible and safe operative strategy in selected patients with perforated diverticulitis [6].

These data are confirmed by the study conducted by Matthew D. Tadlock et al, who examined 1,314 patients who required emergency surgery for acute diverticulitis, 75.4% underwent HP, 21.7% underwent PA and 2.9% underwent PA with Proximal Deviation (PAPD). Thirty-day mortality was 7.3%, 4.6%, and 1.6% for HP, PA, and PAPD, respectively ($p=0.163$), while surgical site infections occurred in 19.7%, 17.9% and 13.2% respectively [12].

In our test population, we recorded an overall mortality rate of 2.7%, which is in line with the literature. According to our analysis, the incidence of wound infection (3.6%) has a lower incidence than in the literature.

The meta-analysis of Cirocchi R et al's group, reviews 3 randomized trials with 254 patients (116 and 138 in the PA and HP groups, respectively) and concludes that PA and HP appear to be equivalent except for a lower risk of intra-abdominal abscess after PA [14].

Finally, Hosam Halim's group included a total of 25 studies involving 3546 patients, in which the overall mortality in the HP group was 10.8% in observational studies and 9.4% in RCTs. Mortality rates in the PRA group, 8.2% in observational studies and 4.3% in RCTs, were lower than those in the HP group [5]. In our cohort, the overall mortality rate was 2.7%; the reintervention rate was 5.4%, these data are in line with the literature [15].

Conclusion

Current management of acute complicated diverticulitis continues to evolve towards more conservative and minimally invasive strategies.

Our results shows us that we are on the right track: MI invasive approach allows an effective intra- abdominal cleansing, reduces post-surgical immunosuppression, less hospitalization days and, without stoma, we have similar AL complications rate with PA and stoma according to literature data (5-7%).

Resection and anastomosis can be considered in urgency a viable and safe surgical strategy, with complication rates in line with the literature. Although the data are comforting, the emergency setting does not make it easy to perform prospective, randomized multicenter studies, so the lack of studies makes further well-structured future studies necessary.

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