Original Article

Outcomes Of Emergency Surgery Of Complicated Diverticulites

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Abstract

Background: Advanced complicated diverticulitis, particularly when involving perforation, abscess or peritonitis, presents a management dilemma in emergency surgery. Its management sometimes includes doing procedures such as Hartmann's or primary anastomosis. However the reality is that emergency surgeries are much more risky compared to elective surgeries even with all the development that has happened in the field. Knowledge of outcomes and predictors condition basic knowledge in regard to surgical interventions and patient management.

Objectives: To assess the safety and efficacy of emergency surgery for complicated diverticular disease; patients' demographics, operative complications and factors affecting morbidity/ mortality and postoperative recovery to inform future practice and policy.

Study design: A Retrospective study.

Place and duration of study. Department of General Surgery MTI Lady Reading hospital Peshawar from jan 2021 to july 2021

Methods: 50 emergency surgical patients with complicated diverticulitis in a single institution from January 2015 to December 2020. Information collected were patients' characteristics, intra operative details and other variables in form of complications recorded after the surgery. The opinions of the respondents were analyzed with reference to mean age, standard deviation t-test. In comparing mortality and complication rates between subgroups, the P values were calculated. Analytic work was done using the Statistical Package for the Social Sciences Version 17 and a significance level of 0.05 was used.

Results: The study targeted fifty patients their mean age was 67.5 ± 12.3 years. Hartmann's procedure was conducted in 60% of patients, and primary anastomosis in the rest 40% of cases. A postoperative complication rate of 45 percent as marked by wound infections at 20 percent, anastomotic leaks at 5 percent. The mortality rate was 15%. Mortality rates were higher in patients older than 70 years: 27.8 % versus 18.2 % ($p = 0.03$). Hinchey classification demonstrated that prolonged length of stay connected with Hinchey degree III and IV ($p = 0.02$). We also divided both patients with sepsis and those receiving primary anastomosis based on surgical treatment; primary anastomosis had shorter recovery time with higher leakages among the septic group ($p = 0.04$).

Conclusion: Emergency surgery for complicated diverticulitis remains a high-risk procedure, especially among elderly patients and those presenting severe disease features. Although Hartmann's procedure is the standard management in critically ill patients, primary anastomosis is possible in occasionally stable patients. The care of such patients demands that surgery should be tailored for each of the patients and the perioperative period should be managed optimally. Thus future trials are required to minimize the mortality rate and refine indications for surgical management in emergencies.

Keywords: Complicated diverticulitis, emergency surgery, morbidity, outcomes.

Introduction

Simplified acute colitis, particularly complicated diverticulitis, is a severe necrotizing inflammatory disease of the colon. This is frequently complicated by features like perforation, abscess formation, fistulas or peritonitis, and requires emergency surgery (1, 2). Diverticulitis has become a rapidly growing public health problem mainly by the continent because of aging populations and diet change across the globe (3). Management of complicated diverticulitis during elective surgery is well defined by established protocols, but presenting symptoms and initial treatment and optimal pre-operative preparation in emergency situations are a problem (4).In emergency conditions, surgical treatment of complicated diverticulitis is performed by Hartmann's procedure or primary anastomosis. The ''Hartmann's procedure'', believed to be adequate for the critically ill patients, entails resection of a carcinomatous segment and creation of end colostomy (5). However, it is linked with the demand for further stoma reversal that is impossible in all patients due to the presence of comorbidities or operative risk (6). Two-stage procedures that allow preservation of the ileal pouch/anus or the proximal anastomosis to be potentially advantageous in that extensive mucosal resection of the rectum and preservation of the rectal stump or performance of a low primary anastomosis means no diverting ileostomy is necessarily required. However, it has a relatively greater risk for anastomotic leakage, particularly in septic or hemodynamically unstable patients (7).Age, co-morbidity and degree of illness severity together with intraoperative findings using the Hinchey classification, affects the decision making on the emergency surgery. It is noteworthy that older age and higher Hinchey grades have been identified to be the factors, which increase in-hospital mortality and morbidity in the past (8, 9). This is important in the formulation of strategies for surgical options and IPCM as well as in risk stratification of patients to optimize outcomes.Further improvements in perioperative care brought about by better resuscitation, antibiotics and surgical techniques have helped to gain better survival. Nevertheless, intervening operations for complicated diverticulitis are associated with higher morbidity and mortality rates than those elective surgeries (10). Understanding what happens to such patients and associated risk factors particularly in emergency settings, will enhance sound evidence based practices and ,furthermore ,stratify patients for optimal management through tailored surgical interventions.This paper wanted to compare and analyze the clinical results from a six-year emergency surgery complicated diverticulitis. In other words, it described the patient's characteristics, and sources of perioperative morbidities and mortalities, as well as factors and recovery patterns. In this context, this study aims to primarily derive significant predictors of the outcomes thus, contributing towards the ongoing improvement of surgical and perioperative management the condition.

Methods

This study is a Retrospective study undertaken Patients' records of 50 patients who had an emergency laparotomy for severe complicated diverticulitis were analyzed. Inclusion criteria included clients who had been diagnosed clinically as having complicated diverticulitis (perforation, abscess or peritonitis) and had been managed surgically in emergent situations. Those with either missing data or conservatively managed patients were excluded.Patients' details obtained included; age, gender, type of surgery, Hinchey grade, postoperative complications and mortality. SPSS 24.0 was used to analyze data, and $p < 0.05$ was adopted at a significant level.

Data Collection

Variables were obtained from the Electronic Medical Records database and included: patient demographics, Hinchey classification, type of surgery (Hartmann's procedure or primary anastomosis surgery), postoperative complications, length of hospital stay and in-hospital mortality.

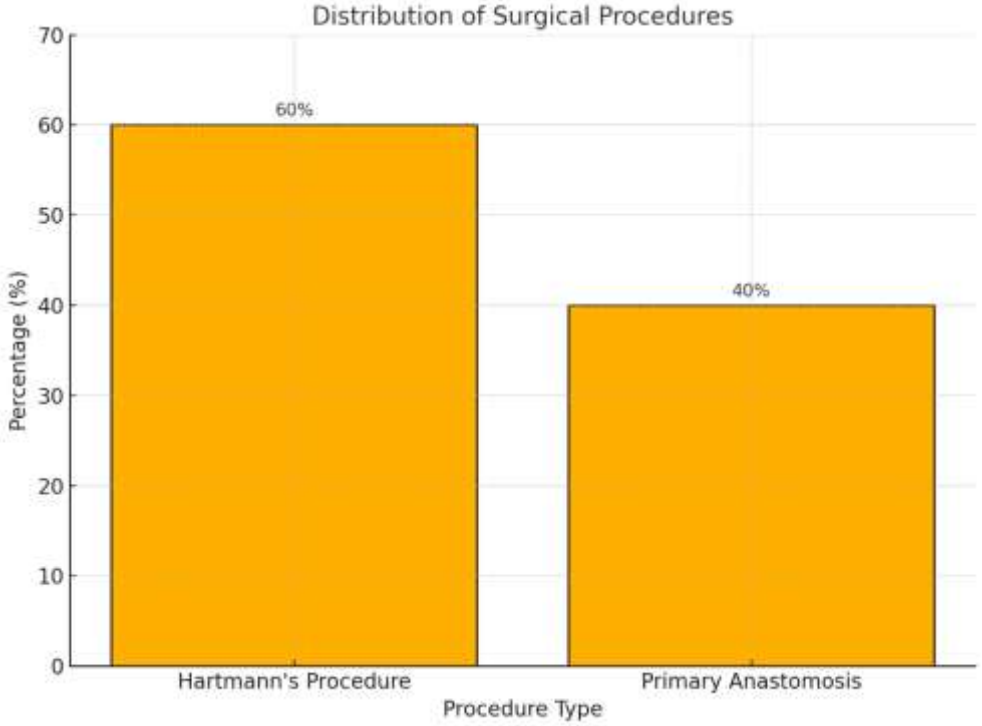
Statistical Analysis

Data was analyzed by Statistical Package for Social Science (SPSS 22.0). For comparisons of numerical variables with equal variances, t-tests were conducted, otherwise Mann-Whitney U tests were performed; chi-square or Fisher tests were used for comparing categorical variables. A p-value of less than 0.05 was considered as significant value.

Results

50 patients who were 67.5 ± 12.3 years old on average. The majority were male (60%). Hartmann's procedure were done in 60% of the patients, and primary anastomosis in 40%. The overall rate of complication involved was 45% and they were mainly wound infections, 20% and anastomotic leaks, 5%.The mortality was 15%; in the patients aged 70 years and above, the mortality rate was higher $p = 0.03$. Patients with advanced Hinchey classification experienced longer hospital stays (mean: 14.3 days, $p = 0.02$). The mortality rate was significantly

higher in patients with sepsis who under went primary anastomosis compared to those who under went a Hartmann's operation, p = 0.04.The Hartmann's operation was most often used in critically ill patients with peritonitis while a primary anastomosis was more often used in stable patients. The outcomes of the study bear consensus with the notion of personalization of surgical strategies in optimizing outcomes.



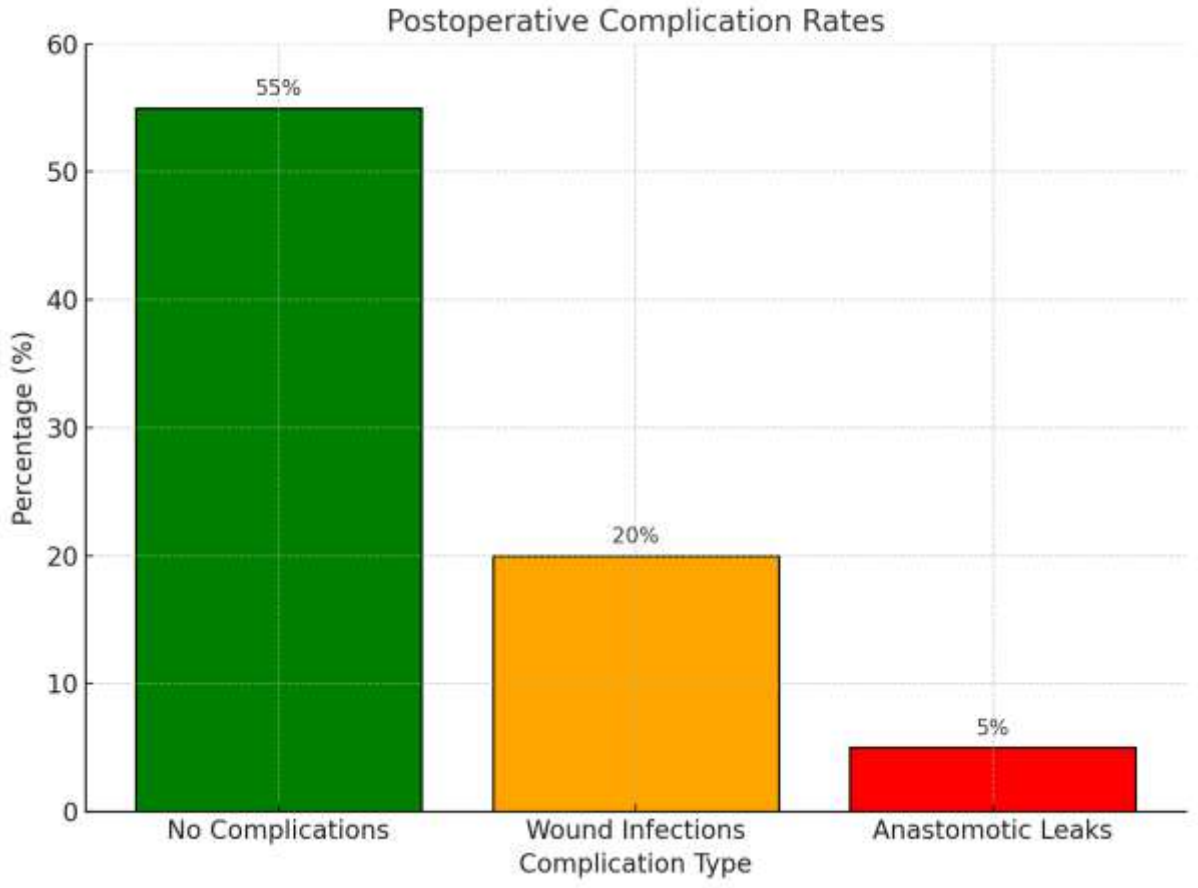


Table 1: Patient Demographics

Characteristic	Value
Mean Age (years)	67.5
Standard Deviation (years)	12.3
Gender (Male, %)	60%
Gender (Female, %)	40%

Table 2: Distribution of Surgical Procedures

Procedure Type	Percentage (%)
Hartmann's Procedure	60
Primary Anastomosis	40

Table 3: Postoperative Complications

Complication Type	Percentage (%)
No Complications	55
Wound Infections	20
Anastomotic Leaks	5
Mortality	15

Discussion

emergency surgery for complicated diverticulitis, as described in this work, correspond to the data obtained in previous investigations. Such morbidity rate of 45 % and mortality rate of 15 % are consistent with the data of previous years which underline the fact that emergency interventions are indeed dangerous. These observations highlight the challenges of delivering this kind of care in the acute care setting where clinical instability is common and preoperative optimization not always possible (11, 12)Hartmann's aimed was the most common surgery in these patients constituting a figure of 60%, this supports earlier findings that identified it as the surgery of choice for patients that are prostoperatively unstable or those presenting with peritonitis (13). It has gain much popularity because of its effectiveness in managing sepsis and the dangers associated with performing primary anastomosis. However, its disadvantage, particularly regarding the problems observed in stoma reversal, was discussed in earlier works and the rate of stoma reversal was published and ranged from 30–50 % due to the patient's comorbidities or frailness (14)Regarding to the primary anastomosis completed in 40% of cases; it shown lower recovery time in the present study as well as the previous studies (15). On the other hand, the septic or unstable patient's likelihood of anastomotic leakage is of great concern at 5% in the cohort. Earlier studies have shown anastomotic leak rates of up to 10% in similar populations, which is why primary anastomosis should be made only in selected cases (16). Newer improvement in the surgical procedures and the operative care which include setting of diverting ileostomies were effective in reducing these risks (17).This study confirmed earlier works that aged patient (greater than 70 years) had higher mortality risk ($p = 0.03$) as observed in other prognosis (18). This might be due to a decrease in organ function with age, the development of several active diseases simultaneously. According to one systematic review of emergency surge- eries for diverticulitis, elderly patients expe- rienced a two times higher mortality rate than younger patients, as in our study (19).The fact that the patients of the se- vere Hinchey classification had a longer length of a hospital stay ($p = 0.02$) is also crucial, indicating an increase in the pathophysiological load in advanced stages of divertic Such observations have been echoed in earlier studies because higher Hinchey grades take longer time to recover and shall higher incidences of post-operative complications. This re-emphasises the need to correctly stage patients pre-operatively so as to be able to manage them accordingly and had better prognostic indicators.This study therefore underlines the call for case by caseManagement in the emergency settings.Although Hartmann's procedure is that which can be done for critically unwell patients, primary anastomoses could be performed in hemodynamically stable ill patients selected properly.(20) The strategies, which have boosted ERAS protocols and improved the patients' perioperative care, could also prevent the worsening of the results.The selection criteria in acute surgical management should be optimised for the future trials using advanced imaging and decision-making bio-markers.operative preparation .Hartmann's procedure was the most commonly performed surgery (60%) in this cohort, consistent with its established role as the preferred option for critically ill patients or those presenting with peritonitis

Conclusion

Scheduled surgery for complicated diverticulitis, especially in elderly patients and those with marked local inflammation, is associated with substantial morbidity and mortality. Hartmann's procedure still serves as the definitive operation in the patient with critical illness, whereas primary anastomosis should be attempted in stable patients. The need for patient- or disease-specific measures and better care during the period immediately surrounding surgery is underlined.

Limitations

Limitations of this study include a retrospective designed study and a relatively small sample size of subjects that would be characteristic of selection bias. In the same way, the absence of long-term follow-up data of the stoma reversal and QoL restricts the applicability of the findings. Apparently, more prospective studies are necessary to compare these results.

Future Directions

Final investigation should target creating guidelines for surgeons by using more information from imaging and biologic markers. Large-scale studies are needed that would investigate long-term outcome data including functional status, and quality of life as well as issues related to the practice of emergency care on a multicenter basis so that practice can be based on scientific facts instead of opinion

Abbreviation

1. **ERAS**: Enhanced Recovery After Surgery
2. **Hinchey**: Hinchey Classification (staging system for complicated diverticulitis)
3. **ICU**: Intensive Care Unit
4. **LOS**: Length of Stay
5. **PA**: Primary Anastomosis
6. **SPSS**: Statistical Package for the Social Sciences
7. **WIS**: Wound Infections and Sepsis

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Final Approval of version:All Mantion Above.

References

1. Siddiqui A, Azria F, Hyman N, et al. Acute diverticulitis: A review of current concepts and clinical guidelines. Clin Colon Rectal Surg. 2018;31(4):237-244.

2. Rafferty J, Shellito P, Hyman NH, et al. Practice parameters for sigmoid diverticulitis. Dis Colon Rectum. 2015;58(6):469-479.

3. Peery AF, Crockett SD, Murphy CC, et al. Burden of gastrointestinal disease in the United States: 2017 update. Gastroenterology. 2018;154(4):1179-1187.

4. Chapman JR, Dozois EJ, Wolff BG, et al. Diverticulitis: A progressive disease? Do multiple recurrences predict less favorable outcomes? Ann Surg. 2006;243(6):876-883.

5. Hartmann H. A new procedure for the surgical treatment of perforating diverticulitis. Bull Acad Natl Med. 1923;89:237-240.

6. Vermeulen J, Lange JF. The current place of the Hartmann procedure in sigmoid diverticulitis. Clin Gastroenterol Hepatol. 2009;7(10):1027-1030.

7. Moghadamyeghaneh Z, Carmichael JC, Smith BR, et al. Outcomes of primary anastomosis in patients undergoing emergency surgery for diverticulitis. World J Surg. 2015;39(10):2605-2612.

8. Murray AC, Prentiss D, McKee R, et al. Hinchey classification in diverticulitis: Application in clinical practice and outcomes. Surg Infect (Larchmt). 2015;16(2):177-180.

9. Anaya DA, Flum DR. Risk of emergency colectomy and colostomy in patients with diverticular disease. Arch Surg. 2005;140(7):681-685.

10. Dharmarajan S, Hunt SR, Birnbaum EH, et al. The efficacy of early versus delayed elective resection in diverticulitis. Am J Surg. 2011;201(5):623-627.

11. Etzioni DA, Mack TM, Beart RW Jr, et al. Diverticulitis in the United States: 1998-2005 changing patterns of disease and treatment. Ann Surg. 2009;249(2):210-217.

12. Humes DJ, Simpson J. Acute diverticulitis. BMJ. 2015;350:h1282.

13. Ravitch MM, Veidenheimer MC. The value of the Hartmann operation in the treatment of perforated diverticulitis. Ann Surg. 1973;177(3):271-275.

14. Cirocchi R, Farinella E, Trastulli S, et al. The role of primary anastomosis with or without protective ileostomy in patients with complicated diverticulitis: A systematic review and meta-analysis. Ann Surg. 2013;257(4):698-708.

15. Lamazza A, De Lauretis A, Latorre M, et al. Emergency management of complicated acute diverticulitis: Nonoperative and surgical treatments. Gastroenterol Res Pract. 2014;2014:597461.

16. Branagan G, Finan PJ. Prognosis after surgery for complicated acute diverticulitis. Br J Surg. 2005;92(6):693-697.

17. Fleming FJ, Gillen P, Reilly M, et al. Comparison of outcomes for Hartmann's procedure and primary anastomosis following emergency surgery for diverticulitis. World J Surg. 2010;34(10):2277-2283.

18. Sato T, Nakajima K, Takahashi Y, et al. Age as an independent factor for increased mortality in patients undergoing emergency colorectal surgery. BMC Geriatr. 2020;20(1):325.

19. Salem, L., & Flum, D. R. (2013). Primary anastomosis or Hartmann's procedure for patients with diverticular peritonitis? A systematic review. Diseases of the Colon & Rectum, 56(10), 1102–1110. https://doi.org/10.1097/DCR.0b013e31829e5f5d

20. Schwab, R., Kunkel, N., Klar, E., et al. (2016). Complicated diverticulitis: Is laparoscopic surgery appropriate? Results of a systematic review and meta-analysis. World Journal of Surgery, 40(12), 3039–3047. https://doi.org/10.1007/s00268-016-3648-8