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COMPARATIVE STUDY BETWEEN ILEOSTOMY AND PRIMARY REPAIR DONE IN PATIENT WITH INTESTINAL PERFORATION

Dr. Abhishek Dabakara, Dr. Ashish Sharma (Primary Author) & Dr. Iqbal Khan (Assist. Prof)

Dept. of General Surgery Index Medical College Hospital and Research Centre, Indore (M.P)

Corresponding Author: Dr. Abhishek Dabakara

ABSTRACT

The management of intestinal perforation is a critical concern in surgical practice, with ileostomy and primary repair being two primary approaches. This study provides a comparative analysis of these techniques by reviewing existing literature to evaluate their outcomes, complications, and long-term effects. The study aims to offer insights into the benefits and limitations of each procedure, facilitating better decision-making in clinical practice. The analysis highlights the significance of patient-specific factors in choosing the appropriate surgical intervention, emphasizing the need for individualized treatment plans.

Keywords: *Ileostomy, Primary Repair, Intestinal Perforation, Surgical Outcomes, Postoperative Complications*

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I. INTRODUCTION

Intestinal perforation is a life-threatening condition requiring prompt surgical intervention. The debate between ileostomy and primary repair as the optimal treatment method continues to be a topic of discussion among surgeons. Ileostomy involves diverting the intestinal contents through an external stoma, while primary repair entails directly suturing the perforation. Both methods have their merits and drawbacks, with varying implications for patient recovery, complication rates, and long-term outcomes.

Previous studies have demonstrated that the choice between ileostomy and primary repair depends on several factors, including the patient's clinical condition, the size and location of the perforation, and the presence of contamination in the peritoneal cavity (Smith et al., 2019; Patel & Thomas, 2021). This study aims to compare these two surgical options by synthesizing existing research to provide a comprehensive understanding of their relative effectiveness.

A. Intestinal Perforation

Intestinal perforation is a severe medical condition characterized by a hole or tear in the wall of the gastrointestinal tract, leading to the leakage of intestinal contents into the peritoneal cavity. This condition can result in peritonitis, sepsis, and, if untreated, death. The incidence of intestinal perforation varies globally, with higher rates reported in developing countries, often due to infectious causes like typhoid fever (Bhattacharya et al., 2020). In developed countries, the causes are more commonly related to conditions such as diverticulitis, Crohn’s disease, and iatrogenic injuries (Tekkis et al., 2019).

The pathophysiology of intestinal perforation involves an acute inflammatory response that can rapidly progress to systemic infection and multi-organ failure. The severity of the condition depends on the size of the perforation, the extent of contamination, and the patient’s overall health status. Timely diagnosis, typically achieved through clinical examination, imaging studies, and laboratory tests, is critical for reducing mortality (Wang & Liu, 2018). Despite advances in diagnostic techniques and surgical interventions, intestinal perforation remains a significant challenge in emergency surgical care, with mortality rates ranging from 6% to 30% depending on the cause and severity (Morris et al., 2021).

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

B. Overview of Surgical Treatment Options

The surgical management of intestinal perforation has evolved significantly over the years, with ileostomy and primary repair being the two most widely employed techniques. Each method has specific indications, advantages, and potential complications that influence surgical decision-making.

Ileostomy: In an ileostomy, the surgeon creates a stoma by bringing the end of the ileum (the last part of the small intestine) to the surface of the abdomen, where it is sutured to the skin. This procedure diverts the intestinal contents away from the site of perforation, allowing the perforated bowel to heal and reducing the risk of intra-abdominal sepsis (Jain et al., 2020). Ileostomy is often preferred in cases with severe peritoneal contamination, multiple perforations, or when the patient is hemodynamically unstable (Singh et al., 2017). However, this procedure can have significant drawbacks, including the need for stoma care, the psychological impact on patients, and the potential for complications such as stoma prolapse, retraction, or skin irritation (Deakin & Fowler, 2019).

Primary Repair: Primary repair involves directly suturing the perforation site without creating a stoma. This approach is generally considered when the perforation is small, the degree of contamination is minimal, and the patient is stable (Baker & Smith, 2018). Primary repair has the advantage of preserving normal bowel function and eliminating the need for a stoma, which can improve postoperative quality of life. However, the risk of anastomotic leakage, infection, and recurrent perforation must be carefully weighed against these benefits (Gomez et al., 2020).

C. Clinical Decision-Making in Surgical Interventions

The decision between performing an ileostomy or opting for primary repair is multifaceted, requiring careful assessment of several clinical factors. One of the most critical determinants is the **degree of peritoneal contamination**. In cases where there is widespread contamination due to fecal matter or intestinal contents, ileostomy is often favored because it mitigates the risk of septic complications by diverting the flow away from the damaged area (Kim et al., 2021). On the other hand, in controlled contamination scenarios, primary repair might be preferred to avoid the complications associated with stoma formation (Mohan et al., 2019).

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Patient demographics and **pre-existing conditions** also play a crucial role in surgical decision-making. For instance, older patients or those with significant comorbidities such as diabetes, cardiovascular disease, or immune suppression may not tolerate the physiological stress associated with an ileostomy and may benefit more from a primary repair if the clinical situation allows (Lee et al., 2020). Additionally, the **size and location of the perforation** are critical factors. Larger perforations or those located in anatomically complex areas may necessitate an ileostomy to ensure adequate healing (Nguyen et al., 2018).

The **surgeon's expertise** and experience with both procedures also contribute significantly to the decision-making process. Surgeons with extensive experience in ileostomy may be more inclined to recommend it, especially in high-risk cases, while those with a strong background in minimally invasive techniques might favor primary repair in suitable candidates (Greenfield et al., 2017).

D. Research Objectives

- To compare the postoperative outcomes of ileostomy and primary repair in patients with intestinal perforation.
- To analyze the complication rates associated with both surgical procedures.
- To evaluate the long-term effects on patient quality of life following each surgical approach.

II. SYSTEMATIC LITERATURE REVIEW

S. No.	Topic	Objectives	Results/Findings	Author details
1	Compare Outcomes of Primary Repair and Ileostomy in Patients Presented with Typhoid Perforation	To compare the outcomes between primary repair and ileostomy inpaediatric patients presented with typhoid perforation	There were 72 males (36 in each group) and 28 females (14 in each group) in this study. Mean age of the patients were 11.14±7.44 years in group I and in group	Cheema et al. (2022)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

			II mean age was 10.17±9.68 years. In group I 35 (70%) cases had low socio-economic status while in group II 33 (66%) cases had low socio-economic status. 60 patients were from rural areas (30 in each group). Wound infection was the most common complication 9 (18%) found in group I and 12 (24%) in group II followed by wound dehiscence in group I 5 (10%) and in group II 7 (14%). Mortality rate in group II 8 (16%) was significantly higher as compared to group I 3 (6%). Satisfaction among patients of group I was significantly higher as compared	

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			to group II with p value 0.05.	
2	Typhoid Perforation: Comparison of Outcomes between Primary Repair and Ileostomy in Children	To examine the outcomes of primary repair and ileostomy in patients presented with typhoid perforation.	There were 28 males and 12 females with mean age 9.25±3.45 years in Group A and in Group B 26 patients were males and 14 were females with mean age 9.12±2.96 years. Overall complications rate was high in Group B as compared to Group A patients (p=<0.05). Mortality rate was high in Group B 20% as compared to Group A 7.5%.	Khan et al. (2020)
3	A comparative study on outcome of ileal perforation after primary perforation closure and resection and ileostomy	To compare the outcome of two different types of treatment for Ileal perforation i.e. Primary Closure (vs) Resection and Ileostomy.	The common age groups affected was 41-50 years age group (5 patients) and 61-70 years age groups (5 patients). The least affected were 1-10years age group (one patient). The incidence in	Rahman et al. (2018)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

			males was slightly greater than females. Male to female ratio was 2.5:1. Typhoid perforation is the most common case of ileal perforation followed by non-specific perforation. Post-operative complications are more in the primary closure group with 32.14% (9 patients) which is lower when compared to ileostomy group 17.85% (5 patients). Complications of primary closure were wound infection (2 patients), burst abdomen (3 patients), faecal fistula (1 patient), respiratory complications (3 patients). Complications in ileostomy group were wound	

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

			infection (4 patients) and respiratory complications (one patient).	
4	Comparison between Primary Repair and Ileostomy in the Management of Typhoid Intestinal Perforation	To compare the outcomes of primary repair with ileostomy in the management of typhoid intestinal perforation.	Mean age of patients noted was 22.47±14.8 years. In Group-A, 124(62%) patients, and in Group-B 118(59%) patients were males. Postoperative wound infection was the most frequent complication found, in 32(16%) patients in Group-A and 44(22%) patients in Group-B. No complications were found in 96(48%) patients in Group-A and 80(40%) patients in Group-B. The mortality rate was higher in Group-B 34(17%) in comparison to Group-A 22(11%).	Shah UA, Rameez SMA, Bajwa KS, Javed M, Iqbal T, Malik A. (2024)
5	A Comparative Study between	To study the management of	The most common age group involved	Babu (2019)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

	the Outcome of Primary Repair Versus Ileostomy in Ileal Perforation: Our Institutional Experience	ileal perforation and to evaluate and compare the outcome of primary repair and ileostomy in ileal perforation with respect to the preoperative parameters, post operative complications and mortality and also to find the ideal procedure.	was 46-60 years. There were 24 males and 6 females. Out of 30 patients of the study, 14 patients underwent primary repair and 16 patients underwent ileostomy. Most common complication is leak in primary repair. Stoma related complications occurred in 2 cases. Mortality rate was higher in primary repair group in this study.	
6	A comparative study on outcome of ileal perforation after primary perforation closure and resection and ileostomy	To compare the outcome of two different types of treatment for Ileal perforation i.e. Primary Closure (vs) Resection and Ileostomy.	The common age groups affected was 41-50 years age group (5 patients) and 61-70 years age groups (5 patients). The least affected were 1-10years age group (one patient). The incidence in males was slightly greater than females.	Wahab et al. (2018)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

			Male to female ratio was 2.5:1. Typhoid perforation is the most common case of ileal perforation followed by non-specific perforation. Post-operative complications are more in the primary closure group with 32.14% (9 patients) which is lower when compared to ileostomy group 17.85% (5 patients). Complications of primary closure were wound infection (2 patients), burst abdomen (3 patients), faecal fistula (1 patient), respiratory complications (3 patients). Complications in ileostomy group were wound infection (4 patients) and respiratory	

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			complications (one patient).	

III. RESEARCH METHODOLOGY

This study employs a systematic literature review methodology to compare ileostomy and primary repair in the management of intestinal perforation. The literature search will be conducted using databases such as PubMed, Scopus, and Cochrane Library, focusing on studies published in the last decade. Inclusion criteria will include studies that provide comparative data on surgical outcomes, complication rates, and long-term effects. Articles will be selected based on their relevance, quality, and the robustness of their findings.

IV. CONCLUSION

The comparative analysis of ileostomy and primary repair in patients with intestinal perforation reveals that while both procedures have their advantages, the choice of intervention should be tailored to individual patient needs. Ileostomy may be more suitable for patients with severe contamination or multiple perforations, whereas primary repair could be advantageous in cases with minimal contamination and a stable clinical condition. This study underscores the importance of personalized treatment plans in improving surgical outcomes and patient quality of life. Further research, particularly large-scale randomized controlled trials, is needed to solidify these findings and guide clinical decision-making.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

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