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Original research article

OUTCOME OF GRAHAM PATCH OMENTOPEXY IN THE MANAGEMENT OF PERFORATED DUODENAL ULCER

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Abstract: *Perforated duodenal ulcer remains a surgical emergency with significant morbidity and mortality. Graham's patch omentopexy is a commonly performed procedure for its management. Evaluating the outcomes of this technique is crucial for improving patient care.* ***Objective:*** *To examine the outcomes of Graham's patch omentopexy in managing perforated duodenal ulcers, focusing on postoperative complications.* ***Methods:*** *This study included 45 patients diagnosed with perforated duodenal ulcers who underwent Graham's patch omentopexy from June 2023 to December 2023. The outcomes were assessed in terms of postoperative complications, including wound infection, wound dehiscence, pneumonia, bile leakage, abdominal abscess, and mortality.* ***Results:*** *The mean age of the patients was 46.49 ± 9.58 years. Postoperative complications included wound infection in 14 patients (31.3%), wound dehiscence in 13 patients (28.9%), pneumonia in 6 patients (13.3%), bile leakage in 5 patients (11.1%), abdominal abscess in 6 patients (13.3%), and mortality in 1 patient (2.2%).* ***Conclusion:*** *Graham's patch omentopexy is an effective technique for managing perforated duodenal ulcers; however, complications such as wound infection, dehiscence, pneumonia, bile leakage, abdominal abscess, and mortality can occur. Further studies are needed to identify factors associated with these complications to optimize patient outcomes.*

Keywords: Duodenal Perforated Ulcer, Peptic Ulcer, Complications, Graham's Omentopexy.

Introduction

Duodenal perforation is a rare but potentially fatal condition. The range of the death rate is 8% to 25%. (1-4) Lenepneau initially described the condition of a perforated duodenal ulcer in 1688. 4. There are two types of duodenal perforations: confined and free. Contained perforation arises when an ulcer creates a full hole through the tissue, but the leakage is limited by surrounding organs like the pancreas that isolate the affected area. Free perforation happens when intestinal contents escape into the abdominal cavity, resulting in widespread peritonitis. (4, 5) Various surgical techniques have been developed to treat difficult peptic ulcers. When treating duodenal ulcer perforation in an emergency, omentopexy is commonly used. (6) Cellen Jones first proposed omentopexy, and Graham revised it. (7) Direct and indirect omentopexy are the primary surgical methods for omental patching. Several complex methods have been described for the treatment of duodenal perforations. (8, 9) Treatment options include partial gastrectomy to remove the perforated duodenum and gastric antrum, pyloroplasty to close the perforation, or closure of the perforation through a jejunal serosal patch and jejunal pedicle. Because these techniques can potentially prolong surgery times and need a high level of surgical skill and resources that might not be available in an emergency, they may not be feasible or advised for patients with unstable hemodynamics. (10, 11) Perforated duodenal ulcers are a significant emergency requiring prompt surgical intervention as well as resuscitation. There are several alternatives for treatment, ranging from non-operative methods to laparoscopic repair. (10-13)

Perforated duodenal ulcer is a severe medical condition that can result in life-threatening outcomes. As stated in earlier literature, Graham patch omentopexy is an effective treatment for this medical issue. This study aims to examine the post-operative consequences of Graham patch omentopexy in patients undergoing perforated duodenal ulcer treatment at our hospital. The study findings will assist in highlighting the importance of promptly identifying and intervening to manage this surgical emergency effectively. Timely intervention is crucial to prevent severe consequences arising from an untreated perforated duodenal ulcer, emphasizing the fundamental significance of early medical care and suitable surgical intervention.

Methodology

Our study was conducted in the Department of General Surgery, Lady Reading Hospital, from June 2023 to December 2023 after obtaining approval from the hospital. Forty-five patients presenting with perforated duodenal ulcers were selected for this study from OPD. Patients were aged 20 to 60 years; both genders were included. The demographics of all the patients were noted down on a pre-designed proforma. The procedures were performed by a consultant surgeon with more than five years of experience; Graham's omentopexy technique involved closing a perforation by using interrupted full-thickness 2-0 victory sutures along the ulcer margins. A pedicled omentum patch was placed over these sutures and tied without attempting primary perforation closure before inserting the omentum as a plug. After the surgery, we examined the outcomes in

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terms of postoperative complications such as bile leakage, wound infection and dehiscence, pneumonia, abdominal abscess, and mortality.

Results

For this study, we selected 45 patients who presented with perforated duodenal ulcers. The mean age was 46.49±9.586 years. The gender-wise distribution of the patients revealed that the frequency of male patients was 26 (57.8%) while female patients were 19 (42.2%). The perforation size was < 0.05 cm in 9 (20%) patients, 0.5 to 1 cm in 21 (46.7%) patients, and> 1 cm in 15 (33.3%) patients. Causes of perforation were smoking 15 (33.3%), NSAIDs 16 (35.6%), and stress 14 (31.1%). The outcomes were assessed in terms of complications which were wound infection 14 (31.3%), wound dehiscence 13 (28.9%), pneumonia 6 (13.3%), mortality 1 (2.2%), leakage of bile 5 (11.1%) and abdominal abscess 6 (13.3%). We did not find any notable association between causes of perforation and outcomes.

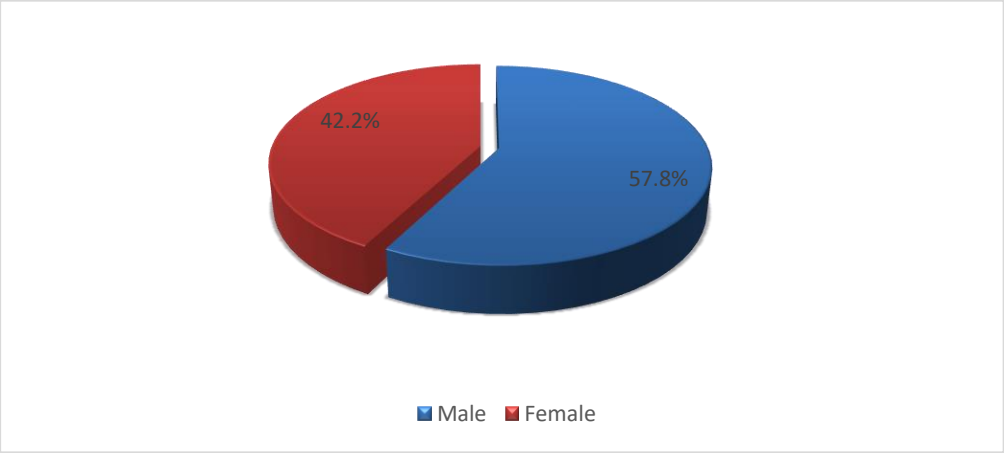

Figure 1 Gender distribution

Table 1 Cause of perforation

Causes of perforation	Frequency	Percent
Smoking	15	33.3
NSAIDS	16	35.6
Stress	14	31.1
Total	45	100.0

Table 2 Outcomes of Graham's Omentopexy

Outcomes of Graham's Omentopexy	Frequency	Percent
Wound infection	14	31.1
Wound dehiscence	13	28.9
Pneumonia	11	24.4
Mortality	1	2.2
Bile leakage	5	11.1
Abdominal abscess	1	2.2
Total	45	100.0

Table 3 Stratification of causes of perforation with outcomes of Graham's Omentopexy

		Cause of perforated duodenal ulcer			Total	P value
		Smoking	NSAIDS	Stress		
Outcomes	Wound infection	7	3	4	14	0.44
		50.0%	21.4%	28.6%	100.0%	
	Wound dehiscence	2	5	6	13	
		15.4%	38.5%	46.2%	100.0%	
	Pneumonia	1	4	1	6	
		16.7%	66.7%	16.7%	100.0%	
	Mortality	0	1	0	1	
		0.0%	100.0%	0.0%	100.0%	
	Bile leakage	2	1	2	5	
		40.0%	20.0%	40.0%	100.0%	
	Abdominal abscess	3	2	1	6	
		50.0%	33.3%	16.7%	100.0%	
Total		15	16	14	45	
		33.3%	35.6%	31.1%	100.0%	

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Discussion

Peptic ulcers are characterized as distinct erosions in the gastrointestinal tract's epithelial lining resulting from gastric juice's corrosive impact. (14) These lesions occur when the protective layer of the mucous membrane is harmed due to excessive acid production, contact between ordinary stomach acid and unsuitable mucous membrane, or a breach caused by various factors. Helicobacter pylori (H. pylori) infection, alcohol consumption, smoking, and the use of non-steroidal anti-inflammatory drugs (NSAIDs) are contributing factors. (15) The formation of peptic ulcers is significantly influenced by cigarette smoking and the excessive consumption of ulcerogenic medications, such as NSAIDs and corticosteroids. Additional risk variables encompass advanced age, male gender, alcohol abuse, and the presence of significant comorbidities. (15)

The progression of perforated peptic ulcers has undergone substantial changes since its initial clinical description. In the 19th century, this condition was rare and primarily impacted young women, with holes predominantly seen in the cardia of the stomach. (16) During the twentieth century, there was a substantial rise in the prevalence of perforations, primarily occurring in the duodenum of middle-aged males. (16) Men reached their highest point in the 1950s, while women's numbers increased. Advancements in operational procedures, bacteriology, and medication have greatly revolutionized the care of peptic ulcer disease. Although medicinal therapies such as H2-receptor antagonists and proton pump inhibitors have led to a decrease in elective procedures for perforated duodenal ulcers, emergency surgeries for acute complications such as ulcer perforation and bleeding continue to be frequent. (17) Peptic ulcer perforation is observed in approximately 10% of persons with a perforated duodenal ulcer, which is a significant outcome. Despite the notable progress in treating ulcers after discovering the role of H. pylori, there has been no discernible reduction in the incidence of ulcer perforation. The prevention potential of ulcers relies on comprehending the constituent factors that contribute to their development, some of which have recently been identified and appear to differ from those that produce uncomplicated ulcers. (17, 18)

We conducted a study on 45 patients aged between 20 and 60. Our analysis indicated that male patients' frequency was more significant than female patients. Our investigation revealed that the primary factors contributing to the development of a perforated ulcer were the use of NSAIDs, smoking, and stress. Another study demonstrated that a significant proportion of patients with a perforated duodenal ulcer had a history of tobacco and NSAID intake.

Our study found that the complications following Graham's omentopexy included wound infection in 14 patients (31.1%), wound dehiscence in 13 patients (28.9%), pneumonia in 6 patients (13.3%), mortality in 1 patients (2.2%), bile leakage in 5 patients (11.1%), and abdominal abscess in 6 patients (13.3%). The results of our investigation align with a previous study that documented the following problems after the GO procedure: wound infection (27.5%), wound dehiscence (7.5%), biliary leakage (7.5%), abdominal abscesses (7.5%), pneumonia (7.5%), and mortality (5%). (19)

Conclusion

From our study, we conclude that the outcomes in terms of complications of Graham's patch omentopexy in the management of perforated duodenal ulcer were wound infection, wound dehiscence, pneumonia, bile leakage, abdominal abscess, and mortality. We suggest further trials be conducted to explore the outcomes of this procedure further.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate.

Approved by the department concerned. (IRBEC-LRH-13/22)

Consent for publication

Approved

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Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

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Concept & Design of Study

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