ORIGINAL RESEARCH PAPER

General Surgery

KEY WORDS: Duodenal perforation, Helicobacter pylori, peptic ulcer disease, laparoscopic closure, perforated ulcer,

A COMPREHENSIVE REVIEW OVER MANAGEMENT STRATEGIES AND OUTCOMES IN DUODENAL ULCER PERFORATION

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ABSTRACT

Introduction: Duodenal perforation is a relatively uncommon yet potentially life-threatening condition, as evidenced by mortality rates ranging from 8% to 25% in published studies. Recent years have seen a decline in the incidence of peptic ulcer disease, a trend partly attributed to the widespread use of proton pump inhibitors (PPIs) and effective eradication treatments for Helicobacter pylori1. Despite these advancements, delayed diagnosis remains a significant challenge in managing duodenal perforation, often leading to poorer patient outcomes and decreased survival rates. **Methodology:** It's a retrospective observational study was conducted between 2023 -2024[1 yr] including 25 cases who underwent surgery for duodenal ulcer perforation which were diagnosed intra operatively in department of General Surgery, Al-Ameen Medical College, Vijayapura. **Results:** The data provides a comprehensive overview of patient demographics, surgical procedures, and outcomes, highlighting key trends and distributions in the study population and demonstrates that the current study aligns well with existing research. In a study involving 25 patients who underwent intraoperative examination revealing duodenal ulcer perforation, the age range spanned from 19 to 80 years, with the most prevalent age group being 40-49 years. The study population exhibited a male-to-female ratio of 3:1, comprising 16 males and 9 females. **Conclusion:** The management strategies for perforated gastro-duodenal ulcers vary from conservative approaches, first described by Taylor in 1946, to more aggressive surgical options such as gastrectomy. Typically, the majority of cases are effectively treated with simple suturing of the perforated intestinal wall. The preferred treatment in many instances involves either open surgical or laparoscopic closure2 of the perforated ulcer.

INTRODUCTION

Duodenal perforation is a relatively uncommon yet potentially life-threatening condition, as evidenced by mortality rates ranging from 8% to 25% in published studies. Recent years have seen a decline in the incidence of peptic ulcer disease, a trend partly attributed to the widespread use of proton pump inhibitors (PPIs) and effective eradication treatments for Helicobacter pylori. Despite these advancements, delayed diagnosis remains a significant challenge in managing duodenal perforation, often leading to poorer patient outcomes and decreased survival rates.

Duodenal ulcers are a component of peptic ulcer disease, which occurs when there is a disruption in the mucosal surface of the stomach or the first part of the small intestine (duodenum). Both the stomach and duodenum have defence mechanisms that protect their mucosal surfaces. Ulceration results from damage extending beyond the superficial layer. While dyspepsia is the primary symptom of most duodenal ulcers, symptoms can vary in severity, including gastrointestinal bleeding, obstruction of the gastric outlet, perforation, or fistula formation.

Management depends on the patient's specific presentation and disease progression at the time of diagnosis[3].

Differential diagnosis between duodenal and gastric ulcers is important in patients with dyspepsia or upper abdominal pain, especially those with a history of NSAID use or previous Helicobacter pylori infection. Testing for H. pylori is recommended for all patients diagnosed with peptic ulcer disease, particularly duodenal ulcers, as it is a common causative factor.

Objectives

To find out outcome of patients with duodenal perforation in a tertiary care centre.

Methodology

It's a retrospective observational study was conducted between 2023 -2024[1 yr] including 25 cases who underwent surgery for duodenal ulcer perforation which were diagnosed intra operatively in department of General Surgery, Al-Ameen Medical College, Vijayapura.

Study Design

Methods of Collection of Data:

A. Study design: Observational Study
B. Study period: May 2023 to June 2024
C. Place of study: Al-Ameen Medical College, Vijayapura.
D. Sample size: 25 patients.

Data collection began after obtaining approval from the Institutional Review Board and securing informed consent from all participants. Participants were informed about the study's objectives and the utilization of anonymized data for publication.

Inclusion Criteria

1. All cases above 18yrs
2. Diagnosed intraoperatively with duodenal ulcer perforation
3. Needed surgical intervention

Exclusion Criteria

1. Cases which suggestive of other perforation other than duodenal perforation and not underwent surgical intervention.
2. Suffering from serious comorbidities
3. Immunocompromised patients
4. Incisional hernia with complications
5. Chronic COPD
6. Patients with diabetes mellitus.

Statistical Analysis

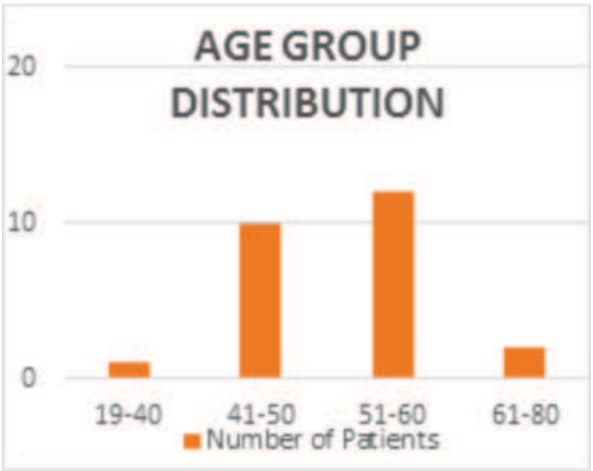
The data was entered into an MS Excel sheet, and the results were subsequently presented in tables and figures with numbers and percentages as necessary.

RESULTS

Age Group Distribution:

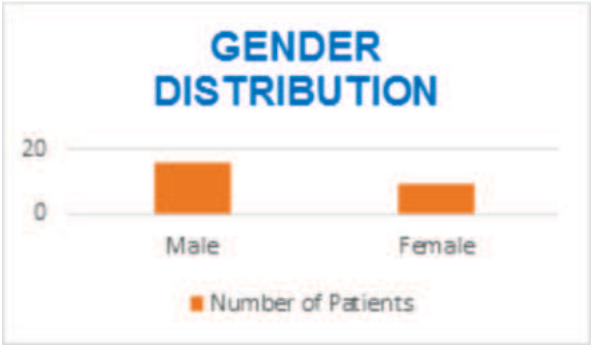
Majority of patients (84%) are within the 19 to 80 years of age range.

- 19-40 years: 40%
- 40-60 years: 44%
- Least represented age group: 21-30 years (2%)
- 61-80 years: 14%



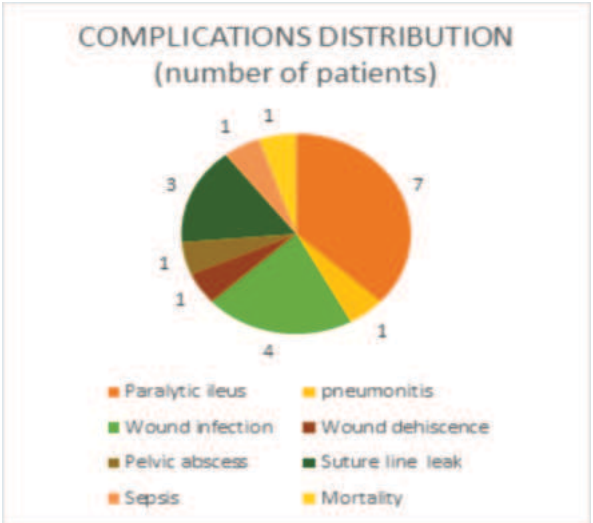
Gender Distribution

The study population exhibited a male-to-female ratio of 3:1 (16 males and 9 females).



Complications Distribution

- Paralytic ileus : 28%
- pneumonitis: 4%
- Wound infection : 16%
- Wound dehiscence : 4%
- Pelvic abscess : 4%
- Suture line leak : 12%
- Sepsis : 4%
- Mortality : 4%



DISCUSSION

Duodenal perforation, a rare yet highly lethal condition, carries a mortality rate ranging from 8% to 25% as reported in the literature. A significant contributor to this condition is peptic ulcer disease (PUD)[4], which remains the primary cause despite a decreasing incidence in recent years. Annually affecting 4 million people worldwide, with an incidence rate of 1.5% to 3%, PUD leads to perforation in approximately 5% of patients during their lifetime. The decline in PUD cases can be attributed to advancements such as eradication treatments for Helicobacter pylori and the widespread use of proton pump inhibitors (PPIs).

Our study compared complications following duodenal perforation repair with findings from Lau et al[5], Lunevicius et al[6], and Cochrane reviews. Suture line leaks occurred in 12% of cases in our study, similar to Lau et al. and Lunevicius et al. (10% and 12%, respectively), but slightly lower than Cochrane's reported 15%. Paralytic ileus was observed in 28% of our cases, higher than the rates in other studies (19% to 25%). Pulmonary complications were noted in 4% of our cases, contrasting with higher incidences in Lau et al. (14%) and Lunevicius et al. (15%), and lower than Cochrane's 9%. Intra-abdominal collections and wound infections were comparable across studies, with rates varying slightly. Re-intervention rates were 12% in our study, aligning closely with other reports. Hospital stays averaged 8-10 days in our study, consistent with findings from Lau et al. and Lunevicius et al., but slightly longer than Cochrane's reported range of 6-8 days. Mortality in our study was 4%, lower than Lau et al. (14%) and Cochrane (8%), but similar to Lunevicius et al. (5%).

CONCLUSION

- The management of perforated gastro-duodenal ulcer ranges from conservative non-operative therapy (initially described by Taylor in 1946) to radical surgical treatment(gastrectomy)
- Most cases are managed by simple suture of the perforated intestinal wall.
- The best treatment in most cases seems to be open surgical or laparoscopic suture closure of the perforated ulcer.
- Treatment with PPI medications is essential in all cases and should begin as early as possible, no matter which therapeutic strategy is chosen.
- Eradication of H. pylori infection is essential, no matter what sort of intervention is chosen.

REFERENCES

1. Clinch, Darja BMBCh, MRCS; Damaskos, Dimitrios MSc, FRCS; Di Marzo, Fransesco MD; Di Saverio, Salomone MD, FACS, FRCS. Journal of Trauma and Acute Care Surgery 91(4): p 748-758, October 2021. | DOI: 10.1097/TA.0000000000003357
2. Arnaud, Jean-Pierre MD; Tuech, Jean-Jacques MD; Bergamaschi, Roberto MD; Pessaux, Patrick MD; Regenet, Nicolas MD. Surgical Laparoscopy, Endoscopy & Percutaneous Techniques 12(3):p 145-147, June 2002.
3. November 1998, Perforated Duodenal Ulcer An Alternative Therapeutic Plan. Arthur J. Donovan, MD; Thomas V. Berne, MD; John A. Donovan, MD. Arch Surg. 1998;133(11):1166-1171. doi:10.1001/archsurg.133.11.1166
4. Duodenal Ulcer Perforation: A District Hospital Experience R. Durai, A. Razvi, A. Uzkalnis & Ph. C. H. Ng https://doi.org/10.1080/00015458.2011.11680698
5. Ng, Enders K. W. MD*; Lam, Y. H. MD*; Sung, Joseph J. Y. MD†; Yung, M. Y. BN*; To, K. F. MD‡; Chan, Angus C. W. MD*; Lee, Danny W. H. MD*; Law, Bonita K. B. MD*; Lau, James Y. W. MD*; Ling, Thomas K. W. PhD§; Lau, W. Y. MD*; Chung, S. C. Sydney MD* Annals of Surgery 231(2):p 153-158, February 2000.
6. Lunevicius, R., Morkevicius, M. Management Strategies, Early Results, Benefits, and Risk Factors of Laparoscopic Repair of Perforated Peptic Ulcer. World J. Surg. 29, 1299–1310 (2005). https://doi.org/10.1007/s00268-005-7705-4