

Non-Operative Management of Perforated Duodenum: A Case Series

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ABSTRACT

Perforated duodenum is a severe and sometimes deadly condition. Peptic ulcer disease (PUD) is the most common cause of perforated duodenum, with *H. pylori* infection and non-steroidal anti-inflammatory drugs (NSAIDs) being the key contributors, while the other risk factors include smoking, stress, past PUD history, corticosteroids, and alcohol consumption. Medical management may be an option for specific patients, especially for those with stable vital signs, no signs of peritonitis or risk factors for surgical complications. This case series highlights two instances of medically managed perforated duodenum, demonstrating alternative approaches to the treatment. Despite the risks involved, careful consideration of patient's condition and individual circumstances may lead to successful outcomes with non-surgical interventions. Early diagnosis, timely intervention, and ongoing monitoring are crucial in managing perforated duodenum effectively.

Key Words: Duodenal perforation, Peptic ulcer disease, Medical management, Outcome.

How to cite this article: Khan A, Noor T, Khan HS, Fatima S. Non-Operative Management of Perforated Duodenum: A Case Series. *J Coll Physicians Surg Pak* 2023; **33(JCPSPCR)**:CR161-CR163.

INTRODUCTION

Duodenal perforation is caused by a breach in the duodenal wall. Numerous conditions, such as peptic ulcer disease (PUD), trauma, malignancy, or risk factors like smoking, alcohol, etc. may promote it.¹ While *H. pylori* (48%) and non-steroidal anti-inflammatory drugs (NSAIDs) (24%) continue to be the predominant risk factors, smoking may contribute to 23% of PUD, according to a meta-analysis.² The surgical intervention is considered the gold standard therapy. However, a medical management approach may be explored as an option, particularly in patients with stable vital signs and no signs of peritonitis or risk factors for surgical complications such as advanced age, smoking history, or other underlying diseases.³

This case series highlights two examples of medically managed perforated duodenum, demonstrating alternative approaches to treatment.

CASE 1:

A 42-year male with no known comorbidities arrived in the Emergency Department (ED) with constipation, severe generalised abdominal pain, and fever for six days.

He had insignificant medical and surgical history and no history of long-term NSAIDs usage but had a 20-pack-year smoking history.

The pain was sharp and acute, which began in the epigastrium and then became generalised, and was associated with multiple bouts of bilious vomiting. He did not pass gas or have a bowel movement for four days, but now he was doing both despite being constipated. He was receiving treatment at a local clinic for persistent constipation. With the worsening of symptoms, an upright chest radiograph (CXR) was obtained that showed free air under the diaphragm (Figure 1). After this observation, he was referred to the surgical department.



Figure 1: Upright chest x-ray (CXR) showing free air under the diaphragm (arrow).

On examination, he had stable vital signs and generalised abdominal guarding but no rigidity. An upright CXR revealed air under the diaphragm. On ultrasonography, no evidence of peritonitis or intra-abdominal contamination was noted. All laboratory investigations were normal, including complete

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Received: July 26, 2023; Revised: December 09, 2023;

Accepted: December 10, 2023

DOI: <https://doi.org/10.29271/jcpsp.2023.JCPSPCR.CR161>

blood count (CBC), liver function tests (LFTs), renal function tests (RFTs), serum amylase, and electrolytes. A probable diagnosis of perforated duodenum was made.

He was hospitalised, kept NPO (nothing by mouth), and given IV fluids, antibiotics, and proton pump inhibitors (PPIs). He remained haemodynamically stable during the hospital stay. His health improved and was transitioned to oral feeding after 5 days. He was discharged after 2 days of tolerating oral feeds. At the sixth-month follow-up, he had no symptoms or recurrences.

CASE 2:

A 62-year male presented in the ED with gradually increasing, sharp abdominal pain in the epigastrium for six days. The patient was vitally stable with abdominal guarding. The radiographs revealed air under both hemi-diaphragms giving a provisional diagnosis of perforated duodenum (Figure 2).



Figure 2: Upright chest x-ray (CXR) showing air under bilateral hemidiaphragms.

Owing to prolonged history, stable vital signs, and unremarkable laboratory tests, he was managed medically. The patient was discharged on the 4th post-admission day with advice to follow-up. At his follow-up visit, no significant concerns were found.

DISCUSSION

Edward Crisp first proposed the idea that perforations are sealed off by spontaneous adhesions secondary to inflammation in 1843. This idea formed the foundation of the experiment by Hermon Taylor in 1946. Taylor treated a group of 28 patients with perforated peptic ulcers non-operatively. Out of which, 78% responded well to the therapy.⁴

Traditionally, a duodenal perforation is treated surgically by repairing the perforation and treating any accompanying infections or complications by laparotomy or laparoscopy. However, with advancements in *H. pylori* therapy and acid-reducing medications, up to 90% of perforations can now be treated with simple closure and/or a Graham patch. In less than 10% of instances, definitive surgery is required, usually for those with a recent perforation, chronic ulcer illness, or failed medical therapy.⁵ This emphasises an evolving trend toward more conservative techniques in the treatment of duodenal perforations.

Medical treatment may be considered as an alternative to surgical intervention in some circumstances. It may be acceptable for patients with high-risk surgical conditions, haemodynamically stable vital signs with no symptoms of peritonitis, perforations in challenging locations, cost concerns, people under the age of 70 years with minor symptoms, contained perforations, and stable conditions, similar to these presented cases. However, non-operative care may result in significant consequences such as septic shock, multi-system organ failure, and intra-abdominal abscesses. In these cases, immediate surgical intervention should be performed.

The standard treatment is surgical intervention, which has several benefits, directly repairing the perforation, eliminating necrotic tissue, and minimising the risk of recurrence and long-term complications. Medical treatment has the advantage of being less invasive. The decision to opt for either surgical or medical treatment is determined by the individual patient's circumstances and should be taken on a case-by-case basis after a proper evaluation.

In conclusion, the case series highlights non-operative management as a potential alternative to surgical management of perforated duodenum. It may be especially useful for poor surgical candidates or for patients preferring a non-surgical approach. More research is needed to define the criteria for choosing individuals suitable for this approach of perforated duodenum, as well as the ideal duration of treatment and follow-up.

PATIENT'S CONSENT:

Written informed consent was obtained from all patients or their legal guardians. Any images, clinical details, or other patient-specific information included in this manuscript have been anonymised or modified to prevent identification.

COMPETING INTEREST:

The author declared no competing interest.

AUTHORS' CONTRIBUTION:

AK: Conceptualisation, methodology, original draft, review and editing.

TN: Data collection and visualisation.

HSK: Supervision, review and editing.

SF: Patient care, review of cases, and literature review.

All authors approved the final version of the manuscript to be published.

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