



Case Series

A case series of Unusual Cause of Gastric Outlet Obstruction: Subhepatic Appendix Reaching the Duodenum

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OPEN ACCESS

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Received: 13-01-2026

Accepted: 26-01-2026

Available online: 16-02-2026

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Medical and Pharmaceutical Research

ABSTRACT

Background: Anatomical variations in the position and length of the appendix are common; however, a subhepatic long appendix extending up to the duodenum is rare and may result in atypical clinical presentations. Inflammatory involvement of such an appendix can lead to gastric outlet obstruction (GOO), creating a diagnostic dilemma and delaying appropriate management.

Aim: To highlight the clinical presentation, diagnostic challenges and surgical outcomes of appendicitis of a appendix in a sub hepatic position reaching upto duodenum.

Methods:

This case series retrospectively describes three young male patients presenting with atypical symptoms of appendicitis caused by a subhepatic, elongated appendix reaching the duodenum. Clinical presentation, radiological findings, intraoperative observations, surgical management, and postoperative outcomes were analyzed.

Results: The first patient, a 28-year-old male, presented with severe epigastric pain and features of gastric outlet obstruction. Contrast-enhanced computed tomography revealed a subhepatic appendix extending to the duodenum. Open appendectomy via a McBurney incision demonstrated perforation near the appendiceal base. The patient recovered well and was discharged on postoperative day six.

The second case involved a 23-year-old male presenting with right iliac fossa pain and recurrent vomiting. Intraoperative findings revealed a subhepatic appendix reaching the duodenum. Open appendectomy was performed with an uneventful recovery.

The third patient, a 28-year-old male, presented with acute abdomen, right iliac fossa pain, and severe vomiting. Ultrasonography showed an appendicular collection. Surgical exploration revealed a perforated, elongated appendix extending to the duodenum. Appendectomy resulted in a satisfactory postoperative outcome.

Conclusion: A subhepatic long appendix extending up to the duodenum is a rare but significant anatomical variant that can present with features of gastric outlet obstruction. Early imaging and heightened clinical suspicion are essential for timely diagnosis. Appendicitis should be considered in the differential diagnosis of unexplained upper abdominal pain and gastric outlet obstruction, particularly in young adults.

Keywords: Subhepatic appendix; Gastric outlet obstruction; Acute appendicitis; Anatomical variation; Duodenal compression; Open appendectomy.

INTRODUCTION

Acute appendicitis is one of the most common surgical emergencies, but its presentation can vary widely depending on the position and length of the appendix. Although retrocecal and pelvic positions are most common, rare locations such

as a subhepatic appendix can produce atypical symptoms and diagnostic uncertainty. A subhepatic appendix is often related to abnormal cecal descent during embryological development and may clinically mimic hepatobiliary or upper gastrointestinal conditions.

Gastric outlet obstruction (GOO) is usually caused by peptic ulcer disease, malignancy, or pyloroduodenal inflammation. Appendicitis is an extremely uncommon cause of GOO, particularly when associated with a long appendix extending toward the duodenum. This unusual anatomical relationship can lead to misleading clinical and radiological findings, resulting in delayed diagnosis.

Awareness of this rare variant is important when evaluating young patients with unexplained upper abdominal pain and persistent vomiting. This case series highlights the clinical presentation, imaging findings, intra-operative features, and surgical outcomes of appendicitis arising from a subhepatic elongated appendix reaching the duodenum and presenting as gastric outlet obstruction.

AIMS AND OBJECTIVES

To highlight the clinical presentation ,diagnostic challenges and surgical outcomes of appendicitis of a appendix in a sub hepatic position reaching upto duodenum.

MATERIALS AND METHODS

This is a retrospective case series including three young males with abdominal pain and unusual presentation of symptoms of gastric outlet obstruction.

The clinical features ,radiological findings ,intraoperative findings and post operative course were analysed.

All 3 patients underwent open appendectomy .

RESULTS

TABLE 1: CLINICAL PROFILE

Case no	Age	Sex	Symptoms	duration
1)	28	male	Abdominal pain ,recurrent vomiting	2 days
2)	31	male	Abdominal pain ,recurrent vomiting	2 days
3)	32	male	Epigastricpain ,recurrent vomiting	1 day

TABLE 2: IMAGING FINDINGS

CASE	MODALITY	FINDINGS
1	USG	ACUTE APPENDICITIS
2	CECT	SUBHEPATIC APPENDIX CLOSE TO MIDLINE WITH APPENDICULAR PERFORATION
3	USG	ACUTE APPENDICITIS

TABLE 3: OPERATIVE DETAILS

CASE	FINDINGS	PROCEDURE
1	Elongated subhepatic appendix reaching upto duodenum	OPEN APPENDICECTOMY
2	Appendicular perforation at base of appendix	OPEN APPENDICECTOMY
3	Enlongated subhepatic appendix encircling the duodenum	OPEN APPENDICECTOMY

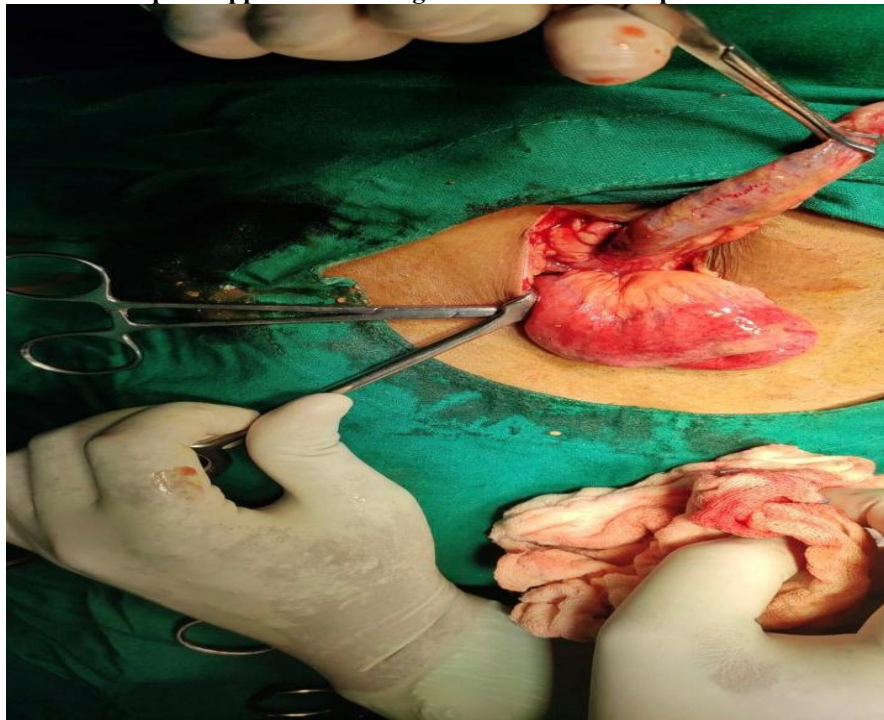
TABLE 4: HISTOPATHOLOGY AND OUTCOME

CASE	HISTOPATHOLOGY	OUTCOME
1	APPENDICITIS	UNEVENTFUL RECOVERY
2	APPENDICULAR PERFORATION	UNEVENTFUL RECOVERY
3	APPENDICITIS	UNEVENTFUL RECOVERY

CASE 1: Elongated and inflamed subhepatic appendix encircling the duodenum



CASE 2 : Subhepatic appendix reaching the duodenum with perforation seen at base



CASE 3 : Elongated and inflamed appendix abutting the duodenum



DISCUSSION

Appendix is a blind muscular tube with mucosal, submucosal and serosal layers. At birth, the appendix is short and broad at its junction with the caecum, but differential growth of the caecum produces the typical tubular structure by about the age of 2 years. During childhood, continued growth of the caecum commonly rotates the appendix into a retrocaecal but intraperitoneal position. In approximately one-quarter of cases, rotation of the appendix does not occur, resulting in a pelvic, subcaecal or paracaecal position. Occasionally, the tip of the appendix becomes extraperitoneal, lying behind the caecum or [ascending colon](#). Rarely, the caecum does not migrate during development to its normal position in the right lower quadrant of the abdomen. In these circumstances, the appendix can be found near the [gall bladder](#) or, in the case of [intestinal malrotation](#), in the left iliac fossa, causing diagnostic difficulty if appendicitis develops. The incidence of subhepatic appendicitis is uncommon which is 0.08 % which was found in our cases.

Acute appendicitis is one of the most common surgical emergencies. The causes of appendicitis can be obstructive or non-obstructive. The obstruction can be by fecolith, [pinworm infection](#), or [lymphoid hyperplasia](#). Non-obstructive cause includes catarrhal infection. Patients typically present with poorly localized colicky abdominal pain; generally around the periumbilical region which shifts to the right iliac fossa. It is usually associated with anorexia, nausea, and 1–2 episodes of vomiting. Fever occurs after 6 hours however, in around 20 % of patients, there is no pyrexia. Subhepatic appendicitis presents significant diagnostic challenges due to its atypical clinical presentations. Its manifestations often resemble conditions such as [cholecystitis](#), [gastritis](#), gastric outlet obstruction or other upper [gastrointestinal disorders](#) which results in delayed or missed diagnosis.

The diagnosis of appendicitis rests more on thorough clinical examination of the abdomen than on any aspect of history or laboratory examination. There will be a limitation of respiratory movement on inspection of the abdomen with maximum tenderness at Mc. Burney's point and rebound tenderness will elicit on gentle percussion over the site of maximum tenderness.

The modified [Alvarado score](#) is the most widely used clinical and laboratory-based scoring system to assist in diagnosis. Out of 9, a score of 1–4: unlikely diagnosis of appendicitis, score 5–6: possible diagnosis, score of more than 7 should undergo appendectomy without the need for further imaging.

USG of the abdomen is more useful in children and thin adults with a diagnostic accuracy in excess of 90 %. Modern [CT](#) is both sensitive and specific with approximately 95 % in the diagnosis of acute appendicitis.

Appendectomy may be undertaken using either an open or laparoscopic approach. Laparoscopic approach is advantageous when the appropriate equipment and expertise are available and cost allows. The initial laparoscopy allows the diagnosis to be established and may reduce the negative appendectomy rates. Furthermore, the patient may benefit from quicker recovery afforded by a minimally invasive approach, lower rate of wound infection, and reduced incidence

of post-operative pelvic collection . A study by Chiapponi et al. reported a case of a 43-year-old patient with [epigastric pain](#) suggestive of cholecystitis which then turned out to be perforated subhepatic appendicitis on a CT scan. In this case, [laparotomy](#) was done . Another study by Painuly et al. reported a case of 31 year-old male diagnosed with subhepatic appendicitis on CT scan and managed with laparoscopic appendectomy .

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