

Duodenal Diverticular Disease and Duodenal Switch: An Unusual Surgical Alternative. Case Report

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ABSTRACT

Duodenal diverticular disease (DDD) is an uncommon condition of the gastrointestinal tract, with a reported prevalence of 0.2–5% in radiological studies and up to 22% in autopsy series. Although most cases are asymptomatic, complications such as bleeding, perforation, obstruction, or cholestasis may occur, requiring surgical intervention. Elective management is rare and should be individualized according to diverticulum location and symptom severity. This report presents a case of recurrent symptomatic DDD successfully managed with a duodenal switch technique. Surgical indications, therapeutic alternatives, and intraoperative findings are discussed within the context of the available literature. This approach represents a viable option in selected cases, enabling symptom resolution with a functionally favorable anatomical strategy.

KEYWORDS: Duodenal diverticular disease, duodenal diverticulum, duodenal switch, elective surgery, duodenal obstruction.

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INTRODUCTION

Duodenal diverticular disease (DDD) is an uncommon clinical entity in surgical practice, characterized by saccular mucosal protrusions through the muscular wall of the duodenum. While diverticula may develop throughout the gastrointestinal tract, their presence in the duodenum is relatively rare, accounting for a small percentage of findings in diagnostic studies and autopsies. ¹Most duodenal diverticula are acquired and false (pseudodiverticula), arising from herniation of mucosa and submucosa through weak points in the duodenal wall, typically in the second portion, near the ampulla of Vater.²

Clinically, Duodenal diverticular disease is asymptomatic in most cases and is often discovered incidentally during endoscopic procedures or surgery. However, in a small subset of patients, diverticula may cause significant symptoms, such as postprandial abdominal pain, bloating, nausea, vomiting, or weight loss, or may present with severe complications like gastrointestinal bleeding, perforation, diverticulitis, pancreatitis, or Lemmel's syndrome.³

Treatment of Duodenal diverticular disease primarily depends on the presence and severity of symptoms. Asymptomatic cases generally require no intervention. However, in patients with persistent or recurrent symptoms,

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or those with complications, surgical treatment should be considered. Diverticulectomy is the standard approach when technically feasible, but it may pose significant risks, including fistula formation, bile leakage, or injury to adjacent structures, especially when the diverticulum is near the ampulla of Vater or associated with severe chronic inflammation.⁴

In this context, alternative techniques such as the duodenal switch may offer a safe and effective surgical option in cases where diverticulectomy is hazardous or technically challenging. The duodenal switch involves exclusion of the affected duodenal segment and reconstruction of the intestinal tract via bypasses that maintain biliary and pancreatic continuity and function. Although traditionally used in the treatment of morbid obesity and certain small bowel diseases, its application in selected cases of symptomatic Duodenal diverticular disease may prevent complications and resolve symptoms definitively.⁵

This report presents a case of symptomatic Duodenal diverticular disease managed successfully using a duodenal

switch technique, discussing the clinical, diagnostic, therapeutic, and surgical considerations, along with a literature review.

CASE PRESENTATION

A 50-year-old female presented with vague abdominal symptoms lasting two years, including abdominal pain, postprandial fullness, reflux, and nausea. Initial endoscopy revealed a cavity in the anterior region of the first portion of the duodenum containing bile. Conservative treatment with symptomatic medications resulted in only partial improvement. Due to persistent symptoms, a second endoscopy was performed, revealing grade A esophagitis (Los Angeles classification), sliding hiatal hernia, and a barium study showed a sacular image with a base on the mesial border of the third portion of the duodenum, consistent with a duodenal diverticulum, along with a mild hiatal hernia and grade I gastroesophageal reflux (Figure 1).



Figure 1. UGI series showing a sacular image in the third portion of the duodenum.



Figure 2. Diverticular sac in the first portion of the duodenum.

The patient was scheduled for elective surgery and underwent an uncomplicated duodenal switch (Figure 2,3,4). Postoperative recovery was favorable, with progressive oral intake and normal laboratory parameters. The patient was

discharged without complications and currently reports resolution of the symptoms that prompted surgery.



Figure 3. Duodenal anastomosis with T stapler.



Figure 4. Duodenal anastomosis.

DISCUSSION

Duodenal diverticular disease is a rare, underdiagnosed condition that remains largely unfamiliar to general surgeons. Its clinical presentation is often nonspecific, contributing to delayed or incidental diagnosis through imaging or intraoperative discovery. The silent nature of this disease means many patients remain asymptomatic for years until acute complications such as gastrointestinal bleeding, perforation, intestinal obstruction, pancreatitis, or bile duct compression arise.⁶

Due to this tendency to present in advanced stages, most patients are treated under emergency conditions, where inflammation, infection, or clinical instability significantly increase surgical risk, morbidity, and mortality. These circumstances limit therapeutic options and may necessitate more aggressive or high-risk procedures.⁷

In contrast, timely diagnosis and elective management allow for better surgical planning using safer and more anatomically conservative strategies. In this regard, the duodenal switch represents an unconventional but potentially valuable alternative for selected patients, particularly when diverticulum location hinders safe resection or when duodenal transit is compromised.⁸

This case highlights the importance of general surgeons being familiar with this entity and considering alternative surgical approaches that offer definitive symptom relief, fewer complications, and improved postoperative quality of life. Furthermore, it emphasizes the need for additional studies to assess the safety and efficacy of techniques such as the duodenal switch in the elective management of Duodenal diverticular disease.

CONCLUSION

Duodenal diverticular disease is an infrequent condition with variable and often nonspecific clinical presentation, contributing to its underdiagnosis in general surgical practice. Detection is usually incidental or delayed and often occurs after serious complications have developed. This often leads to emergency management, increasing morbidity and mortality, especially in patients with comorbidities or unstable clinical status.⁹

This clinical case underscores the importance of including DDD in the differential diagnosis of patients with chronic or intermittent upper gastrointestinal symptoms, particularly when common causes have been ruled out. Early recognition enables elective surgical planning, reducing the risks associated with emergency intervention and improving postoperative outcomes.¹⁰

The duodenal switch technique, traditionally used in bariatric surgery and complex intestinal conditions, proves to be a feasible, safe, and effective surgical option for selected DDD cases where diverticulectomy is high-risk or technically unfeasible. It allows exclusion of the affected segment while preserving functional continuity of the gastrointestinal tract,

with favorable clinical outcomes and a low complication profile.^{11,12}

In conclusion, awareness of Duodenal diverticular disease, appropriate diagnostic workup, and consideration of alternative surgical techniques such as the duodenal switch in elective settings are crucial to improving patient outcomes. Further dissemination of this entity among general surgeons and additional studies are needed to standardize management and validate the use of less conventional techniques, as illustrated in this case.

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