

# Appendix Within a Previous Drain-site Hernia Sac After Pancreaticoduodenectomy for Ampulla of Vater Carcinoma: A Rare Case Report

## Ampulla Vateri Karsinomu Nedeniyle Yapılan Pankreatikoduodenektomi Sonrası Eski Dren Yeri Herni Kesesi İçinde Apendiks: Nadir Bir Olgu Sunumu

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### Abstract

Drain-site hernias and acute appendicitis are frequently encountered in surgical practice; however, identification of the vermiform appendix within a hernia sac constitutes an exceptionally uncommon clinical scenario. Incarceration of the appendix is most commonly described in association with inguinal hernias (Amyand's hernia) and femoral hernias (De Garengeot's hernia). Sporadic reports have additionally documented appendiceal involvement in umbilical and Spigelian hernias. In the present study, we report a case of a 57-year-old male who presented with right lower quadrant pain and detail his prior surgical history, physical examination findings, radiological assessment, and intraoperative confirmation of appendiceal entrapment within a hernia sac that developed at the site of a previous drain insertion. A focused review of previously published cases is also provided.

**Keywords:** Appendix, hernia, Amyand, drain

### Öz

Dren yeri hernileri ve akut apandisit cerrahi pratikte sık karşılaşılan durumlar olmakla birlikte, herni kesesi içerisinde apendiks vermiformisin saptanması son derece nadir bir klinik tablodur. Apendiksin herni içerisinde inkarsere olması en sık inguinal hernilerle ilişkili olarak tanımlanmış olup bu durum Amyand hernisi olarak adlandırılmaktadır; ayrıca femoral hernilerde görülen formu De Garengeot hernisi olarak bilinmektedir. Bunun yanında, umbilikal ve Spigelian hernilerde apendiks varlığına ilişkin sporadik olgular da literatürde bildirilmiştir. Bu çalışmada, sağ alt kadranda ağrısı ile başvuran 57 yaşındaki erkek hastada, önceki cerrahi öykü, fizik muayene bulguları, radyolojik değerlendirme ve daha önce yerleştirilen dren yerinde gelişen herni kesesi içerisinde apendiksin intraoperatif olarak saptanması ayrıntılı şekilde sunulmuştur. Ayrıca literatürde bildirilen benzer olgulara yönelik bir derleme de sunulmuştur.

**Anahtar Kelimeler:** Apendiks, herni, Amyand, dren yeri



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## Introduction

The term Amyand's hernia originates from Claudius Amyand, who performed the first recorded appendectomy in the eighteenth century on a pediatric patient whose appendix was located within a right inguinal hernia sac. This rare surgical entity continues to generate discussion due to the diagnostic uncertainty it may create preoperatively and the variability in operative management strategies (1,2). Encountering the appendix within a hernia sac may alter intraoperative decision-making and surgical planning. Although the exact mechanism underlying this condition has not been definitively clarified, increased intra-abdominal pressure remains the most widely accepted explanation. According to this concept, episodes of elevated intra-abdominal pressure may facilitate migration of the appendix into a pre-existing hernia defect, where subsequent incarceration may compromise vascular perfusion and eventually provoke inflammatory changes (3). While the classical description of Amyand's hernia involves the appendix within an inguinal hernia sac, the present report differs in that the appendix was identified within a hernia defect formed at a prior drain-site. The occurrence of a non-inflamed vermiform appendix protruding through a drain-site defect has been documented only sporadically in previously published case reports (4-6).

## Case Presentation

A 57-year-old man underwent pancreaticoduodenectomy (Whipple procedure) in 2015 for a tumor of the ampulla of Vater. Apart from this history, he had no other systemic diseases. He presented to our outpatient clinic with intermittent right lower quadrant pain that had persisted for approximately two months. On examination, palpation revealed a reducible hernia at the previous drain insertion site in the right lower quadrant. No rebound tenderness, guarding, or other abnormal physical findings were observed. Laboratory investigations, including complete blood count, serum biochemistry, and urinalysis, were within normal limits. Contrast-enhanced abdominal computed tomography (CT), performed with both oral and intravenous contrast, demonstrated a tubular structure extending through the abdominal wall defect into the hernia sac at the former drain-site (Figure 1). The radiological appearance was consistent with the vermiform appendix. Based on these findings, elective surgical management was planned. Laparoscopic exploration confirmed the presence of the appendix within the hernia sac. Careful dissection enabled separation of the appendix from surrounding tissues. The mesoappendix was sealed and divided using a LigaSure™ energy device. Two Hem-o-lok clips were applied to the appendiceal base, and transection was performed proximal to the clips. Laparoscopic appendectomy was then completed, and the specimen was retrieved using an endoscopic

specimen bag. Following appendectomy, the hernia defect was closed laparoscopically using two interrupted primary sutures with 2-0 Vicryl. The postoperative course was uneventful, and the patient was discharged on postoperative day one without complications.

## Discussion

The presence of the appendix within an inguinal hernia sac, commonly referred to as Amyand's hernia, represents an uncommon anatomical finding. A non-inflamed appendix is reported in approximately 0.5-1% of external hernias, whereas the coexistence of acute appendicitis within an inguinal hernia is considerably rarer, accounting for roughly 0.1-0.13% of all appendicitis cases (1,4). Establishing the diagnosis prior to surgery is often challenging, particularly when clinical signs of inflammation are absent. In many patients, the condition is discovered incidentally during operative intervention. Weber et al. (5) documented that only one out of sixty cases received a correct preoperative diagnosis. Recent studies and systematic reviews continue to highlight the rarity of appendiceal involvement in abdominal wall hernias and emphasize the diagnostic challenges associated with these conditions. Advances in cross-sectional imaging, particularly CT, have improved the ability to identify unusual hernia contents preoperatively, although most cases are still diagnosed during surgery (7-9). In the current case, localized pain corresponding to the drain-site raised suspicion and contributed to preoperative identification. The optimal imaging modality in such circumstances remains debated. When physical findings are subtle and peritoneal irritation signs are lacking, CT provides valuable cross-sectional visualization and may facilitate accurate diagnosis (10). In our patient, CT imaging clearly demonstrated a tubular structure entering the hernia sac. Classification systems proposed for Amyand's hernia assist in guiding therapeutic decisions and are summarized in



**Figure 1.** Oral+IV contrast-enhanced computed tomography cross-sectional image  
IV: Intravenous

Table 1. Although our case involved a drain-site defect rather than a classical inguinal hernia, similar principles may be applied when planning management. The decision to perform an appendectomy in cases where the appendix appears non-inflamed remains controversial. Some authors advocate routine removal to eliminate future risk, whereas others recommend preservation when no inflammatory signs are present in order to minimize potential postoperative morbidity (11). In the present case, the decision to perform an appendectomy was made based on several considerations. Although the appendix appeared macroscopically normal, its presence within the hernia sac and the possibility of prior incarceration raised concerns regarding potential vascular compromise and future inflammatory changes. In addition, removal of the appendix eliminated the risk of subsequent appendicitis, which could complicate clinical evaluation. Therefore, appendectomy combined with repair of the abdominal wall defect was considered a safe and definitive surgical strategy. Restoration of fascial integrity can be achieved using either open or minimally invasive techniques. Recent publications have highlighted potential benefits of laparoscopic hernia repair, including reduced postoperative pain and shorter hospitalization periods (12-14). Nevertheless, consensus regarding the superiority of one operative approach over another has not yet been reached. This case highlights the importance of considering unusual hernia contents in patients with a history of major abdominal surgery.

**Conclusion**

Appendiceal entrapment within a hernia defect arising from a previous drain-site constitutes an exceptionally rare clinical occurrence. Because of its infrequency, awareness among surgeons is essential to prevent delayed recognition and possible complications. CT serves as a useful tool for early detection and operative planning. In this patient, successful management was achieved through laparoscopic appendectomy combined with laparoscopic repair of the hernia defect. However, due

to the limited number of reported cases, definitive treatment guidelines cannot yet be established.

Written informed consent for the publication of this case was obtained from the patient’s legal representative.

The patient’s intraoperative images are shown in Figures 2 and 3.

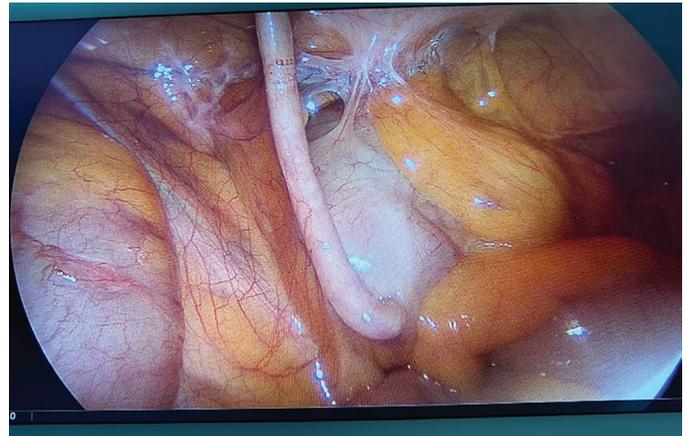


Figure 2. Intraoperative view of appendix vermiformis

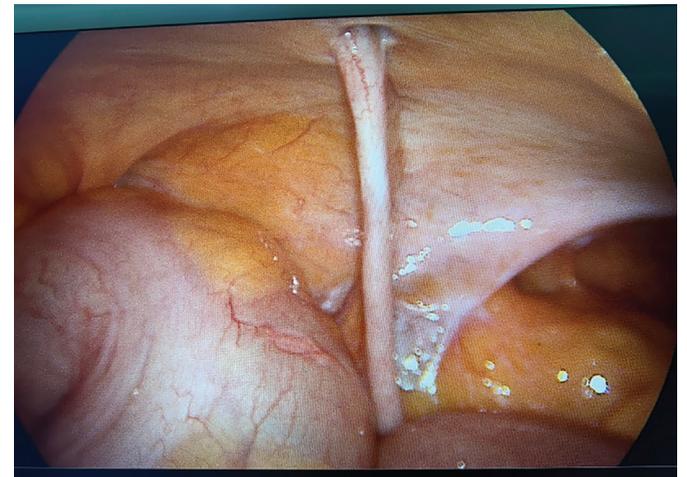


Figure 3. View of appendix vermiformis extending into the hernia sac

Table 1. Losanoff and Basson classification of Amyand’s hernia and recommended surgical management		
Classification	Definition	Surgical management
Type 1	Normal appendix within an inguinal hernia	Hernia reduction and mesh repair; appendectomy only in young patients
Type 2	Acute appendicitis within an inguinal hernia without abdominal sepsis	Appendectomy through an inguinal incision and hernia repair without mesh placement
Type 3	Acute appendicitis within an inguinal hernia with abdominal/peritoneal sepsis	Laparotomy, appendectomy, and primary hernia repair without mesh
Type 4	Acute appendicitis within an inguinal hernia with related or unrelated abdominal pathology	Managed as types 1-3; additional pathology is investigated and treated appropriately

## Ethics

**Informed Consent:** Written informed consent for the publication of this case was obtained from the patient's legal representative.

## Footnotes

### Authorship Contributions

Concept/Design: K.F.I., İ.A., O.Y., İ.C.E., Data Collection or Processing: K.F.I., B.Y., Analysis or Interpretation: K.F.I., M.K.D., İ.A., Literature Review: K.F.I., B.Y., O.Y., Writing, Reviewing and Editing: K.F.I., M.K.D., B.Y., İ.A., İ.C.E.

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One of the authors of this article (İ.C.E.) is a member of the Editorial Board of this journal. He had no involvement in the peer-review process or editorial decision regarding this manuscript. The peer-review process and editorial decision were handled independently by another editor.

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