EMERGENCY SURGICAL MANAGEMENT OF AMYAND HERNIA: A CASE SERIES STUDY

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Abstract

Introduction: Amyand's hernia, named after Claudius Amyand, is a rare hernia variant characterized by the presence of the vermiform appendix within the hernial sac. Accounting for about 1% of all inguinal hernias, its exact development mechanism remains unclear. The clinical presentation can vary significantly, often mirroring symptoms of a hernia or acute appendicitis.

Material & Method: A retrospective case series study was conducted at the General Surgery Clinic 1 of the SCJU Tg. Mures Emergency County Hospital. It involved a comprehensive review of medical records of patients diagnosed with Amyand's hernia who underwent emergency surgery. Data collected included demographics, clinical presentation, surgical management, postoperative complications, and follow-up details. Descriptive statistical analysis was performed using EasyMedStat software.

Results: Over five years, seven cases of Amyand's hernia were reported, with an increase in 2023. The average age of the patients was 77.8 years, all male, demonstrating a higher incidence in older males. Symptom onset varied widely, from four months to nearly 20 years. Most patients experienced abdominal pain, with approximately half reporting fever. The primary diagnosis was often intestinal occlusion with an incarcerated inguinal-scrotal hernia. Surgical approaches varied, with the Lichtenstein operation being the most common. Mesh repair was used in most cases, and all patients underwent appendectomy. The median hospital stay was five days, with minimal postoperative complications.

Conclusion: Amyand's hernia presents a surgical challenge due to its rarity and variable clinical presentation. This study underscores the need for individualized treatment strategies to optimize patient outcomes. The findings contribute to understanding Amyand's hernia, highlighting the importance of tailored surgical approaches and diligent postoperative care.

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Introduction

Amyand's hernia is a subset of hernias characterized by the vermiform appendix within the hernial sac. This particular condition is named after Claudius Amyand, a surgeon from France who performed an appendectomy in 1735 on an 11-year-old boy with an inflamed appendix within an inguinal hernia [1-7]. Despite its importance, Amyand's hernia is rare and only accounts for about 1% of all inguinal hernia cases, and even fewer cases involve acute appendicitis. The exact mechanism behind the development of Amyand's hernia isn't completely understood [3,6,8]. It is believed that anatomical variations in the position of the appendix increased pressure within the abdomen, or perhaps a combination of both factors contributed to mobilizing the appendix into the canal [7-10]. This displacement can sometimes result in inflammation of the appendix due to its confinement within the sac or insufficient blood flow.

The clinical presentation of Amyand hernia varies from case to case. Many patients experience symptoms associated with a hernia, such as a bulge in their groin that becomes more prominent when coughing or straining and subsides at rest. However, suppose the appendix becomes inflamed and located within the hernia sac [1-3]. In that case, it can complicate the situation by causing symptoms that resemble appendicitis, strangulated hernia, or testicular issues in male patients. When diagnosing Amyand's hernia, suspicion imaging studies are often involved. Ultrasonography can distinguish inguinal hernias from other masses in the groin [3-8]. However, computed tomography (CT) provides diagnostic information as it allows visualization of the appendix within the hernial sac and assessment for signs of inflammation, perforation, or other complications. The treatment approach for Amyand hernia depends on factors including the condition of the appendix and any complications related to the hernia [8-10]. A simple herniorrhaphy may be sufficient in cases where the appendix appears normal. This minimizes surgical complications and reduces the risk of infections. However, if there is inflammation or perforation of the appendix, an appendectomy is necessary. The appendectomy can be performed through either the hernia incision or a separate abdominal incision, depending on what's deemed appropriate by the surgeon based on their assessment and considering factors such as inflammation severity and the patient's overall health [12]. Whether to use mesh or non-repair to fix the hernia is complex. It should be individualized for each case while considering factors such as infection and the patient's overall health status. The postoperative care for Amyand's hernia is comparable to that of hernia repairs or appendectomies. However, monitoring patients after surgery and providing necessary follow-up is crucial due to the chances of complications, like wound infections or hernia recurrence [1-9].

Materials and Method

We conducted a case series retrospective study to evaluate patients diagnosed with Amyand's hernia who underwent emergency surgery. The study was conducted at the General Surgery Clinic 1 of the SCJU Tg. Mures Emergency County Hospital. We included patients diagnosed with Amyand's hernia, as identified through a review of surgical records at our institution. Inclusion criteria consisted of a confirmed diagnosis of Amyand's hernia and having undergone emergency surgical intervention for the condition. The exclusion criterion was the presence of incomplete medical records. A comprehensive review of the medical records of the identified patients was conducted. The data collected included demographics: age and sex of the patients. Clinical presentation: symptoms and signs leading to the diagnosis,

including duration of symptoms and the nature of the hernia (reducible, irreducible, strangulated), along with any associated symptoms like abdominal pain or fever. Surgical management: information about the surgical procedure performed, including appendectomy, mesh for hernia repair, and the surgical approach. Postoperative complications: data on complications such as wound infections, hernia recurrence, or postoperative ileus. Follow-up: details on the duration of hospital stay, hernia recurrence, and long-term complications. Descriptive statistical analysis was employed to analyze the collected data.

Continuous variables, such as age, were summarized using measures of central tendency (mean, median) and dispersion (standard deviation, interquartile range). Categorical variables like sex and the type of surgical procedure were summarized with frequencies and percentages. The analysis was conducted using the EasyMedStat software to provide a comprehensive overview of patient demographics, clinical presentation, surgical management, postoperative outcomes, and follow-up data. The study protocol received approval from the Institutional Review Board of the SCJU Tg. Mures Emergency County Hospital. Being a retrospective study that reviewed existing medical records, patient consent was waived. However, all patient data were anonymized and handled according to the ethical standards of the Helsinki Declaration of 1975, as revised in 2000.

Results

We reported a total of seven cases of Amyand's hernia over five years. It illustrates a fluctuation trend, with the most cases reported in the last year of 2023 (Figure 1). The average age of cases reported was 77.8 years old, indicating a higher incidence or diagnosis rate of Amyand's hernia in the older population, with a 100% male predominance. The onset of hernia symptoms in patients diagnosed with Amyand's hernia varies across different periods. In all the cases reported, the frequency distribution varies from the onset of symptoms, ranging from four months to almost 20 years. This suggests that recognizing or developing symptoms leading to an Amyand's hernia diagnosis does not follow a predictable timeline and can vary widely among patients. It indicates that the condition can be identified at nearly any stage after the initial appearance of hernia signs.

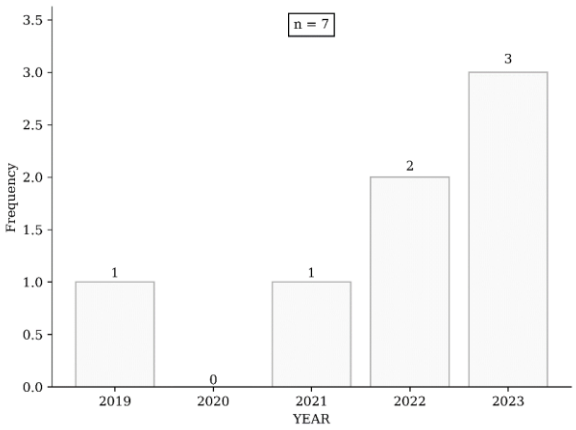

Figure 1 - Total cases of Amyand hernia from 2019 to 2023

A slight majority of the patients reported experiencing abdominal pain (n=4), suggesting it's a common symptom associated with this condition. The incidence of fever as a symptom in patients, with a nearly equal split between those presenting with fever (n=3) and those without (n=4).

The primary diagnosis was intestinal occlusion (surgical acute abdomen) with an incarcerated inguinal-scrotal hernia (82%) (Figure 2). The Lichtenstein operation was the most frequently performed procedure, followed by the Shouldice repair, with a subset of patients also undergoing cecorrhaphy, pointing to a diversity of surgical approaches based on specific patient cases or surgeon preference (Figure 3). In most cases (n=5), surgical MESH repair was applied. In the case of the appendix, in all cases, appendectomy was performed with no report of perforated acute appendicitis.

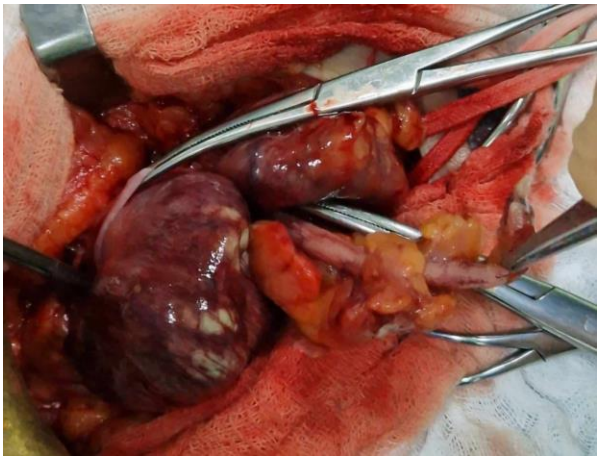

Figure 2 - Case of Amyand hernia with intestinal occlusion 88-year-old patient – Surgical Clinic I SCJU Târgu Mureș

Regarding hospital admission lengths for patients with Amyand's hernia. The median length of stay is five days, ranging from a minimum of three days to a maximum of seven days. The interquartile range (the middle 50% of data) spans four to six days, suggesting a relatively consistent length of patient stay Figure 4.

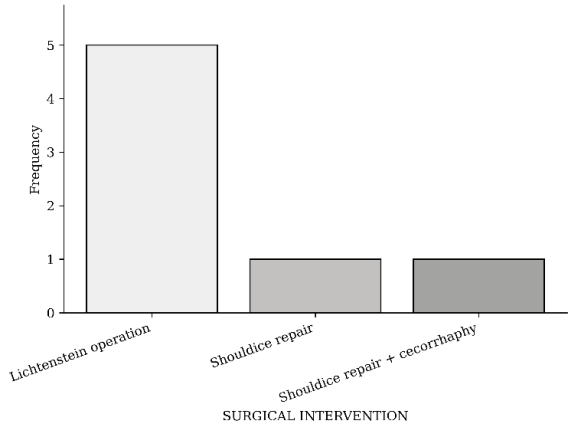

Figure 3 – Surgical approach in Amyand hernia patients

Only two postoperative complications were encountered: a hematoma (three days postop) and one seroma (three weeks after surgery). The absence of complications is the most prevalent outcome, regarding the patients' high age and the number of comorbidities that increase the risk.

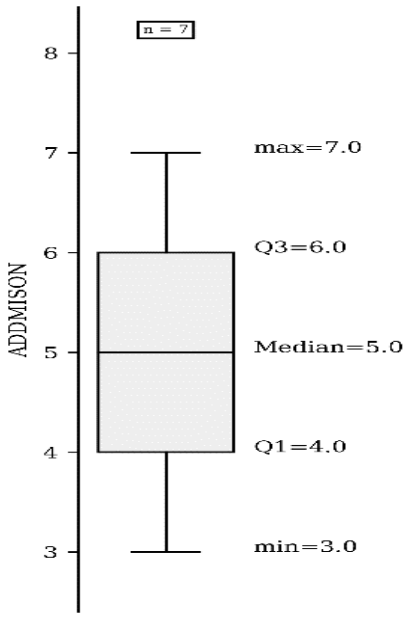

Figure 4 - Hospitalization period of patients with Amyand hernia. Median length of five days

Discussions

In our study, we documented seven cases of Amyand's hernia treated over five years, culminating in a noticeable uptick in cases in 2023. The patient demographic, exclusively male with an average age nearing the eighth decade, corroborates the gender and age predisposition noted in the broader body of research, such as the findings reported by Manatakis et al. (2021) [12]. The age range noted in our study can be further examined alongside the demographic statistics from more extensive cohort studies to elucidate potential deviations or confirm common trends in the affected population's age distribution. The diverse onset timeline of hernia symptoms, spanning from a mere four months to two decades, underscores the unpredictable nature of the condition's progression, mirroring the symptom onset variability reported in individual case studies and literature reviews [1-5]. Our observation that abdominal pain was a prevalent symptom in a majority of cases echoes the narrative in the literature that abdominal pain is often a

presenting complaint in Amyand's hernia. However, its presence is not unanimously reported in all cases in other studies, such as those reviewed by D'Alia C et al. (2003) [13]. In our series, the predominant clinical presentation was an intestinal occlusion in conjunction with an incarcerated inguinal-scrotal hernia, paralleling the presentations in similar articles where acute abdominal presentations were common precursors to the diagnosis of Amyand's hernia. The frequency of such occurrences could be compared to those in other studies. Surgically, our preference leaned towards the Lichtenstein operation and Shouldice repair, with one case also involving cecorrhaphy. This mirrors the surgical diversity reported in the literature, where different techniques are employed based on the hernia type, patient comorbidities, and surgeon's expertise. However, the uniform application of mesh repair in most cases may contrast with the more conservative approach observed in the literature, which often reserves mesh repair for non-inflamed appendix cases to reduce the risk of surgical site infection. The universal application of appendectomy in our study aligns with a cautious surgical approach, reflecting the treatment algorithm that advocates for appendectomy contingent on the intraoperative findings of the appendix. This surgical decision is well-supported by literature, especially considering the clinical debate about managing an un-inflamed appendix discovered during hernia repair [5,6,12].

Regarding hospital stay, our patients had a median admission duration of five days, which is relatively consistent and reflective of efficient postoperative recovery and management. This metric can be juxtaposed with hospital stay data from other studies, such as those highlighted in more extensive reviews [12]. Postoperative complications in our study were limited to one hematoma and one seroma, demonstrating a commendable outcome given the patient cohort's advanced age and comorbid status. This complication rate is low and favorable when viewed in the broader literature, where the sample size might allow for a more extensive range of postoperative sequelae. Our approach to managing Amyand's hernia, characterized by a definitive surgical strategy and a lower complication profile, aligns with current best practices and carefully considers patient factors and surgical risks, as is evident from the broader scientific discourse on this rare hernia variant.

Conclusions

To conclude, Amyand's hernia represents a surgical challenge with a low prevalence rate. Adequate individualized treatment is required to ensure a good outcome for the patients. Further studies can offer new insights into its management and progression, encompassing the best surgical approach for these rare types of hernias.

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