

Case Report

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Incarcerated Amyand's hernia: a case report and literature review

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ABSTRACT

While inguinal hernias are among the most common surgical conditions, an Amyand's hernia, defined by the presence of the appendix within an inguinal hernia sac, is a rare clinical entity. A case of a 92-year-old woman who presented to the emergency department with two days of abdominal pain and a non-reducible right inguinal mass compatible with an incarcerated hernia. Emergency surgery revealed an inflamed appendix within the hernia sac; appendectomy and hernia repair using the Lichtenstein technique were performed, resulting in an uneventful recovery. Amyand's hernia is often asymptomatic and usually diagnosed incidentally during surgery, whether elective or emergent in case of incarcerated or strangulated hernia. Acute appendicitis may be present and increases the risk of complications. Management depends on the appendix's inflammatory state and hernia complexity, typically involving appendectomy and hernia repair. Various classification systems provide guidance to treatment however surgical decisions should be tailored to patient-specific factors and surgeon expertise. More studies are needed in order to establish guidelines.

Keywords: Inguinal hernia, Amyand hernia, Acute appendicitis

INTRODUCTION

Inguinal hernias are among the most common surgical conditions, frequently encountered in clinical practice. While most cases are straightforward, challenging presentations do occur, particularly when atypical contents are found within the hernia sac. One example is Amyand's hernia, defined by the presence of the appendix within the hernia sac, regardless its inflammatory state.¹⁻⁴ Although the majority of these cases are incidentally diagnosed during surgical intervention, they demand careful consideration due to their variable clinical presentation and management strategies.²⁻⁴

CASE REPORT

A 92-year-old female patient, partially dependent for activities of daily living, presented to the emergency department with a two-day history of abdominal pain.

She reported a painful mass in the right inguinal region, which also had appeared two days prior. The patient denied other symptoms, such as fever, urinary or gastrointestinal symptoms. Past medical history included gastric ulcer perforation, repaired over 50 years ago, and anxiety disorder. She was medicated with esomeprazole 40 mg, sucralfate 1000 mg/5 ml, lorazepam 1 mg, and zolpidem 10 mg. She had no known drug allergies. At physical examination, the patient was alert, oriented, hydrated, had normal vital signs and presented a slight cutaneous pallor. Abdomen was tender with abdominal pain and guarding in the lower quadrants. A large, non-reducible mass was noted in the right inguinal region without cutaneous inflammatory signs. Complementary studies were performed. Laboratory tests documented a slight elevation of CPR (6 mg/dl) with no other alterations. Abdominal X-ray showed no abnormalities.

The patient underwent emergency surgery under general anaesthesia. After a right inguinal incision, a hernial sac was isolated and opened, revealing an inflamed cecal

appendix without any purulent fluid or contamination (Figure 1).

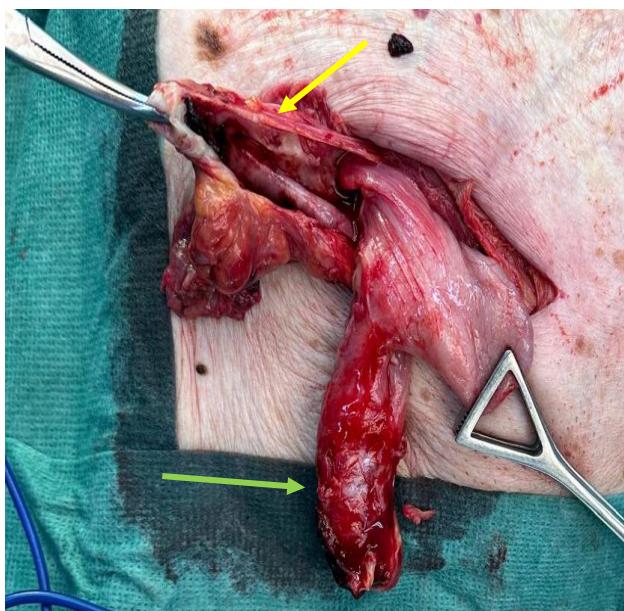


Figure 1: Macroscopic findings during surgery: an inflamed appendix (green arrow) within the hernia sac (yellow arrow).

An appendectomy was performed, as well as hernia repair via the Lichtenstein technique with a non-absorbable flat mesh prosthesis. Surgery was uneventful and post-operative clinical evolution was favourable, she completed a seven-day course of amoxicillin/clavulanic acid. No complications or symptoms were reported in six weeks of follow-up.

DISCUSSION

Inguinal hernias are a protrusion of the abdominal content through a defect or weakness in the inguinal canal and while they are a very common pathology only about 1% of them contain the appendix within the hernia sac (regardless it's inflammatory state).¹⁻³ Those are called Amyand's hernias (AH) and were first described in 1735 by Claudio Amyand while he performed the first appendectomy on an 11-year-old patient.^{1,4}

AH is more common in males and on right side where the appendix is usually found.¹⁻⁵ Rarely it can occur on the left side due to intestinal malrotation, a floating cecum or situs inversus.⁴ It's about three times more frequent in children due to the patency of the peritoneo vaginal canal^{4,6} but can also result from fibrous adhesions between the testicle and appendix or congenital laxity of the right colon.⁶

The diagnosis is a challenge. Clinical presentation is variable and depends on the inflammatory state of the appendix. Often is asymptomatic, and usually it is an incidental diagnosis made intraoperatively during hernia

repair.²⁻⁴ Imaging studies (ultrasonography or computer tomography) can be performed. If preoperative diagnostics is made, laparoscopic techniques, may be performed which reduce the risk of surgical site infections.^{5,6}

In some cases it can present as incarcerated or strangulated hernia, with or without acute appendicitis. Only 0.1% of all cases of appendicitis happens in AH.¹⁴ Acute appendicitis within the hernia sac can be caused by extraluminal obstruction due to hernia incarceration (increase pressure on the hernia neck by a narrow deep inguinal ring), external trauma if irreducible hernia, contraction of abdominal muscles, increased intra-abdominal pressure or from an intraluminal obstruction.²⁻⁷ Incarceration of the hernia can lead to inflammation of the appendix, and the other way round, acute appendicitis within the hernia sac can also lead to incarceration. In these cases the patient may present a thickened cord, swelling, pain and redness in the groin and scrotum as well as nausea and vomiting and tenderness in the right lower quadrant.²⁻⁴

Acute appendicitis can lead to complications like abscess, perforation, peritonitis, fistula³ and necrotizing fasciitis.^{2,3} The peritonitis extension is varying inversely with the diameter of the hernia defect, if small, the peritonitis is limited to the sac.⁴

The differential diagnosis comprises irreducible, incarcerated or strangulated hernia, acute appendicitis, strangulated omentocele, orchiepididymitis, acute hydrocele, testicular tumor or torsion, Richter's hernia and inguinal adenitis.²⁻⁷

There are different classifications of AH. The Fernando and Leelaratna classification distinguishes three types: (a) a non-inflamed appendix within the hernia sac, (b) an inflamed appendix, and (c) a perforated appendix. The Losanoff and Basson classification divides Amyand's hernia into four main types. Type I refers to an inguinal hernia containing a normal appendix, for which management may involve hernia reduction or appendectomy followed by mesh repair. Type II describes acute appendicitis within the inguinal hernia sac without abdominal sepsis, requiring appendectomy and non-mesh hernia repair.

Type III is characterized by acute appendicitis within the inguinal hernia sac with peritoneal sepsis, necessitating laparotomy, appendectomy, and non-mesh hernia repair. Finally, Type IV involves acute appendicitis within the inguinal hernia sac along with other abdominal pathology, either related or unrelated; in these cases, management follows the approach for Type III, with additional treatment for the coexisting abdominal disease.⁸ A modified version of the Losanoff and Basson classification includes additional Type V for cases where the appendix is found within an incisional hernia.⁴

The management of AH is dictated not only by the inflammatory state of the appendix and the complexity of the hernia, but also the surgeon's technical skills and patient's clinical condition and comorbidities.⁴ Usually appendectomy and hernia repair are performed. While appendectomy is always indicated for acute appendicitis, opinions differ on whether to perform appendectomy for a non-inflamed appendix, due to increased risk of infection as the procedure is no longer sterile.^{4,5} Those who advocate performing appendectomy in these cases aim to prevent the need for future appendectomy and to eliminate diagnostic uncertainty, typically in a paediatric context but also in left side AH.^{4,7} There is also controversy about the type of hernia repair and mesh use if an appendectomy is performed. Some authors report that mesh inguinal hernia repair can be considered a safe technique in cases of acute appendicitis without associated complications, while others recommend avoiding mesh repair due to the risk of surgical site infection and fistula formation.^{3,5,6,9-11} Treatment can be performed using either laparoscopic or open approach. Another option, if pre-operative diagnosis of AH, is to perform the appendectomy laparoscopically and the hernia mesh repair using an open technique.⁴

CONCLUSION

Amyand's hernia remains a rare presentation of inguinal hernias, most often diagnosed during surgery. Although current classifications provide useful guidance, ongoing debate persists regarding optimal management strategies, particularly concerning the need for appendectomy in cases with a non-inflamed appendix and the use of mesh in hernia repair following appendectomy. Managing this condition requires a personalized approach, tailored to the specific circumstances of each case, based on the appendix's condition, the complexity of the hernia, patient comorbidities and surgical expertise. More studies are needed in order to establish guidelines.

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