



## Amyand's Hernia: Case Report of a Rare Hernia

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### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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### ABSTRACT

The presence of a vermiform appendix in an inguinal hernia sac is known as a Amyand's hernia. It's an atypical and rare disease. The diagnosis is usually made intraoperatively. The management of this type of hernia should be tailored to each patient according to their clinical presentation and often poses problems of repair due to the infection risk associated with the appendectomy. Surgeons should have a complete knowledge of Amyand's hernia treatment modalities. It's an imperative condition for a good repair without complications and with avoidance of recurrence. Here, we describe a patient with an Amyand hernia who underwent appendectomy along with a mesh repair of his hernia.

*Keywords: Amyand hernia; appendix; appendectomy; mesh repair.*

### 1. INTRODUCTION

Amyand's hernia is defined as an inguinal hernia containing the appendix within the hernial sac. The incidence of this rare condition rises up to

1% (0.19–1.7%) of all inguinal hernia cases and the inflammation of the appendix within the inguinal sac is even rarer, as it corresponds to 0.1% (0.07–0.13%) of all Amyand's hernia cases [1]. Claudius Amyand, surgeon to King George II,

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was the first to describe the presence of a perforated appendix within the hernial sac (in 1735) of an 11-year-old boy who had undergone successful appendectomy [2]. At incidental Amyand hernia, two major questions are raised : Should we do the appendectomy ? And should we use a mesh for the repair?

We present a case report of Amyand's hernia diagnosed intraoperatively with a catarrhal and non-perforated appendix which have been treated with an appendectomy and a tension free repair using a mesh.

## 2. CASE REPORT

A 63-year-old man, chronic smoker at 30 pack-years with no particular pathological antecedent, presented a right inguinal tumefaction evolving for two months without any transit disorders, vomiting, externalized digestive hemorrhage or dysuria. On examination, the patient was conscious, hemodynamically and respiratorily stable: blood pressure=120/70 mmHg, respiratory rate=16 cycles per minute, pulse rate=82 beats per minute, body temperature=37.4°C. We objectified the presence of a right inguinal hernia, which was painless, reducible, impulsive to cough and without any inflammatory signs. The abdomen was flexible and the rectal examination was normal. The vesico-prostatic ultrasound showed

no abnormality and the biological balance was normal, particularly the leukocytes at 6960/mm<sup>3</sup>. The patient was operated with a right inguinal approach, the surgical exploration revealed the presence of an indirect inguinal hernia classified Nyhus 3b. After opening the hernial sac, a catarrhal appendix with stercoliths was found (Fig. 1). An inguinal appendectomy was carried out to cure the right hernia with a Polypropylene mesh according to the lichtenstein technique, the operation was simple and the anatomopathological examination concluded to an acute appendicitis.

## 3. DISCUSSION

A hernia is defined as the protrusion of a viscus or a part of a viscus through the walls of its containing cavity [2]. Unusual contents may be encountered, such as a Meckel's diverticulum (Littre hernia), a portion of the intestine wall (Richter hernia) or the bladder [3]. The presence of the vermiform appendix, whether inflamed or not, inside a hernial sac is designed in the literature as Amyand's hernia. It may also present as an incarcerated hernia or as an acute appendicitis occurring inside the hernial sac [4]. It should not be confused with femoral hernia containing the appendix, the latter was named De Garengeot hernia after Rene Jacques Croissant De Garengeot [5].

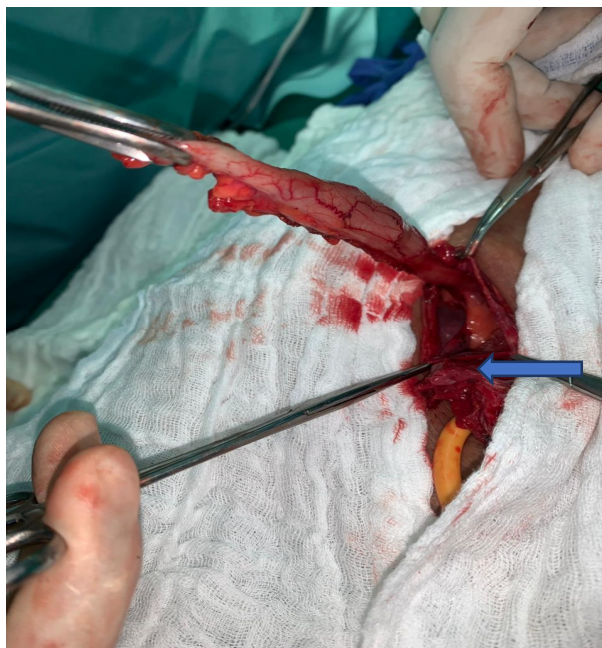


Fig. 1. Amyand's hernia where the appendix is identified within the hernial sac (Blue Arrow)

Amyand's hernia cases have been recorded in every age, from neonates to elderly. Nonetheless, they are three times more likely to be diagnosed in children than in adults, due to the patency of the processus vaginalis within the pediatric population [6]. This condition is also more frequent in males, due to the greater incidence of inguinal hernia [3]. A left sided Amyand's hernia may be caused by situs inversus, malrotation or mobile caecum. Very few cases with left Amyand's hernia have been reported in the literature [7].

The etiopathogenesis of acute appendicitis in Amyand's hernia is unclear, several hypotheses have been proposed : contraction of anterolateral abdominal muscles, causing compression and functional obstruction of the prolapsed appendix; incarceration and, subsequently, the inflammation of the appendix; development of adhesions between its serous membrane and the hernia sac, resulting in an irreducible hernia [8].

The diagnosis of Amyand's hernia is generally incidental intraoperatively. Abdominal exam, physical signs, laboratory results and imaging are not always helpful in the differential diagnosis [6]. The presence of peritoneal irritation and early pain in an incarcerated hernia may suggest appendicitis inside the hernial sac [9].

Typical symptoms of acute appendicitis such as nausea, vomiting, the right iliac fossa pain and anorexia may also be seen in Amyand's hernia. According to the literature, fever and leukocytosis are less frequent in these cases [10].

The use of imaging methods may assist the diagnosis [9]. The most significant ultrasound finding is the presence of a non-compressible tubular structure within the hernial sac. In case of appendicitis, the additional characteristics include wall thickening and hyperemia of the appendix. The Computed tomography (CT) scan signs considered pathognomonic for Amyand's hernia are : a blind ending tubular structure inside the hernia sac arising from the base of the caecum, hyperemia, wall thickening and periappendiceal fat stranding [11].

Various complications of Amyand's hernia have been reported. Lyass et al. described an abdominal abscess secondary to a perforated appendix in an inguinal hernia. Serrano and Ackerman et al. reported an incarcerated right inguinal hernia that contained a perforated appendix along with an inflamed right testicle and spermatic cord [6].

There is no consensus in the literature regarding the best course of action in treating an Amyand's hernia. The system emphasizes the fact that the management of Amyand's hernia in practice depends on the condition of appendix [8].

Losanoff recommends the appendectomy due to the higher incidence of acute appendicitis in childhood and adolescence in the presence of a non-inflamed appendix in the hernia sac. Some advocate for a systematic prophylactic appendectomy to prevent the appendicitis post-manipulation or in the future and the re-herniation. According to Michalinos, Moris and Vernadakis, prophylactic appendectomy is advised especially in patients with immunosuppressed state. Other authors reject the idea, as it is believed, that prophylactic appendectomy may add unnecessary risk of infection to the surgery [12].

According to Losanoff and Basson, in patients with appendicitis or perforated appendix, a prosthetic mesh is typically contraindicated due to the risk of viscera and mesh infection [13] In cases where the appendix is inflamed with no perforations or gangrene, then, depending on other factors such as overall health and hernia size, the surgeon could consider proceeding to a tension free hernia repair with a mesh, as the overall risk of infection may be lower than the risk of recurrence with a primary hernia repair [13].

In contrast, Chatzimavroudis et al. reported that synthetic mesh may be used successfully in cases of Amyand's hernia, even with inflamed or perforated appendix, with no post-operative complications, and that a septic environment is not an absolute contraindication for the prosthetic mesh [6].

In our case, we performed an appendectomy and did the choice to proceed with a tension free hernia repair with a polypropylene mesh for several reasons including: the absence of a severe inflammation, the absence of perforation or gangrene and the large size of the hernia.

#### 4. CONCLUSION

An Amyand's hernia is a rare condition, to this date there is a lack of studies about the management of this affection. The necessity for prophylactic appendectomy and insertion of a mesh intraoperatively is still under debate.

However, more research is needed to provide surgeons with evidence-based and standardized

approaches for dealing with this unique situation and ensure optimal patient outcomes.

## CONSENT

As per international standard, patient's consent has been collected and preserved by the authors.

## ETHICAL APPROVAL

As per international standard, written ethical approval has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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