

Amyand's hernia with appendicular perforation: A case series

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ABSTRACT

Introduction: Amyand's hernia is an uncommon variant of inguinal hernias, which is defined by the presence of the appendix within the hernia sac. They can be classified into four types. There is not much literature about the subject and some issues remain controversial, such as the treatment options. Over 16 years (1996–2012) 2648 inguinal hernias were surgically intervened at Hospital Distrital da Figueira da Foz, Portugal, and two of them were Amyand's hernias representing an incidence of 0.076%. **Case Series:** The patients are males, 72 and 76 years old, and presented right inguinal pain and tumor. In both cases, the diagnosis was made during emergency surgery and perforated appendicitis was found. **Appendectomy through the herniotomy incision and primary prosthetic hernia repair with associated endovenous broad-spectrum antibiotic therapy was the treatment of choice. No significant morbidity or mortality was recorded. Conclusion:** The adequate surgical treatment depends on the type of Amyand's hernia. **Appendectomy through the herniotomy incision and primary hernia repair seems to be the best treatment option for Amyand's hernia with acute appendicitis. The method of primary**

hernia repair is, however, controversial. Some authors stand for a prosthetic hernia repair and endovenous broad-spectrum antibiotic therapy, with good results. Appendectomy is not an absolute contraindication to primary prosthetic hernia repair. More studies are needed to acknowledge the best surgical approach concerning the different types of Amyand's hernia.

Keywords: Hernia mesh, Hernioplasty, Inguinal hernia, Perforated appendicitis

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INTRODUCTION

Amyand's hernia is an uncommon variant of inguinal hernias, which is defined by the presence of the appendix within the hernia sac. The appendix may or may not be inflamed [1].

Amyand's hernias can be classified into four types: type 1 is the Amyand's hernia containing a non-inflamed appendix.

- in type 2 there is acute appendicitis, with limited infection to the hernia sac;
- in type 3 there is acute appendicitis with associated peritonitis, and

- type 4 Amyand's hernias are complicated by other serious diseases such as appendicular adenocarcinoma, colon carcinoma and others [2].

The incidence of Amyand's hernias is less than 1% [3], and even less when associated with perforated appendicitis when it falls to 0.1 to 0.13%, according to literature review reports [4, 5]. Over 16 years (1996–2012) 2648 inguinal hernias were surgically intervened at Hospital Distrital da Figueira da Foz (HDFP), Portugal, and two of them were Amyand's hernias representing an incidence of 0.076%.

There is not much literature about the subject and some issues remain controversial, such as the treatment options. The rarity of this disease associated with the fact that two cases were registered in HDFP, motivated the authors to report these hernias.

CASE SERIES

Case 1

A 72-year-old Caucasian male presented at the emergency department with right lower quadrant pain and inguinal swelling. The symptoms started the same day. The pain was continuous and progressive, worsening with walking and without migration. The patient also had nausea, but no other significant complaints. At observation he presented right inguinal inflammation, very painful on palpation and scrotal edema. The patient had right iliac fossa tenderness and guarding on palpation. No other significant findings at presentation. His physical examination was compatible with incarcerated right inguinal hernia. Laboratory tests showed an elevated C-reactive protein (183.23 mg/L). All other routine preoperative tests (electrocardiogram, chest X-ray and blood tests) were normal and no other diagnostic exams were done.

The patient was transferred to the operating room for an emergency surgical procedure. Through an inguinal approach the surgeons verified that the inguinal hernia sac contained a perforated gangrenous appendix with periappendicular abscess (Figure 1). Appendectomy through the herniotomy incision and primary hernia repair was performed. The surgeons opted for a prosthetic hernia repair with a polypropylene mesh and associated endovenous broad-spectrum antibiotic therapy (imipenem and cilastatin) during five days.

No perioperative or postoperative morbidity and mortality were recorded, and the patient was discharged at the sixth postoperative day. The histological examination revealed a perforated acute appendicitis (Figure 2). The patient presented good evolution on follow-up.

Case 2

A 76-year-old Caucasian male presented at the emergency department with inguinal pain and tumor

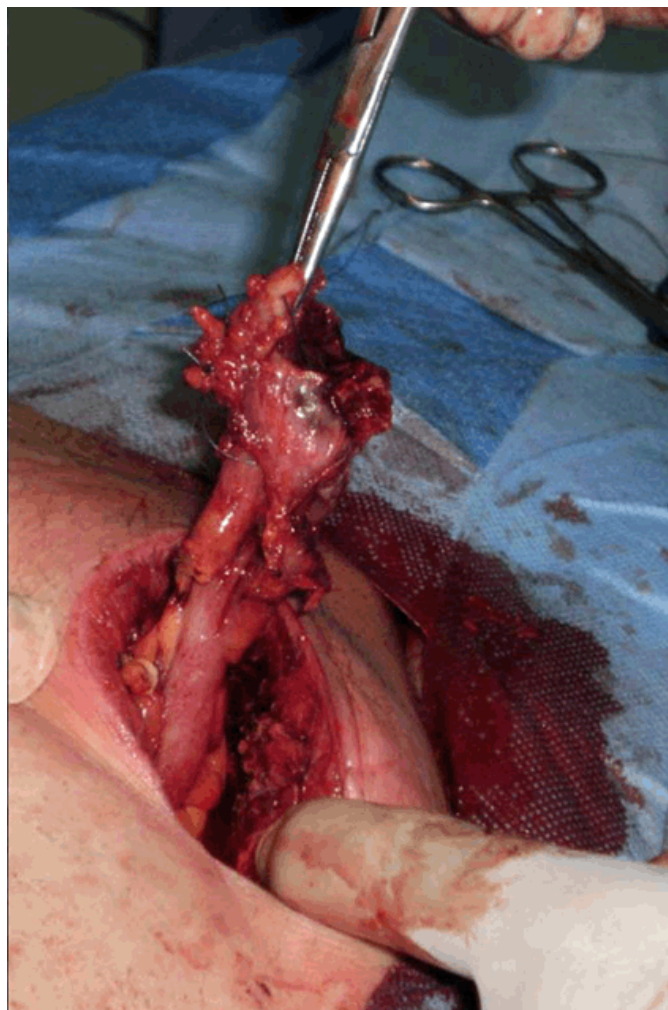


Figure 1: Through a right inguinal approach the surgeons verified that the inguinal hernia sac contained a perforated gangrenous appendix.

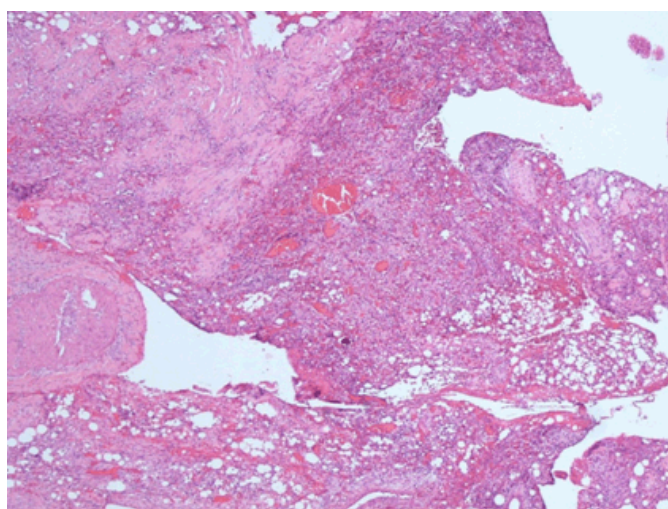


Figure 2: The inflamed appendicular lumen can be observed on the right. There is an interruption through the entire thickness of the wall of the ileocecal appendix making the histological diagnosis of perforated acute appendicitis (H&E stain, x400).

starting the same day. The pain was continuous and progressive, worsening with walking and without migration. The patient also had nausea, but no other significant complaints. At observation, he presented right inguinal inflammation, very painful on palpation. The patient had right iliac fossa tenderness and guarding on palpation. No other significant findings at presentation. His physical examination was compatible with incarcerated right inguinal hernia. Routine preoperative tests (electrocardiogram, chest X-ray and blood tests), were normal and no other diagnostic exams were done.

The patient was transferred to the operating room for an emergency surgical procedure. Through an inguinal approach the surgeons verified that the inguinal hernia sac contained a perforated gangrenous appendix. The surgeons opted for a prosthetic hernia repair with a polypropylene mesh and associated endovenous broad-spectrum antibiotic therapy (imipenem and cilastatin) during five days.

No perioperative or postoperative morbidity and mortality were recorded, and the patient was discharged at the sixth postoperative day. The patient presented good evolution on follow-up.

DISCUSSION

Amyand's hernias are more common in males, as observed in this study, and may affect patients from three weeks old to 88 years old. The average age of incidence of about 69.4 years old [1] is also concordant with that presented here. Most cases occur in the right side, as a result of the normal anatomic position of the appendix, and also because of the fact that the right inguinal hernias are more common than the left ones. Also this is in accordance with the cases we registered. There are left side Amyand's hernias reported. These are rare and may be associated with situs inversus, intestinal malrotation or a mobile cecum [6].

The clinical presentation is variable. The most common symptom is the typical epigastric or periumbilical pain, which then converges to the lower right quadrant, combined with an irreducible soft swelling in the groin or inguinal-scrotal area. The symptoms reported by the patients studied are according to the most frequently described in literature. In some cases, symptoms of intestinal occlusion or signs of peritonitis are described. Naturally, the symptoms are related to the type of Amyand's hernia.

The preoperative diagnosis of Amyand's hernia is very difficult, and rare, being more usually accomplished during emergency surgery [1, 7], as it was in both the cases that the authors present.

In the cases presented, both type 2, it was decided to carry out appendectomy through the herniotomy incision and primary prosthetic hernia repair with a polypropylene mesh. Patients underwent a five-day empirical broad

spectrum antibiotic therapy aiming to obtain a large pathogen coverage action.

Therapeutic options for Amyand's hernia have been widely discussed in recent case reports, but there is still no consensus on the best option. Appendectomy by herniotomy incision with primary repair of the hernia seems to be the most appropriate treatment in case of the type 2 hernias. The most suitable type of primary hernia repair is, however, controversial. Some authors suggest herniorrhaphy while others defend prosthetic hernia repair with polypropylene mesh associated with intravenous broad-spectrum antibiotics during three to five days [8]. Herniorrhaphy repair technique may be hampered by local tissue inflammation enhancing the risk of relapse [8]. Some authors argue that the decision should be made taking into account the degree of inflammation of the appendix [1, 7].

Scientific studies on the most appropriate prosthetic material type are scarce limiting the evidence to the positive results obtained with the polypropylene meshes [8] and, in some cases, acellular collagen products [2]. Straight (flat) polypropylene meshes seem more appropriate since they avoid the formation of hollows that potentiate infection [8]. More studies on the subject are needed to draw conclusions about the best option.

The incidental appendectomy on type 1 Amyand's hernias is also non-consensual being, however, contraindicated by several authors [1]. Some advocate a decision taking into account factors such as the patient's age or the size of the hernia [2]. In the case Amyand's hernias type 3 and type 4, clinical judgment should determine a delayed hernia repair in an unstable patient or in patients with severe disease constituting an obvious contraindication to primary repair [2].

Acute appendicitis and incarcerated inguinal hernia are two common causes of emergency surgery for acute abdomen. Initial treatment of each of them is usually simple but when they manifest in combination their symptomatology is changed, masking their specific symptoms. Especially, the absence of acute appendicitis classical symptoms can lead to a late diagnosis and a consequently higher morbidity.

Amyand's hernia has a non-negligible mortality of about 14–30% [7]. The mortality risk is probably associated with the perforation of the appendix independently of peritoneal abscess formation or even peritonitis [7]. Both the cases presented had appendicular perforation, a poor prognostic factor, which reinforces the therapeutic success of the reported case series.

CONCLUSION

The results presented in this study are consistent with other scientific publications. The most appropriate surgical treatment in each case depends on the type of Amyand's hernia. Performing appendectomy does

not represent an absolute contraindication to primary prosthetic hernia repair. More studies are needed to clarify the best therapeutic approach in different types of Amyand's hernia.

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Author Contributions

Filipe Madeira Martins – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Henrique Morais – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

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Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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