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Case Report

Amyand's Hernia: A Challenging Diagnosis

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Abstract

Background: Hernia repair surgery is a procedure frequently performed today, both in elective or outpatient settings as in an emergency context. Hernia is defined as a condition in which part of an organ or its fascia protruded through the wall of the cavity containing it. Quite often in the emergency department incarcerated hernias are found, and in most cases, the content of the hernia sac is the omentum or small intestine. In very rare instances, the appendix can be found inside the hernia sac. When the appendix is found in the hernia sac it is called an "Amyand Hernia", regardless if it is inflamed or not, with the incidence of appendicitis in an inguinal hernia being 0.07 - 0.13%. Preoperative diagnosis of an Amyand hernia is a clinical and often a Radiological challenge, being in many cases misdiagnosed as an incarcerated inguinal hernia. Usually, the diagnosis of Amyand's hernia is an incidental finding during surgical repair of an inguinal hernia. There is still no real consensus on the ideal surgical treatment approach for this pathology.

Clinical Case: A 72-year-old man, with a known reducible right inguinal hernia awaiting surgical repair presented to the Emergency Department with acute abdominal pain, nausea, vomiting and a painful right groin mass. He was diagnosed with an incarcerated right inguinal hernia and taken to the operating room for emergency surgery. An open approach was performed with a transverse right inguinal incision and the inflamed appendix was identified inside the inguinal sac. The patient was submitted to an appendectomy and subsequently, using the Bassini technique, had the incarcerated inguinal hernia corrected.

Conclusion: Preoperative clinical and imaging diagnosis of amyand´s hernia is rare and difficult. More prospective studies should be carried out in order to standardize the treatment of this pathology. The diagnosis of Amyand´s hernia should be in the surgeon's mind especially in the case of a strangulated inguinal hernia, as shown in this case.

Keywords: *Acute Appendicitis; Appendectomy; Amyand Hernia; Hernia Repair*

Abbreviation

AH: Amyand´s Hernia

Introduction

Hernias of the abdominal wall are defined as a defect in continuity of the fascial or musculoaponeurotic structure of the anterior abdominal wall, which allows the exit or protrusion of an intra-abdominal structure element, which can be the omentum, intestinal loops or

intra-abdominal organs. Dr. Claudius Amyand was the first to perform a successful appendectomy on an 11-year-old boy who had a right inguinal hernia, on December 6, 1735. Since then, an incarcerated hernia containing appendix, which may be normal or inflamed has been called Amyand's hernia [1]. The reported incidence is around 1% of all hernias. More rarer is the finding of acute appendicitis within the inguinal hernia, estimated rate at 0.07 - 0.13% [2].

If the patient, have situs inversus, very loose cecum, large appendix or intestinal malrotation, the appendix is normally find on the left side of the abdomen [3]. The clinically presentation, can present with variable, non-specific signs and symptom or be mistaken for an incarcerated inguinal hernia, because of this the diagnostic is challenge. Normally, its identification is often incidental, at intra-operatory room. The pathophysiology of Amyand's hernia is still unclear. Appendicitis in Amyand hernia can be caused by compression of the appendix by the sharp edge of the internal ring. Currently, there are controversies about the most appropriate treatment for this entity, especially when the appendix is normal in the hernia sac. In the literature, some authors preferred appendectomy in all patients, others preferred hernia repair without appendectomy if the appendix was normal appearance [4].

Case Presentation

A 72-year-old man, followed in general surgery consultation, for reducible right inguinal hernia, presented to the Emergency Department with acute abdominal pain, nausea, vomiting and a painful right groin mass, started about 12h prior to arrival. He was assessed by the general surgery unit and reported that the hernia is usually manual reducible during the last 1 year, but has recently triggered constant sharp pain. At her abdominal examination we found an obviously painful right inguinal mass, non-reducible. The rest of the physical examination was normal. No imaging exam was requested in this case, being diagnosed with incarcerated right inguinal hernia. The patient underwent surgical exploration of an incarcerated right inguinal hernia, after discussing the risks and benefits of the procedure. The open approach was performed with a transverse right inguinal incision (Figure 1), identifying the inflamed appendix in the inguinal sac with a small local abscess (Figure 2). A simple appendectomy was performed, the appendicular base was clamped, cut and ligated with the free stump technique with 2-0 silk, the surgical specimen was extracted through the inguinal region to avoid peritoneal contamination, the right inguinal region was cleaned and a inguinal plasty with Bassini technique was performed. The operating piece of appendix (Figure 3) was sent to the pathology department for histological examination. The patient had an adequate postoperative evolution, tolerating food the second postoperative day, with no complaint of pain. Hospital discharge was decided on the four post-surgical day, with no apparent complications so far.

Figure 1: *Transverse right inguinal incision.*

Figure 2: *Amyand hernia with appendicitis with local abscess.*

Figure 3: *The operating piece of the long appendix.*

Discussion

Acute appendicitis represents one of the most common surgical diagnoses made by general surgeon. Despite the frequency of this pathology, its diagnosis can still be a challenge, given the multiple locations where the cecal appendix can be found. Amyand´s hernia is a

rare condition where the vermiform appendix is part of the inguinal hernia content and may eventually evolve as appendicitis of difficult diagnosis [5]. Clinically, the preoperative diagnosis of AH is challenging, and most cases have presented as incarcerated right inguinal. Some general manifestations such as fever, vomiting, abdominal painful and distension depend on the condition of the vermiform appendix and the content of the inguinal hernia [4]. The differential diagnosis of Amyands hernia included, necrotic inguinal adenopapthy, testicular torsion and epididymal orchitis. The best diagnostic study for inguinal hernias is the abdominopelvic tomography, in which we can find the presence of intestinal loops within the hernia sac, or the presence of the cecal appendix, as well as data suggestive of acute appendicitis, perforation or strangulation [6] (Table 1).

Types of AH	Features	Surgical Management
Type 1	Normal appendix within the inguinal hernia	Reduction of appendix or appendicectomy and mesh hernioplasty
Type 2	Acute appendicitis with no abdominal sepsis	Appendicectomy through the hernia and sutured hernioplasty
Type 3	Acute appendicitis with abdominal sepsis	Appendicectomy through laparotomy with sutured hernioplasty
Type 4	Acute appendicitis associated with related or unrelated abdominal pathology	Appendicectomy through hernia or laparotomy plus diagnostic workup

Table 1: *Losanoff-Basson classification of Amyand´s hernia and their management.*

Currently and despite several guidelines, in the literature there is no consensus about the best treatment of an appendix in Amyand's hernia [7]. Appendectomy is accepted in cases of Amyand's hernia with appendicitis, but if the appendix has a normal appearance, there is still controversy or doubt about the best treatment.

For some authors, such as Hutchinson and Baldassare., *et al.* argued that appendectomy is not necessary and can be detrimental in situations of a healthy appendix [7,8]. According, Ali., table with healthy appendix or appendicitis, appendectomy should be performed in all patients with Amyand's hernia. For most authors, the decision to remove the appendix must be individualized [9]. Prophylactic appendectomy is advocated by some authors who believe that its manipulation can lead to the development of appendicitis, however and so far, no study has shown that the manipulation of normal appendix can lead to secondary appendicitis [10]. Although there is still no consensus, in 2007, Losanoff and Basson described a classification system in order to clarify the operative approach, based on the appearance of the appendix and type of hernia: type I, with a normal appendix; type II, with an acute appendicitis localized in the hernial sac; type III, with localized peritonitis; type IV, with generalized peritonitis [4,11]. In this case, the patient was diagnosed intraoperatively with Amyand's hernia with acute appendicitis (AH type II) accompanied by local complications (abscess); due to the high risk of infection, it was decided to perform appendectomy, and repair of the hernia defect without the use of prosthetic materials using the Bassini technique, reporting adequate postsurgical evolution.

Conclusion

Preoperative clinical and imaging diagnosis of amyand´s hernia is rare and difficult. More prospective studies should be carried out in order to standardize the treatment of this pathology. The diagnosis of Amyand´s hernia should be in the surgeon's mind especially in the case of a strangulated inguinal hernia, as shown in this case.

Conflict of Interest

None.

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