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Amyand's Hernia: A Case Report

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Abstract

Background: Amyand's hernia is a type of inguinal hernia that contains the cecal appendix in its sac; with a reported prevalence of 0.28% to 1% of hernias, its preoperative diagnosis is difficult, although possible through imaging studies such as tomography, which is why it is usually an incidental intraoperative finding.

Clinical Case: A 50-year-old male with a previous diagnosis of right inguinal hernia in surgical protocol, who began his complaint 8 days prior to admission characterized by pain in the right inguinal region, accompanied by increased volume and a fluctuating mass at that level. He was admitted for urgent surgical management and right inguinal plasty, showing a perforated cecal appendix as an intraoperative finding, as well as an abscess of approximately 20 ml. Appendectomy was performed by laparotomy and inguinal plasty with Bassini technique without apparent complications. During follow-up an adequate recovery was found.

Conclusion: Amyand's hernia is a rare entity, clinically indistinguishable from a complicated inguinofemoral hernia. The use of presurgical tomography serves to establish the diagnosis in some cases; however the accurate diagnosis is only made during surgery. Its treatment consists of appendectomy and inguinal plasty with or without mesh according to the case.

Keywords: Hernia; Appendicitis; Herniorrhaphy

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 element, which can be the omentum, intestinal loops or intra-abdominal organs [1]. In the Mexican population, the incidence of abdominal hernias is up to 10%, with the inguinal hernia accounting for 75% of cases, being the inguinal plasty one of the procedures most performed by general surgeons [2]. Inguinal hernias differ from femoral hernias, since the latter are projections of the abdominal content through the femoral canal, below the inguinal ligament, being the hernia with the highest risk of incarceration of up to 5% to 20% [3]. The presence of a cecal appendix as the content of a hernia was first described in 1735 by the surgeon Claudius Amyand, who is also known for performing the first appendectomy. The patient was an 11-year-old male who had a history of an inguinoscrotal hernia since childhood, which was complicated with an inguinoscrotal fistula that required surgical management at St. George Hospital in London; At the time of the surgery, described by Amyand himself as "the most complicated and confusing in which he had participated", the presence of a cecal appendix perforated by a pin that had been previously swallowed by the patient was found. The management was ligation and excision, performing at that time the first appendectomy in history [4].

Case Presentation

A 50-year-old male with no known comorbidities, denied drug addiction, with a history of umbilical hernioplasty 9 years ago. Previously under surgical protocol for right inguinal hernioplasty since January 2020. An 3 years prior to admission, he presented a non-painful 1 cm mass protrusion in the right inguinal region, which remained asymptomatic until November 2019, when he reported pain located in the right inguinal area, as well as an increase in size, so he presented to medical evaluation. He had follow up of the chief complaint by the general surgery outpatient clinic, where a diagnosis of right inguinal hernia was made in January 2020, complementing said diagnosis with an abdominopelvic tomography, which reported an indirect hernia process with content consisting of intestinal loops and epiploic fat (Figure 1); the surgical protocol to perform a right inguinal plasty with mesh placement was started, which was suspended due to a COVID-19

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Figure 1: Tomography of January 2020, with radiographic report of inguinal hernia with presence of intestinal loops and epiploic fat, in which the presence of a cecal appendix within the hernial sac, as well as appendicolith, can already be seen.

Figure 2: CT scan performed upon admission to the emergency room, showing an inguinal collection with the presence of gas, and a cecal appendix trapped in a hernia defect (arrow).

health contingency. In May 2020, after 8 days with pain in the right inguinal region, considerable increase in size of the mass, and changes in skin color over hernia defect, as well as nausea, vomiting of gastro-alimentary content and generalized abdominal pain, the patient presented to the emergency room where complementary studies where taken, reporting leukocytosis with neutrophilia (13.30 thousand/µl total neutrophils: 82.3%) and a new tomography was taken (Figure 2). He was assessed by the general surgery team, finding on physical examination the presence of peristaltic sounds decreased in intensity, as well as painful deep palpation in the right iliac fossa, right inguinal region with the presence of color changes characterized by erythema, edema, local temperature increase, a fluctuating mass, without ulceration or discharge, of approximately 7 cm in diameter, crepitant and painful on palpation, in which it was not possible to identify any defects by digital exploration due to the inflammatory process in the area, which is why surgical intervention with inguinal exploration was indicated. Open approach was performed with a right inguinal transverse incision, followed by dissection until the presence of a wall abscess with a content of approximately 20 ml was identified in the subcutaneous fat, as well as intestinal content and free fecalite, with an indirect type hernia defect of approximately 1.5 cm, whose content was found to be a cecal appendix with transmural necrosis and perforation in the distal third, and a thickened, indurated spermatic cord with discoloration changes, where it was not possible to rule out testicular ischemia during surgery. A medial infraumbilical laparotomy was performed, where an incarcerated cecal appendix was found inside an indirect hernia defect at the right groin level (Figure 3), appendicular base showed no sign of an

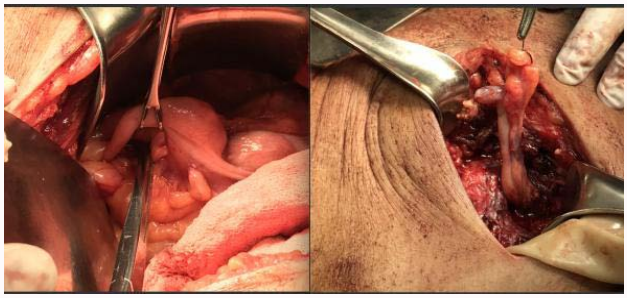

Figure 3: Cecal appendix with respected base, with entrapment in hernia defect. Cecal appendix extracted by inguinal region.

inflammatory process. 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 (Figure 3) to avoid peritoneal contamination, the right inguinal region was cleaned and a inguinal plasty with Bassini technique was performed, with the inguinal wound left to heal by second intention due to a high risk of infection. The patient had an adequate postoperative evolution, tolerating food the second postoperative day, with no complaint of pain. Testicular USG was taken 24 h after the surgical procedure which reports both testes without signs of ischemic involvement. No signs of local infection were identified at the surgical wound level, which presented adequate granulation tissue, so hospital discharge was decided on the fifth post-surgical day, with no apparent complications so far.

Discussion

Acute appendicitis represents one of the most common surgical diagnoses made by a 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 [5]. The presence of a cecal appendix within an inguinal hernia sac is an uncommon finding, present in less than 1% of cases; the presence of acute appendicitis in this location is even rarer, present in only 0.13% of patients [6]. This condition was first described in 1735 by the surgeon Claudius Amyand, who reported this finding in an 11-year-old patient who presented with complicated acute appendicitis within hernial sac of a right inguinoscrotal hernia, whose management consisted of performing appendectomy, reporting the first described surgery of this type. The appendix may have other locations with atypical presentations, such as Garengeot's hernia, which consists of the presence of the cecal appendix within a femoral hernia, first described in 1731 by Jacques De Garengeot, also considered as a rare entity, with less than 200 cases described in the literature, a picture that can become indistinguishable of an Amyand hernia [7]. The incidence of acute appendicitis in this type of hernias is even lower, being reported between 0.08% to 0.13% of cases, with the most common form of presentation being the presence of a mass at the right groin level associated with inflammatory changes such as erythema, local heat and painful exploration as described in the clinical case. Peritoneal contamination and intra-abdominal manifestations are rare, since the inflammation is contained within the hernia at the level of the inguinofemoral region, such as in this case [8]. Preoperative diagnosis is rare, being commonly diagnosed as an intraoperative finding, so the diagnostic suspicion should be high in cases of complicated right-sided inguinal hernias, mainly in children, in whom this pathology is more common secondary to the permeability of the vaginal process [9]. 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 [10]. The treatment of choice for Amyand's hernia is appendectomy *via* infraumbilical median laparotomy with primary repair of the hernia defect. In cases where possible, appendectomy through the hernioplasty incision with a completely extraperitoneal approach is recommended, possible in cases where a non-inflamed appendix is found in the hernial sac. Laparoscopic management is a good treatment option in centers where it is possible. The use of synthetic meshes to repair the hernia defect is controversial, not suggested in cases where there is appendicular perforation or abscesses, since this represents a high risk of contamination of the prosthetic material, in these cases, the Bassini technique repair is recommended [11]. Losanoff et al. [12] proposed a classification for Amyand's hernias in order to regulate therapeutic behavior according to intraoperative findings:

- Type 1: Hernia with a non-inflamed appendix, in this case content reduction or appendectomy and primary repair with prosthetic material is recommended.
- Type 2: Uncomplicated acute appendicitis, if possible extraperitoneal appendectomy with mesh placement is recommended, with moderate risk of infection.
- Type 3: Acute appendicitis with peritonitis, a laparotomy approach is suggested, with hernioplasty with or without prosthetic material according to the risk of contamination.
- Type 4: Acute appendicitis accompanied by another intra-abdominal pathology, the decision to repair the hernia defect is based on the clinical characteristics of the patient.

In this case, the patient was diagnosed intraoperatively with Amyand's hernia with acute appendicitis accompanied by local complications (abscess); due to the high risk of infection, it was decided to perform appendectomy through mid-infraumbilical laparotomy, and repair of the hernia defect without the use of prosthetic materials using the Bassini technique, reporting adequate postsurgical evolution.

Conclusion

Amyand's hernia is a rare form of inguinal hernia, its pre-surgical diagnosis can represent a challenge for the surgeon, for which a high suspicion is required given the low incidence of this pathology. The best diagnostic study is the abdominopelvic tomography, which can show the hernial content as well as data on inflammation. The management of choice is always surgical exploration by performing an appendectomy or reduction of the hernial content and repair of the hernia defect with or without the use of mesh according to the clinical characteristics of the patient and the risk of contamination.

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