

## **Evaluation of amyand's hernia patients: experience report**

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**ABSTRACT**

**Objective:** Report the experience of evaluating two patients with Amyand hernia as a strategy to identify this rare surgical condition. **Experience Report:** A 4-year-old patient with pain in the right inguinal region with irreducible tumor. The child was pale, prostrated and with leukocytosis and left deviation, being submitted to inguinoscopy with diagnosis of Amyand hernia during surgery. The second patient, a 74-year-old man, presented abdominal pain in the lower right quadrant irradiated to the scrotum with a palpable and irreducible tumor in the right inguinal region. Laboratory tests showed leukocytosis with deviation to the left and physical examination showed mild dehydration and low fever. In the operating room, a hernia sac with incarcerated contents was found, which was an inflamed caecal appendix, and the diagnosis of acute appendicitis was later confirmed. **Final Considerations:** The reported cases become important due to their rarity and the association between strangulated right inguinal hernia and acute appendicitis, assisting the medical community for proper management.

**Keywords:** inguinal hernia, surgical diagnostic techniques, appendicitis.

**1 INTRODUCTION**

Amyand's hernia was first reported in the mid-18th century by French surgeon Claudius Amyand. It is a pathology that consists of the presence of the cecal appendix in the content of the inguinal hernia sac and represents approximately 1% of all cases of inguinal hernia (PATOULIAS D et al., 2017). This term is used even in situations where the cecal appendix is normal (CUNHA HAV, 2009). Acute appendicitis in inguinal hernia is an even rarer event, corresponding to 0.1% of all cases of acute appendicitis (SHABANY Y, 2018) and 0.1% of all cases of Amyand hernia (PATOULIAS D et al., 2017). Thus, the treated pathology is rare, which acts in accordance with the limited amount of literature available on the subject.

Cases can affect any age group and are more common in male children, due to the persistence of the peritoniovaginal conduit (PATOULIAS D et al., 2017). The right side is the most affected (CÁRDENAS AM, 2015), by the human anatomy itself. Cases of involvement on the left side are related to situs inversus, intestinal malrotation and mobile cecum (GUPTA S et al., 2005). In addition, this type of hernia can be found with the appendix partially or totally inserted in the hernial sac (PSARRAS K, 2011).

This pathology has variable symptoms, depending on the degree of inflammation and the presence or absence of perforation (OKUR et al., 2015). It may present as asymptomatic, having the usual characteristics of an inguinal hernia and being reducible, with a bulging or edema and associated

with mild local discomfort. (PATOULIAS D et al., 2017). In addition, it can often be diagnosed as an incarcerated or strangled hernia (CANKORKMAZ L, 2009), being associated with the symptomatology of acute appendicitis – pain in the right iliac fossa, anorexia, nausea and vomiting (PATOULIAS D et al., 2017). Because it is not a pathology with specific findings, it can also mimic testicular torsion, epididymitis, orchitis, and inguinal lymphadenitis (ORKUR et al., 2015). Preoperative diagnosis is not common and is mostly performed during surgery (SALLES VJA, 2006).

Thus, Amyand hernia does not present planned therapeutic approach in the vast majority of cases, but it is considered as a general rule that Amyand hernias with normal appendix are not recommended for appendectomy. In cases of associated acute appendicitis, appendectomy with inguinoscopy should be performed (FRANKO J, 2002). The Losanoff and Basson classification is a guide to approaching Amyand's hernia and is based on four possible situations of increasing severity. It proposes that appendectomy be performed only in cases of acute appendicitis or Amyand hernias that occur in young patients. The modification made by Rikki Singal (TABLE 1) added a fifth type of Amyand hernia, the incisional one (SINGAL et al. 2012).

Given the above data, we report five cases of Amyand hernia treated by the digestive system surgery team in the city of Juiz de Fora, MG. The report aims to address the similarities and differences between the cases, as well as their conduct and outcomes, comparing them with the expected results and based on the medical literature.

Table 1 – Amyand Hernia Classification by Lossanoff and Basson and modified by Rikki

Rating	Description	Treatment
<b>Type 1</b>	Appendix inside an inguinal hernia, not inflamed.	Reduction of hernia, repair with mesh and appendectomy in young patients.
Type 2	Acute appendicitis within an inguinal hernia, without pus or perforation, without abdominal sepsis.	Appendectomy, primary hernia repair and no mesh placement.
Type 3	Acute appendicitis within an inguinal hernia, with local or peritoneal pus or sepsis.	Laparotomy, appendectomy and primary repair of the hernia without mesh.
Type 4	Acute appendicitis within an inguinal hernia, with some related or unrelated abdominal pathology.	Treat as hernia types 1, 2 and 3 or treat according to appropriate pathology.
<b>Type 5 to</b>	Normal appendix within an incisional hernia.	Appendectomy, primary hernia repair including mesh.
<b>Type 5 b</b>	Acute appendicitis within an incisional hernia, without pus or perforation.	Laparotomy, appendectomy and primary repair of the hernia without mesh.
<b>Type 5 c</b>	Acute appendicitis within an incisional hernia, abdominal wall or peritoneal sepsis or in relation to previous operation.	Treat him like type four.

## 2 DETAILING OF CASES

The first reported case occurred with the patient E.C.L., 4 years old, living in the city of Rio Pomba, in Minas Gerais. The child presented pain in the inguinal region on the right with an irreducible tumor that caused crying when touched.

The chart was installed in 24 hours with worsening in the last 6 hours. In the local emergency unit, only plain radiography was available, whose image was not conclusive. The laboratory test showed mild leukocytosis with left deviation. The patient was pale and prostrate. The initial diagnosis was incarcerated hernia and suspected strangulation.

Thus, he was referred to the surgical center of that city and underwent inguinoscopy. During the operation, it was found that it was acute appendicitis (phase II) inside the inguinal hernia sac on the right (**Figure 1**).

Thus, standard appendectomy and inguinal herniorrhaphy were performed on the right (**Figure 2**). The patient received antibiotics, hydration and parenteral analgesics for 48 hours, and was discharged without any complications.

Figure 1 – Hernia sac with cecal appendix.



Source – From the author, 2018.

Figure 2 – Hernia sac and funicle separated from the cecal appendix.



Source – From the author, 2018.

The second reported case occurred with the patient N.R.V.R., male, 74 years old. During hospitalization at the Emergency Hospital of Juiz de fora, the patient presented abdominal pain in the lower right quadrant irradiated to the scrotum with palpable and irreducible tumor in the inguinal region on the right.

At admission, laboratory tests were collected that showed leukocytosis of 17000 with left shift (12% canes). On physical examination, she presented mild dehydration and low fever (37.8°C). The patient was taken to the operating room with a diagnosis of incarcerated hernia and suspected strangulation for inguinal approach.

During surgery, a hernia sac with incarcerated content was found in the case of inflamed cecal appendix (**Figures 3 and 4**), which was removed and sent for anatomopathological analysis, confirming the diagnosis of acute appendicitis later (**Figure 5**).

Figure 3 - Hernia bag with incarcerated content



Source – From the author, 2018.

Figure 4 – Appendicular stump



Source – From the author, 2018.

Figure 5 – Hernary bag with reduced content.



Source – From the author, 2018.

The third reported case occurred with patient M., male, 62 years old. The patient had chronic right inguinal hernia, with sudden evolution to scrotal pain and local phlogistic signs. He went to the emergency service with 48 hours of evolution. The pre-surgical diagnosis was incarcerated hernia, with potential for strangulation. Therefore, the patient was referred for surgery.

During the operation, an inguinal hernia sac was found incarcerated with the presence of an uninflamed caecal appendix. Herniorrhaphy was performed with implantation of surgical mesh, without appendectomy.

The patient received analgesia at the hospital and was observed for 2 days until discharge. No further complaints or interurrences.

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The second reported case occurred with the patient N.R.V.R., male, 74 years old. Patients with chronic inguinal hernia on the right presented sudden onset with severe pain in the right iliac fossa and signs of peritoneal irritation.

The patient underwent US, with suspicion of acute appendicitis. The caecal appendix was found in the hernia sac, leading to consequent herniorrhaphy and appendectomy. No surgical mesh was placed.

After the procedure, the patient received analgesia and antibiotic therapy at the hospital, and was discharged without other complications.

The second reported case occurred with the patient N.R.V.R., male, 74 years old. She attended the Emergency Department with typical acute appendicitis – severe pain in the right iliac fossa and nausea. In addition, she presented painful and swollen scrotum. Ultrasonography revealed a hernia in prison.

Taken to the operating room, he underwent right inguinal herniorrhaphy and standard appendectomy.

After hospital analgesia and antibiotic therapy, she was discharged without any other complications.

### **3 DISCUSSION**

The pathophysiology of acute appendicitis in Amyand's hernia is still controversial. One possible cause for this occurrence is the appendix microtrauma that causes fibrosis and adhesion in the sac. Muscle contractions and decreased local blood supply can lead to secondary inflammation, culminating in appendicitis (VEHBI H, 2016).

As described in the case reports above, the diagnosis of this rare pathology is difficult, occurring mainly intraoperatively (BHATTI SL, 2018). In addition, ultrasonography can be used to diagnose Amyand's hernia preoperatively. However, it is known that ultrasonography is rarely used as a routine imaging exam (OKUR MH, 2013).

Currently, one of the classifying methods of Amyand's hernia is Rikki's, which is a modification of the original hernia classification made by Lossanoff and Basson. It is necessary to point out that the hernias presented in the case reports are considered type 2, that is, an acute appendicitis within an inguinal hernia, without pus or perforation, without abdominal sepsis (DESAI G, 2017).

The inflammatory state of the vermiform appendix determines the surgical approach and the type of hernia repair. According to the literature, the indication of appendectomy in cases where there is no inflammation of the appendix is controversial. While in cases where there is inflammation, the use of mesh can be used as a treatment (HOLMES K, 2019). In the treatment of Amyand's hernia type 2, it is defended that primary hernia repair is done with tissue without mesh (VELIMEZIS G, 2017).

Given the peculiarity of the condition, we must be aware of the correct diagnosis and treatment of this rare surgical condition. The diagnosis is performed intraoperatively, since the approach for its treatment is similar to any irreducible inguinal hernia. Regarding the cases in which the appendix is normal, there is controversy regarding the performance of appendectomy. It is noteworthy that the surgeon's experience and surgical approach varies according to each patient.

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