

## Case Report

# Inguinal plasty and appendectomy as treatment for Amyand's hernia: case report and literature review

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## ABSTRACT

Amyand's hernia is described as the presence of the caecal appendix within the hernial sac of an incarcerated inguinal hernia. It was reported as an incidental finding in 1% of cases and with evidence of appendicitis in 0.1% of cases. The approach involves performing appendectomy and inguinal repair in the same surgical time, depending on the clinical scenario and the surgeon's decisions. We presented the case of a 76-year-old male patient with a diagnosis of Amyand's right inguinal hernia diagnosed during trans-operative right inguinal plasty.

**Keywords:** Hernia, Inguinal, Appendicitis, Appendectomy, Plasty, Appendectomy, Amyand

## INTRODUCTION

Amyand's hernia was first described by Claudius Amyand in 1735 when, during the right inguinal plasty of an 11-year-old patient, the cecal appendix was identified within the hernia sac. This hernia is defined by the presence of the vermiform appendix within the inguinal hernia sac, identified in only 1% of cases and of these less than 0.1% with evidence of acute appendicitis. The diagnosis is usually done intraoperatively after inguinal plasty.<sup>1,2</sup>

The pathogenesis is related to the context of an incarcerated inguinal hernia, in addition to the inflammatory process of the appendix due to vascular alterations. The cecal appendix can become incarcerated and strangulated with the risk of ischaemia and perforation.<sup>1,2</sup>

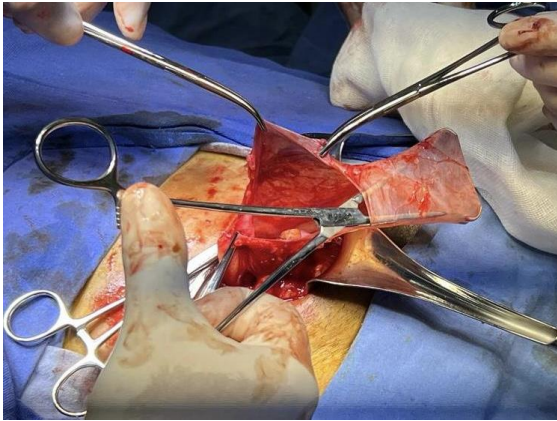
Diagnosis is usually done during the intraoperative phase of an inguinal plasty, diagnosis is difficult to make preoperatively and there is debate about the ideal surgical approach in these cases.<sup>1</sup>

We presented the case of a 76-year-old male patient with a diagnosis of Amyand's right inguinal hernia diagnosed during the right inguinal plasty surgery.

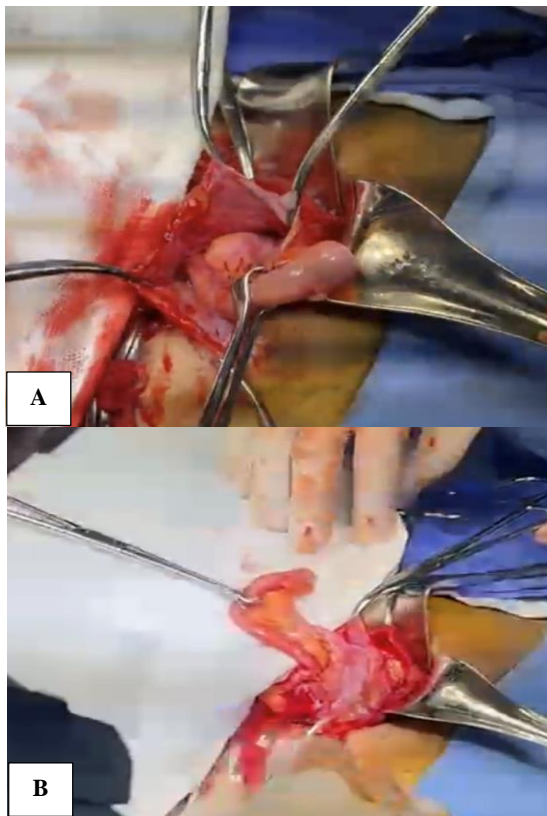
## CASE REPORT

A 76 year-old male without comorbidities, who began his illness with a clinical history of 4 years of evolution characterized by a sensation of a foreign body in the right inguinal region with an increase in volume that was exacerbated by the Valsalva maneuvers, associated with 3 months of pain, stabbing type, intensity 3/10, exacerbated during ambulation, denying weight loss or other symptoms.

A pre-surgical protocol was performed at the outpatient clinic, identifying on physical examination an abdomen with no evidence of peritoneal irritation, right inguinal region with an increase in volume, 3 cm defect, reducible, no change in local coloring, no increase in temperature, diagnosing indirect right inguinal hernia.



**Figure 1: Surgical findings of right inguinal plasty with indirect inguinal hernia, 4 cm defect and 8 cm hernia sac.**



**Figures 2 (A and B): Amyand's hernia, cecal appendix content with hyperemia in the distal third, without evidence of necrosis or perforation, integral base.**

We performed right inguinal plasty and the surgical findings were an indirect inguinal hernia, a 4 cm defect and a hernial sac of approximately 8 cm containing a caecal appendix with hyperaemia in the distal third, without necrosis or perforation, with whole base (Figures 1, 3 and 4). A diagnosis of Amyand's hernia and uncomplicated acute appendicitis was made. Open appendectomy was performed with management of the appendicular stump with simple 1-0 silk ligature and right

inguinal plasty with mesh using the Lichtenstein technique.

He was discharged on the second postoperative day without any eventualities.

## DISCUSSION

The prevalence of Amyand's hernia is 1%, with evidence of appendicitis in only 0.1% of cases.<sup>1</sup> It's more common in men and in pediatric patients.<sup>2,3</sup> Mortality is 14-30% due to the risk of abdominal sepsis and up to 5.5% risk of surgical site infection.<sup>2</sup>

Within the hernia sac, the caecal appendix may be present without alterations or with signs of ischaemia and perforation, and may be present in both direct or indirect hernias.<sup>2</sup> It occurs most commonly on the right side and is associated with intestinal malrotation, situs inversus or mobile caecum in case of left Amyand hernia.<sup>2,4,5</sup> Left hernias account for 9.5% of cases.<sup>6</sup>

The pathophysiologic process implies that after enlargement of the hernial defect, increased intra-abdominal pressure forces the lateral peritoneal rim, including the attached cecum and appendix, to pass through the inguinal canal. This repetitive movement of the appendix within the inguinal canal promotes irritation of the appendix and leads to inflammation of the appendix.<sup>3</sup>

The clinical presentation depends on the extent of inflammation in the hernia sac and the presence or absence of peritoneal contamination, and may be asymptomatic or present with signs of abdominal sepsis.<sup>3</sup> The initial manifestations usually point to a diagnosis of strangulated inguinal hernia.<sup>6,7</sup>

Diagnosis is difficult to make preoperatively, both ultrasound and computed tomography may not be necessary in the inguinal hernia approach, so management will depend on the findings during surgery.<sup>1,3</sup> Ultrasound can identify evidence of inguinal hernia and the presence of the cecal appendix within, while CT suggests evidence of appendicitis.<sup>6</sup>

The classification suggested by Losanoff et al described the characteristics of the cecal appendix in the context of Amyand's hernia and suggests surgical management according to the transoperative findings, through appendectomy and inguinal plasty with or without mesh depending on the case.<sup>1,3,7</sup>

According to Losanoff et al type 1 involves cecal appendix without evidence of appendicitis and suggests appendectomy and inguinal plasty with mesh. Type 2 refers to acute appendicitis without evidence of sepsis and suggests appendectomy and inguinal plasty without mesh. Type 3 involves acute appendicitis with sepsis and requires appendectomy, laparotomy and inguinal plasty

without mesh. Type 4 refers to acute appendicitis and other abdominal pathology and implies the need for the same management as type 3.<sup>1,7</sup>

Rikki's modified classification suggests type 5 in relation to incisional hernia, subdivided into 3 types according to the degree of acute appendicitis and presence or absence of sepsis, as a guide for the surgical management of these cases.<sup>1</sup>

Management in the context of Amyand's hernia involves surgical resolution, adjusting the approach and procedure according to the findings.<sup>8,9,12</sup> It remains a matter of debate whether or not to perform appendectomy in case of a normal cecal appendix and also regarding mesh placement in case of acute appendicitis.<sup>2,10</sup>

Regarding the use of mesh in inguinal plasty, its use was recommended in cases of appendicitis with clean surgical wounds, but not in contaminated wounds, due to the high risk of infections associated with the prosthetic material.<sup>10</sup> Amyand's hernia has a good prognosis, always considering the risk of possible associated complications.<sup>11</sup>

Historically, other hernias have been described in relation to the contents of the sac, such as Littre's hernia when a distal ileum or Meckel's diverticulum is found, Garengot's hernia in case of crural hernia with a healthy cecal appendix in the sac, and Richter's hernia when the antimesenteric border of an intestinal loop is found in the hernia sac.<sup>13</sup>

## CONCLUSION

Amyand's hernia is an unusual type of hernia that occurs mostly in men. It is an important diagnosis to consider in the management of complicated inguinal hernia, as most diagnoses are made during surgery. It is important to know the classification and treatment options, with inguinal plasty and appendectomy being the standard management, always considering the context, indications and contraindications for mesh placement. In this case we consider the use of mesh despite the data of appendicitis due to a clean surgical site.

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