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## Incarcerated Amyand's hernia: A case report

Perrotti Salvatore\*, Bosco Dorotea, Miano Debora, Amico Angelo, Latino Rosalia, Di Cataldo Antonio

Departement of General Surgery and Medical-Surgical Specialty, University of Catania, Catania, Italy

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## ABSTRACT

**INTRODUCTION:** Inguinal hernia may contain vermiform appendix in very rare cases. This particular condition is known as Amyand's hernia and it has an incidence of 1%. Diagnosis is very difficult preoperatively, so it is usually an incidental finding.

**PRESENTATION OF CASE:** We report a case of a 80 year old man with an irreducible mass in right inguinal region. During surgical procedure an Amyand's hernia was identified and we performed hernioplasty sec Trabucco and appendectomy.

**DISCUSSION:** According to Losanoff and Basson classification, our case was type 1 and its management is very controversial.

**CONCLUSION:** Surgical treatment depends on surgeon's experience and on clinical evaluation because there are many factors that may increase morbidity and mortality.

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## 1. Introduction

Inguinal hernia is the most common surgical disease. It may contain great omentum, segments of small or large bowel and uncommon components like ovaries, bladder, fallopian tube and in very rare cases vermiform appendix. This latter particular condition is known as Amyand's hernia [1,2].

Amyand's hernia has an incidence of 1% and it is complicated by acute appendicitis in 0.08–0.13% of cases [3]. Men are more frequently affected than women [4]. Its diagnosis is very difficult preoperatively, so it is usually an incidental finding [5]. We report a case of an 80 year old male patient where was found an Amyand's hernia while performing an inguinal hernia repair electively. Our paper is in line with the SCARE criteria [12].

## 2. Case report

A 80 year old man, scheduled for an election surgery for right inguinal hernia, came back to our department complaining of painful right inguinal swelling, constipation and loss of appetite for 3–4 days. He had a history of reducible right inguinal hernia for 3 years and his medical history included hypertension, deep vein thrombosis, full right carotid stenosis and partial left carotid stenosis. On admission, abdominal examination revealed a tender and irreducible mass (for about three days) in right inguinal region. Being the patient known to us and given his clinical his-

tory of inguinal hernia, we decided not to carry out radiological investigations and to operate the patient in urgency.

The rest of the abdomen was soft. The patient had no fever and at the laboratory testes white blood count was within normal range (Hb 12.8 g/dl, WBC 7960, Protein C dosage: 8.4 mg/L). The patient was taken to the operating room and underwent a general anesthesia due to his comorbidity.

During surgical procedure an incarcerated primary L2 hernia, according to European Hernia Society (type 2 s. Rutkow and Robbins) was identified. A massive pre-hernial lipoma was found and it was difficult to separate itself from spermatic cord, because of chronic process of the hernia and multiples adhesions. The sac was opened and it contained appendix and cecum but there were no signs of inflammation or vascular suffering. A standard open appendectomy and a Trabucco's hernioplasty were performed. The post-operative course was uneventful and the patient was discharged on the fourth post-operative day, without any complications. Hystopathological findings showed lymph node hyperplasia of the appendix.

## 3. Discussion

Since 1736, first case described by Claudius Amyand, very low cases are present in International Literature above a rare and incidental finding of appendix into a hernia sac of right wall groin. So it is a rare disease typically in men in the right side. Instead, presence of appendix in femoral hernia is called De Garengeot Hernia [5,9]. Amyand's hernia may be totally asymptomatic or may present itself as incarcerated or strangulated hernia with complications as like abdominal wall abscess, acute inflammation, perforation or

\* Corresponding author.

E-mail address: [salvatore.perrotti@me.com](mailto:salvatore.perrotti@me.com) (S. Perrotti).

orchitis, epididymitis, wall necrotizing fasciitis with a mortality of 14–30% [3,5,7].

The pathophysiology of acute appendicitis in Amyand's hernia is still controversial. It is usually caused by extraluminal obstruction due to pressure in the hernia neck rather than intraluminal obstruction of the appendix. Muscle contraction or any other sudden increase of intra-abdominal pressure may cause compression of the appendix, resulting in further inflammation. Its blood supply may be subsequently interrupted or significantly reduced, resulting in inflammation and bacterial overgrowth [1].

Our patient had no clinical or biochemical data of compromised bowel, so we did not take any radiological image [2,5]. Ultrasound is readily available, cheap and free from radiation, It is the modality of choice in children and young patients. The criteria for diagnosing acute appendicitis by ultrasonography are the identification of a blind-ending, noncompressible, nonperistaltic tubular structure measures greater than 6 mm in diameter. CT plays an important role in early diagnosis and shows hernias with their contents. CT is highly sensitive and specific in diagnosing acute appendicitis. Diagnosis of Amyand's hernia is done by showing a blind ended tubular structure connected to cecum within the hernia sac. MPR and 3D reconstructions are very useful in showing the appendix and its surrounding structures (and their complications such as perforation). If the diagnosis can be established in the preoperative phase, a laparoscopic surgical treatment can be performed. Also the management is very controversial. In 2007 Losanoff and Basson proposed a classification to standardize the common approach to Amyand's hernia [6]:

-Type 1: normal appendix inside an inguinal hernia; surgical treatment consists of reduction of the hernia repaired with or without mesh and appendectomy only in selected cases.

-Type 2: acute appendicitis inside an inguinal hernia, with no abdominal sepsis; surgical treatment should be appendectomy through the hernia and primary repair with no mesh.

-Type 3: acute appendicitis inside an inguinal hernia, abdominal wall or peritoneal sepsis; surgical treatment consists of laparotomy, appendectomy and primary repair of the hernia with no mesh.

-Type 4: acute appendicitis inside an inguinal hernia, associated or otherwise with abdominal disease; surgical treatment should be for the hernia as in types 1–3 and if there is abdominal disease it is essential to investigate the aetiology and only thus will it be possible to determine appropriate surgical treatment (Fig. 1).

Anyway surgical treatment depends on surgeon's experience and there are many techniques to perform hernioplasty [8–11]. The use of an acellular dermal matrix as alternative to prosthetic mesh in contaminated areas may avoid post-operative wound infection [7,10,11]. Our case was an Amyand's hernia type 1 and its treatment requires hernia repair but appendectomy is very controversial. Proponents for routine appendectomy, we believe that the removal of the appendix at the first operation will decrease the risks of appendicitis and future surgery. Because of tenacious adhesions between appendix and hernia sac, we performed appendectomy, sac resection and hernioplasty sec Trabucco. We performed Trabucco's technique because it is our favourite surgical treatment and, according to our operating series, it ensures reduction of the rate of neuralgia and excellent patient outcomes, especially in elderly patients. We justify the appendectomy for appendix microtrauma to avoid a second future operation and plug and mesh according to favourite hernioplasty (Fig. 2).

#### 4. Conclusion

Amyand's hernia is an extremely rare condition, often misdiagnosed and patient's clinical complaints and laboratory findings are usually inadequate for the pre-operative diagnosis. Treatment



Fig. 1. Hernial sac dissection.

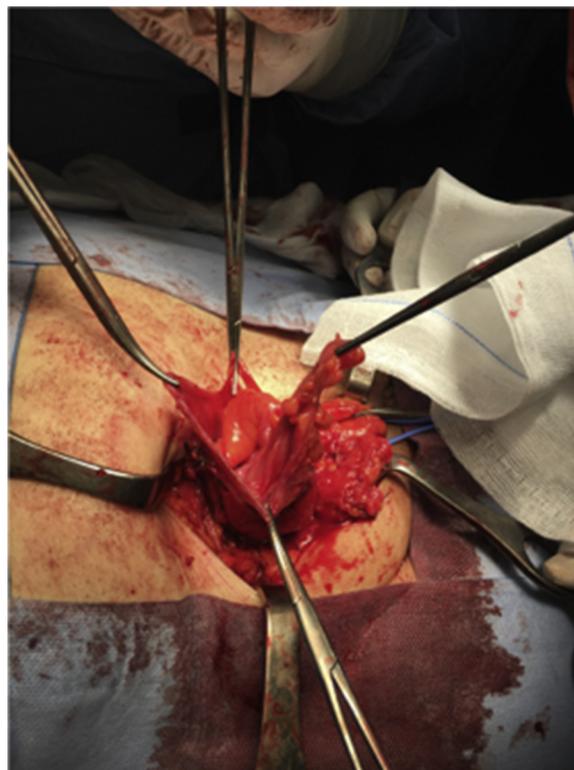


Fig. 2. Appendix isolation before appendectomy.

proposed by Losanoff and Basson in the Amyand's hernia type 1 consists of reduction of the hernia, repair with or without mesh and appendectomy only in selected cases. In our case we performed appendectomy, hernioplasty sec Trabucco and sac resection because of tenacious adhesions between appendix and hernia sac

and appendix microtrauma. Surgical treatment depends on surgeon's experience and on clinical situation because there are many individual factors that may increase morbidity and mortality. Obviously every choice should be weighed thinking about the resolution of the patient's problem and its postoperative outcome.

#### Declarations of interest

There are no potential conflicts of interest in this manuscript.

#### Informed consent statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Provenance and peer review

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