Incarcerated recurrent inguinal hernia containing an acute appendicitis (Amyand hernia): an extremely rare surgical situation

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Submitted: 12 February 2015
Accepted: 31 May 2015

Arch Med Sci 2017; 13, 3: 702–704
DOI: 10.5114/aoms.2016.60403

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Inguinal hernia is one of the most common surgical entities and often poses technical dilemmas, even for the experienced surgeon. It may contain segments of small and large bowel, the great omentum and in very rare cases the vermiform appendix [1]. The presence of the vermiform appendix within an inguinal hernia, with or without appendicitis, was first described by Amyand in 1736 [2]. Claudius Amyand, a French surgeon working in London, performed the first successful appendectomy in 1735 on an 11-year-old boy who presented with an inflamed, perforated appendix in his inguinal hernia sac. The entity of Amyand hernia has an incidence of 1% and is complicated by acute appendicitis in 0.08–0.13% of cases [3–5]. The pathophysiology of acute appendicitis in Amyand 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 [3, 6]. Muscle contraction or any other sudden increase of intra-abdominal pressure may cause compression of the appendix, resulting in further inflammation [6, 7]. Its blood supply may be subsequently interrupted or significantly reduced, resulting in inflammation and bacterial overgrowth [3, 8]. We report a case of Amyand hernia in a recurrent inguinal hernia, presenting difficulties in diagnosis and treatment of this surgical problem.

A 78-year-old man was referred to the Department of Surgery, General Hospital of Western Attica, suffering from a pain in the right inguinal region without any further symptoms. The patient had a surgical history of hernia repair without mesh 12 years ago. Physical examination revealed a painful small mass in the right inguinal region with a scar on skin. Laboratory tests showed leucocytosis (16,500 white blood cells (WBC)/µl). The diagnosis of incarcerated recurrent hernia was established through the clinical findings and ultrasonography (US), and the patient was scheduled for emergency surgery. During surgery, an incarcerated vermiform appendix with acute catarrhal inflammation in the recurrent inguinal hernia was revealed. The appendix was not perforated (Figure 1). An appendectomy and a tension-free mesh repair with an e-polytetrafluoroethylene (e-PTFE) patch were performed [9]. Furthermore, antibiotic therapy with a 2nd generation cephalosporin for 3 days was administered. During the postoperative period there were no complications to register and the patient was discharged on the 5th postoperative day. The patient

was followed up for 36 months and until today there are no signs of hernia recurrence.

Acute appendicitis as a content of an inguinal hernia was first described by Amyand in 1736 [2]. A non-inflamed appendix is estimated to be present in 1% of all adult hernia repairs, whereas 0.13% of cases of appendicitis are present in an inguinal hernia [4, 5]. Amyand hernia can affect any age group (6 weeks to 88 years) and seems to have male preponderance [5, 10]. The clinical presentation consists of a painful irreducible mass in the inguinal region without the classical symptoms of acute appendicitis [3, 5]. The establishment of diagnosis of an Amyand hernia during the preoperative phase is very difficult. If there is a suspicion, ultrasound and/or computed tomography (CT) studies may be helpful in establishing the diagnosis [5, 7, 8, 11, 12]. If the diagnosis can be established in the preoperative phase, a laparoscopic surgical treatment can be performed [13]. The inflammatory status of the vermiform appendix determines the surgical approach and the type of hernia repair. Losanoff and Basson have distinguished four basic types of Amyand hernia, which should be treated differently [14] (Table I). According to this classification, an elective hernioplasty is advocated only when an inflammation is absent (reported as type 2) and patients with "acute appendicitis within an inguinal hernia without abdominal sepsis" (type 2) should undergo surgical treatment through "appendectomy through hernia and primary repair hernia without mesh" [14]. But when Amyand hernia occurs in recurrent inguinal hernia, the mesh repair technique may be mandatory. Ranganathan *et al.* reported a mesh repair technique of an acute appendicitis without perforation in a recurrent inguinal hernia after wound toileting [15]. In the other two reported cases of acute appendicitis in inguinal hernia the hernia repair was performed through the Bassini technique, because there was a perforation of the appendix [15, 16]. It is generally accepted that mesh could not be used in a contaminated wound because of increased incidence of wound infection [17, 18]. In our opinion an Amyand hernia with a non-perforated appendicitis can be safely repaired with a mesh. The use of an acellular dermal matrix is an alternative to prosthetic mesh products in contaminated areas that may avoid postoperative wound infection [19]. A mesh repair is mandatory in recurrent inguinal hernias and can be safe if there is no perforation of the appendix. In our patient there was neither an infection nor a hernia recurrence after 36 months.

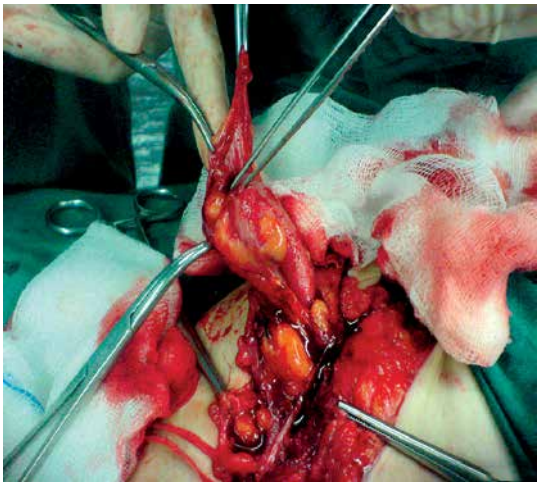

Figure 1. Catarrhal appendicitis in a recurrent inguinal hernia

Acute appendicitis in recurrent inguinal hernia is a very rare clinical entity. To date, two cases have been reported. Appendectomy and hernia repair is the treatment of choice since we believe that in such cases a hernia repair with a mesh may be feasible, since there is no perforation of the appendix. It can offer good long-term results with a low recurrence risk. The use of less irritating material meshes such as modern biomaterials reduces the danger of postoperative wound infection.

Acknowledgments

Georgios Velimezis and Nikolaos Vassos contributed equally to the manuscript.

Conflict of interest

The authors declare no conflict of interest.

Table I. Classification of Amyand hernia

Classification	Description	Surgical management
Type 1	Normal appendix with an inguinal hernia	Hernia reduction, mesh repair, appendectomy in young patients
Type 2	Acute appendicitis within an inguinal hernia, no abdominal sepsis	Appendectomy through hernia, primary endogenous repair of hernia, no mesh
Type 3	Acute appendicitis within an inguinal hernia, abdominal wall, or peritoneal sepsis	Laparotomy, appendectomy, primary repair of hernia, no mesh
Type 4	Acute appendicitis within an inguinal hernia, related or unrelated abdominal pathology	Manage as types 1 to 3 hernia, investigate or treat second pathology as appropriate

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