Letter to the Editor

Treatment dilemma in Amyand's hernia

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The presence of appendix vermiformis in an inguinal hernia sac is referred to as Amyand's hernia and is a rare condition. Its incidence in the adult population is about 1% and it mostly manifests as an unexpected condition during surgery [1]. The rate of complicated cases is about 0.1% [2].

A 47-year-old male patient presented to our clinic electively with complaints of swelling in the right lower quadrant, which he had for a long time. The patient's physical examination revealed that he had reducible right inguinal hernia, and open repair was planned for the patient upon his own wish without using any other additional diagnostic method. The classical inguinal incision was performed and normal appendix vermiformis was randomly found in the sac (Figure 1). As no inflammation was found in the appendix, appendectomy was not performed. Following the separation of adhesions of the appendix on the inguinal sac, it was put back in the abdomen. The Lichtenstein repair was performed with synthetic mesh. The patient, who had no post-operative complications, was discharged from our clinic the day after the procedure. His outpatient clinic check done a week after the procedure did not reveal any problems either.

Appendix in a femoral hernia sac was first reported by De Gareneot in 1731 [2]. Appendix in an inguinal hernia, on the other hand, was first described by the British surgeon Claudius Amyand in 1735 through a case of acute appendicitis in an 11-year-old male patient [3]. It has maintained its position as a rare case with its incidence of 1% since then [4].

The age distribution of the condition varied from 3 weeks to 88 years of age as was reported in a study by Cunha *et al.* [5] It is observed three times more often in the pediatric population than in adults due to the patency of processus vaginalis [6]. Amyand's hernia is observed in males and on the right more often, and those occurring on the left are observed in cases of situs inversus, mobile cecum, and intestinal malrotation [4]. The detection of Amyand's hernia beforehand is rare and it is generally ascertained randomly during a surgical procedure [4, 6]. Its clinical presentation varies depending on the presence or absence of periappendicular inflammation and also peritoneal contamination and is in the form of epigastric, periumbilical pain, or pain in the lower right quadrant, and irreducible inguinal mass. It most frequently manifests as incarcerated inguinal hernia. Testicular torsion or tumor, acute hydrocele, epididymo-orchitis, scrotal abscess, inguinal lymphadenitis, Richter's hernia, strangulated hernia, and strangulated omentocele should be taken into consideration in the differential diagnosis [7, 8].

Patients can be diagnosed through clinical evaluation without having to resort to additional diagnostic methods in uncomplicated inguinal

hernia or classic acute appendicitis cases. If acute abdomen is present in anamnesis and physical examination, however, imaging methods may be used for differential diagnosis. Ultrasonography (USG) and computed tomography (CT) among such imaging methods are most commonly used. Especially CT is a fine supportive method in the differential diagnosis of acute abdomen, and acute appendicitis within the hernia sac can successfully be revealed preoperatively [5]. Güler *et al.* [9] also recently reported 2 cases diagnosed preoperatively by ultrasonography. Abdominal CT is not suggested for all cases of incarcerated inguinal hernia in order to diagnose Amyand's hernia preoperatively, but it should be preferred in selected cases with findings suggesting acute appendicitis alongside incarceration [3]. Diagnostically fever and leukocytosis are not very common [10].

Fernando and Leelaratna [7] classified Amyand's hernia as type A non-inflamed appendix, type B inflamed appendix, and type C perforated appendix. Losanoff and Basson [11], however, divided Amyand's hernia into 4 subgroups according to the inflammatory condition of the appendix within the hernia sac in their study and ascertained treatment strategies according to this classification: (1) normal appendix within a hernia sac, (2) Amyand's hernia accompanied by an inflamed appendix, (3) perforated appendix within an inguinal hernia sac, and (4) complicated intra-abdominal pathology with acute appendicitis (abscess, malignancy, etc.) (Table I).

It has been suggested that appendectomy should not be preferred because of the potential contamination risk in the area where mesh will be laid by prophylactic appendectomy in cases with a normal appendix in the sac [1]. When studies in the literature were investigated in order to find out whether mesh should be used in the presence of an inflamed appendix, it was found that there was no consensus on the subject. The general perspective is to prefer hernia repair without mesh (Shouldice, Bassini) because of the contamination of the surgical field with infection, sepsis, fistula, and increased risk of hernia recurrence, as appendectomy is inevitable from type 2 and above [3, 6, 8, 11]. Torino *et al.* [12], on the other hand, placed mesh without any complications in a case with perforated appendix. In another study supporting this picture, the authors reported that they did not come across any complications in the postoperative period although they used mesh in an acute appendicitis case [8].

Figure 1. Appendix in the right inguinal hernia sac (Amyand's hernia)

When studies in the literature on the role of laparoscopy in Amyand's hernia were investigated, it was found that there was a study which reported open hernia repair followed by laparoscopic appendectomy [13] alongside others that used the laparoscopic method (suturation of the inner inguinal ring following laparoscopic appendectomy) [14] or those that used the laparoscopic extraperitoneal approach with laparoscopic appendectomy without any problems [15]. As can be seen, there is still no clear consensus on either whether mesh should be used or whether open surgery or laparoscopic technique should be used in Amyand's hernia, and more studies are needed in order to determine the correct surgical strategy and the risk of recurrence.

Appendix within an inguinal hernia is rare and is almost always randomly seen. Ultrasonography and/or CT may prove to be useful in the detection of appendix in the sac beforehand in hernia cases accompanied by acute manifestation. The

Table I. Staging and treatment management of Amyand's hernia according to Losanoff and Basson's classification

Variable	Hernia type			
	1	2	3	4
Notable characteristics	Normal appendix	Inflamed appendix	Perforated appendix	Acute appendicitis, complicated intra-abdominal pathologies (abscess, malignancy, etc.)
Surgical procedure	Reduction or appendectomy (depending on age), mesh repair	Appendectomy from within the hernia sac, endogenous repair without mesh	Appendectomy by laparotomy, endogenous repair without mesh	Appendectomy, appropriate diagnosis and treatment for other problems

treatment algorithm varies according to the inflammation of the appendix within the hernia sac. However, there is still no clear consensus on this issue. The general tendency is to perform hernia repair without mesh in the presence of inflammation. When the current studies are taken into consideration, however, it is apparent that mesh can be used in laparoscopic or open procedures in addition to appendectomy in selected cases such as early-stage acute appendicitis.

Conflict of interest

The authors declare no conflict of interest.

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