



Amyand's Hernia in Children

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Abstract

Introduction: Amyand's hernia is the rare presentation of the vermiform appendix in an inguinal hernia sac. This study is an evaluation of perioperative diagnoses of Amyand's hernia.

Methods: This retrospective study was carried out using the data of patients who were admitted to the Selcuk University Faculty of Medicine Department of Pediatric Surgery between November 2011 and December 2017. The clinical data of age and sex of the patient, side of the hernia location, admission complaints, and the treatment were assessed.

Results: During the study period, 1668 patients, 1279 males and 309 females, underwent an inguinal herniorrhaphy at this center. Amyand's hernia was diagnosed in 14 (0.83%) cases. All were male and had a right-sided Amyand's hernia. The median age was 7.5 months. Swelling was observed in 12 patients, postoperative recurrent swelling was seen in 1, and incarceration in 1. An appendectomy was performed with the herniorrhaphy in 1 case; in the remainder the appendix vermiformis was reduced.

Discussion and Conclusion: Amyand's hernia is a rare condition in children, and the diagnosis is generally made during surgery. When diagnosed, the appendix should be examined carefully. In the presence of an inflamed appendix, an appendectomy should be performed.

Keywords: Amyand's hernia; appendix vermiformis; children; inguinal hernia.

Claudius Amyand first detected an appendix in an inguinal hernia sac of an 11-year-old male and performed an appendectomy in 1735 [1]. Thereafter, the presence of the appendix vermiformis in an inguinal hernia sac was defined as Amyand's hernia. Amyand's hernia has been detected in 0.45% of adult inguinal hernia patients and 0.42% of children [2,3]. A preoperative diagnosis is generally very difficult to make; patients may present with signs of incarceration or strangulation, and diagnosis of Amyand's hernia is subsequently made during surgery [4]. Some authors have recommended an appendectomy in combination with the hernia repair when signs of inflammation are seen, while others have routinely advised that an appendectomy be

performed [3,5].

This study assessed the characteristics of cases of Amyand's hernia treated over a period of 7 years.

Patients and Methods

The files of patients operated on for an inguinal hernia between November 2011 and December 2011 in the pediatric surgery clinic were retrospectively screened. Since it was a retrospective study based on a review of archival records, ethics committee approval was not requested. Data regarding age, gender, laterality, admission complaints, treatment, histopathology results, and follow-up of the patients with Amyand's hernia were analyzed.

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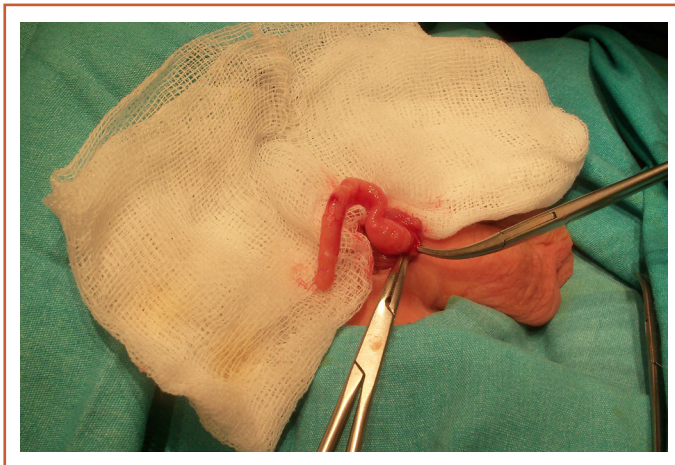


Figure 1. Perioperative appearance of Amyand's hernia.

Results

A total of 1668 hernia repairs were performed in 1279 male and 309 female patients during the study period, and Amyand's hernia was perioperatively detected in 14 (0.83%) patients (Fig. 1). All of the patients with Amyand's hernia were male, with a median age of 7.5 months (range: 1 month-6 years). Twelve patients had right inguinal swelling, 1 patient had postoperative recurrent swelling, and there was 1 instance of incarceration. An appendectomy was performed in 1 patient, and in the remaining patients, the appendix was reduced into the abdominal cavity (Table 1). No postoperative complication was detected in any patient and all were discharged as recovered. The result of the histopathology examination of the sample from the appendectomized patient was lymphoid hyperplasia.

Discussion

Inguinal hernia is most frequently detected in the pediatric age group and requires surgical treatment. Depending on birth weight, the incidence rate ranges between 13.7% and 6.3% in premature babies, while the incidence is reported to be 4.2% between 0 and 6 years of age [6,7]. During a period of 7 years, a hernia repair was performed in a total of 1668 patients in our clinic, and Amyand's hernia was determined perioperatively in 14 (0.83%) of those patients. Amyand's hernia is primarily seen in the male population, and it is most often localized on the right side [3]. Similarly, all of our cases were also localized on the right side. Left-sided Amyand's hernia may be seen in patients with situs inversus, intestinal malrotation, or a mobile cecum [8,9].

The diagnosis of Amyand's hernia is generally made during surgery. A preoperative diagnosis is difficult; however, it has been reported that rarely, diagnosis could be established using ultrasound or computed tomography [10,11]. Since ultrasound is not routinely performed in cases with inguinal or incarcerated hernias, preoperative imaging studies were not performed in any of the present study patients. It has been reported that the diagnosis of Amyand's hernia was missed in most ultrasonographic examinations [10].

In our series, only 1 patient underwent hernia repair with an appendectomy due to the edematous and indurated appearance of the appendix. In all other cases, including 1 patient who presented with incarceration, the appendix vermiformis was reduced into the intra-abdominal cavity. The histopathology report of the appendectomized patient

Table 1. Characteristics of the patients with Amyand's hernia

Patient No.	Age	Gender	Laterality	Symptom	Treatment
1	2 months	Male	Right	Swelling	Reduction
2	1 month	Male	Right	Swelling	Reduction
3	2 months	Male	Right	Swelling	Reduction
4	2 months	Male	Right	Recurrent swelling	Reduction
5	3 months	Male	Right	Swelling	Reduction
6	5 months	Male	Right	Swelling	Reduction
7	6 years	Male	Right	Incarceration	Reduction
8	2 months	Male	Right	Swelling	Reduction
9	8 months	Male	Right	Swelling	Reduction
10	1 month	Male	Right	Swelling	Reduction
11	3 months	Male	Right	Swelling	Appendectomy
12	1 month	Male	Right	Swelling	Reduction
13	2 months	Male	Right	Swelling	Reduction
14	1 month	Male	Right	Swelling	Reduction

was consistent with lymphoid hyperplasia. Although there is no definitive consensus concerning performing an appendectomy in cases of Amyand's hernia, it is recommended if signs of inflammation are observed [12]. It has been proposed that surgical management be based on the status of the appendix: in the presence of a normal appendix vermiformis within the inguinal hernia, a hernia reduction, mesh repair, and appendectomy is suggested in young patients; with localized acute appendicitis and no sepsis, appendectomy through the hernia and primary repair of the hernia without mesh is suggested; in the case of acute appendicitis and abdominal wall or peritoneal sepsis, a laparotomy, appendectomy, and primary repair of the hernia without mesh is suggested; and in the instance of acute appendicitis with related or unrelated abdominal pathology, management as in the other types and treatment of the secondary pathology as appropriate is suggested [13].

In cases of Amyand's hernia, inflammation may be a direct result of incarceration or adhesion of the hernia sac to the appendix vermiformis, leading to impairment of blood circulation [2].

The classic hernia repair is performed by pushing back and ligating the sac. In adult patients, additional repair with mesh is recommended. However, it has been reported that especially in cases with a perforated appendix, repair using mesh may increase the risk of infection and adversely affect wound healing, with the potential danger of recurrence [14].

In our patient group, all of the patients were discharged on the same day, save the appendectomized patient, who was discharged on the first postoperative day. The postoperative follow-up of the patients was uneventful.

In conclusion, despite the rarity of Amyand's hernia in children, appendicitis in the hernia sac may adversely affect the course of the disease. During repair of the hernia sac, the sac should be opened, and the contents examined. In the presence of an inflamed appendix, an appendectomy should be performed.

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