

# A RARE VARIATION OF AMYAND'S HERNIA: GANGRENEOUS APPENDICITIS IN AN INCARCERATED INGUINAL HERNIA SAC

*İbrahim Barut and Ömer Ridvan Tarhan*

Suleyman Demirel University, School of Medicine, Department of General Surgery, Isparta, Turkey.

Claudius Amyand first described in 1735 the presence of a vermiform appendix within an inguinal hernia sac, and since then this entity has carried his name as "Amyand's hernia". The incidence of normal appendix within an inguinal hernia sac is estimated to be approximately 1%, whereas acute appendicitis presenting in an inguinal hernia is an uncommon event (0.1% of all cases of appendicitis). We report a case of gangrenous appendicitis in an incarcerated inguinal hernia and further discuss the features of this condition and suggest that extraluminal compression caused by incarceration may be a predisposing factor for appendicitis. In conclusion, acute appendicitis within an Amyand's hernia can be life threatening and the patients always require emergency surgery. We recommend appendectomy after groin exploration through an inguinal incision, and tension-free herniorrhaphy in cases gangrenous acute appendicitis in incarcerated Amyand's hernia.

**Key words:** Amyand hernia, gangrenous appendicitis, incarceration, inguinal hernia, Rutkow herniorrhaphy

*Eur J Gen Med 2008; 5(2):112-114*

## INTRODUCTION

Acute appendicitis is the most frequent cause of acute abdomen. Presenting symptoms are usually typical, and preoperative diagnosis is not difficult. It can be more difficult in case of an atypical location of the appendix, for example, in the hernia sac. Incarceration is the most serious complication of inguinal hernia, and requires emergency intervention irrespective of the hernia sac contents (1). Claudius Amyand first described in 1735 the presence of a vermiform appendix within an inguinal hernia sac, and since then this entity has carried his name as "Amyand's hernia" (1-5). The appendix may be found in the wall of a sliding hernia sac. But acute appendicitis occurring at this settling is very rare (5). The incidence of normal appendix within an inguinal hernia sac is estimated to be approximately 1%, whereas acute appendicitis presenting in an inguinal hernia is an uncommon event (0.1% of all cases of appendicitis) (6). We report a case of gangrenous appendicitis in an incarcerated inguinal hernia and further discuss the features of this condition and suggest that extraluminal compression caused by incarceration may

be a predisposing factor for appendicitis.

## CASE

A 78-year-old man presented with a 3-days history of right groin pain and swelling. He had also complaints of fever, nausea, vomiting, constipation and failure to pass flatus. On examination, his temperature was 39°C, pulse rate 120 beats/min (regular), blood pressure 140/85 mm Hg, and respiratory rate 30/min. Physical examination revealed a painful and irreducible mass in the right inguinal region. It was hyperemic and edematous, and extended to the right hemiscrotum. The abdomen was soft with no rebound, tenderness and muscular guarding. The other system examinations were normal. On laboratory evaluation, leukocyte count was 13000/mm<sup>3</sup>. Ultrasonographic examination revealed a hernia sac containing suspected aperistaltic bowel segment. It was suggested that incarcerated inguinal hernia and the patient underwent surgery. A single dose antibiotic prophylaxis was performed with 1 g. Ceftazidim (Fortum®, GlaxoSmithKline, Izmit, Turkey) an hour before the operation. Standard

*Correspondence: Dr. İbrahim BARUT*

*Istasyon C. No: 28 / 6, 32300 Isparta, Turkey  
Tel: 905324217997, Fax: 902462234284  
E-mail: ibarutt@hotmail.com*

**Table 1. Hernia types that were included vermiform appendix**

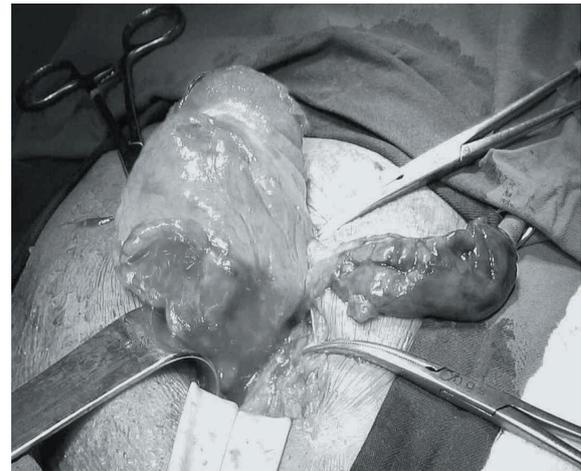
Hernia type	n
Incarcerated inguinal hernia	113
Strangulated inguinal hernia	11
Incarcerated femoral hernia	30
Strangulated femoral hernia	11
Umbilical hernia	4
Strangulated obturator hernia	3
Incarcerated Spiegel hernia	3
Strangulated diaphragmatic hernia	7
Incisional hernia	2
Epigastric hernia	2
Strangulated internal hernia	1
Strangulated paraduodenal hernia	1
<b>Total</b>	<b>188</b>

anesthetic procedure was performed to the patient. Nasogastric decompression was performed perioperatively and was removed at the completion of the operation. An incarcerated inguinal hernia sac (Nyhus class IIIb) containing gangrenous appendicitis was detected during exploration of the right inguinal region (Figure 1). Appendectomy was performed through the defect, the hernial sac was ligated at the internal ring and inguinal hernia was repaired with prolene mesh by using Rutkow hernioplasty technique. Inguinal canal irrigated with warm normal saline and penrose drain inserted into this area. No microorganism was identified on culture of peritoneal fluid. The patient was discharged four days after the operation uneventfully. Neither recurrence nor complication was observed through two years follow up.

## DISCUSSION

The appendix may be in abnormal anatomical sites owing to different degrees of intestinal rotation, or to variations in the caecal attachments. In addition, a very large caecum may extend into the true pelvis. Both these conditions may give rise to a pelvic peritoneum. This is a rare but well recognized occurrence, the appendix having been described within inguinal, incisional and femoral hernias (7).

The presence of the vermiform appendix (without complications) in the sac of an inguinal hernia is rare occurrence in inguinal hernias. In literature, it is



**Figure 1. Gangrenous appendicitis was seen in hernia sac after herniotomy.**

reported with an incidence of about 1% (2). Acute appendicitis in such external hernias occurs in 0.13% of all cases of acute appendicitis. These cases usually lack the classic signs of acute appendicitis (7). The diagnostic approach is usually limited, since existence of irreducible hernia is itself an indicator for surgery. Therefore, the correct diagnosis of appendicitis within a hernia sac is usually made intraoperatively (2, 3, 5, 7). We also made a definite diagnosis during the surgery. Radiological methods can be useful in preoperative diagnosis of appendicitis in a hernia sac. However, in such cases, when CT is performed for atypical clinical symptoms and signs, it may show unsuspected appendicitis in hernia (7, 8).

In some cases, the appendicitis becomes perforated before it is diagnosed. This kind of perforated appendicitis always carries the risk of abdominal contamination and abscess formation. In this situation, the surgical approach should be limited to the groin region, and appendectomy should be completed with an inguinal approach so as not to disseminate the infective process into the abdomen (9). In our case, the infection had been restricted and abdominal contamination and abscess formation were not seen.

The inflammation of the appendix in the hernia sac is usually caused by extraluminal obstruction due to the pressure of the hernia neck rather than intraluminal obstruction of the appendix (9). Contraction of the abdominal muscles and other sudden increases in the intra-

abdominal pressure may also cause compression of the appendix, resulting in further inflammation (1). In this patient, the neck of the hernia sac was narrow and can be caused an extraluminal compression. The infection had been restricted for this reason. No peritoneal contamination was seen.

As in an intra-abdominal pathology, appendicitis in the elderly is often a very difficult to diagnose, as compared to younger patients. As one study demonstrated, only 20% of patients older than 60 years presented with anorexia, fever, right-lower quadrant pain, and elevated WBC count. Approximately half of the cases of appendicitis in the elderly are perforated at operation as compared to fewer than 20% in young adults (10). In this patient the abdomen was soft with no rebound, tenderness or muscular guarding, leukocyte count was found 13000/mm<sup>3</sup>. Gangrenous appendicitis was detected in the incarcerated hernia sac during exploration.

In the review of the literature after 1950, 188 cases were found who had included vermiform appendix in a hernia sac. Hernia types were presented in table 1. In the literature when the pathologic types were taken into consideration 127 patients were acute appendicitis, 32 were perforated and 21 were gangrenous appendicitis. In 8 patients appendix were normal. In our patient we found gangrenous appendicitis in right incarcerated groin hernia sac. The ages of the patients in the literature have been varied between 3 hours to 93 years old. The sex most affected is male and has seen more frequent in pediatric ages. The management of Amyand's hernia depends on the presentation. Although the issue is not resolved, the presence of a normal appendix in an inguinal hernia generally does not require an appendectomy. On the other hand, acute appendicitis should be treated with appendectomy via the hernia sac. The treatment of patients who present with complications of acute appendicitis should be individualized, as it may include open drainage through the groin, or laparotomy (3). D'Alia et al, was reported that Vermillion et al. had described the laparoscopic reduction of Amyand's hernia in 1999 (2). We preferred an inguinal approach in our case for exploration and appendectomy. The tension-free mesh repair that we

performed in the patient was a simple and safe method, which was decreased the complications, patient discomfort, and results in rapid rehabilitation (9).

In conclusion, acute appendicitis within an Amyand's hernia can be life threatening and the patients always require emergency surgery. We recommend appendectomy after groin exploration through an inguinal incision, and tension-free herniorrhaphy in cases gangrenous acute appendicitis in an incarcerated Amyand's hernia.

#### ACKNOWLEDGEMENTS

*The authors wish to thank doctors Yusuf Akdeniz, Celal Cerci, and Mahmut Bulbul, for their valuable contribution to this manuscript.*

#### REFERENCES

1. Solecki R, Matyja A, Milanowski W. Amyand's hernia: a report of two cases. *Hernia*. 2003;7(1):50-1
2. D'Alia C, Lo Schiavo MG, Tonante A, Taranto F, Gagliano E, Bonanno L, Di Giuseppe G, Pagano D, Sturniolo G. Amyand's hernia: case report and review of the literature. *Hernia* 2003;7(2):89-91
3. Franko J, Raftopoulos I, Sulkowski R. A rare variation of Amyand's hernia. *Am J Gastroenterol* 2002;97(10):2684-5
4. Martins JL, Peterlini FL, Martins EC. Neonatal acute appendicitis: a strangulated appendix in an incarcerated inguinal hernia. *Pediatr Surg Int* 2001;17(8):644-5
5. Koseoglu B, Bakan V, oNem O, Bilici S, Demirtas I. A patient with an unusual complication of sliding inguinal hernia: Stercoral appendiceal fistula. *J Pediatr Surg* 2002;37(5):E13
6. Logan MT, Nottingham JM. Amyand's hernia: a case report of an incarcerated and perforated appendix within an inguinal hernia and review of the literature. *Am Surg* 2001;67(7):628-9
7. Zissin R, Brautbar O, Shapiro-Feinberg M. CT diagnosis of acute appendicitis in a femoral hernia. *Br J Radiol* 2000;73(873):1013-4
8. Luchs JS, Halpern D, Katz DS. Amyand's hernia: prospective CT diagnosis. *J Comput Assist Tomogr* 2000;24(6):884-6
9. Barbaros U, Asoglu O, Seven R, Kalayci M. Appendicitis in incarcerated femoral hernia. *Hernia*. 2004 Mar 16 [Epub ahead of print]
10. Isaacs LE, Felsenstein CH. Acute appendicitis in a femoral hernia: an unusual presentation of a groin mass. *J Emerg Med* 2002;23(1): 15-8