CASE REPORT

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Stump appendicitis and chorioamnionitis due to incomplete appendectomy: A case report

Sedat BELLİ[1], Cem YALÇINKAYA[2], Ali EZER[1], Filiz BOLAT[3], Tamer ÇOLAKOĞLU[1], Erhan ŞİMŞEK[2]

Departments of [1]General Surgery, [2]Obstetrics and Gynecology, [3]Pathology, Başkent University, School of Medicine, Adana Hospital, Adana

Acute appendicitis represents the most common non-obstetric indication for surgical intervention in pregnant women, with a reported incidence of 1 in 1440 pregnancies. Stump appendicitis is a rare clinical situation when there is incomplete appendectomy. A rare case occurred of stump appendicitis and chorioamnionitis complicating after incomplete appendectomy. In this way the literature review suggests that only a few cases have been reported so far. We report a case of stump appendicitis and chorioamnionitis occurring three weeks after an appendectomy performed in another medical center. This will involve the discussion of clinical presentation, diagnosis, surgical management and literature review.

Key words: Stump appendicitis, appendicitis, appendectomy, chorioamnionitis, pregnancy

Apendektomi sonrası görülen güdük apandisit ve koryoamniyonit: Olgu sunumu

Gebelik esnasında ortaya çıkan ve cerrahi tedavi gerektiren ekstra uterin hastalıklar arasında en sık rastlanılanı apandisittir. Görülme sıklığı yaklaşık 1440 gebelikte 1'dir. Güdük apandisit inkomplet apendektomi sonrası rezidüel olarak kalan apandiksin enflamasyonu sonrası ender görülen komplikasyondur. Nadir bir durum güdük apandisit ve koryoamniyonit, inkomplet apendektomi sonrası oluştu. Literatür taramasında şimdiye kadar çok az sayıda vakanın yayınlandığı görülmektedir. Biz dış merkezde apendektomi yapılan, ameliyatından üç hafta sonra güdük apandisit ve koryoamniyonit gelişen bir olguyu sunmaktayız. Bu yazı klinik belirtiler, tanı, cerrahi tedavi ve literatür tartışma içerecektir.

Anahtar kelimeler: Güdük apandisit, apandisit, apendektomi, koryoamniyonit, gebelik

INTRODUCTION

Acute appendicitis represents the most common non-obstetric indication for surgical intervention in pregnant women, with a reported incidence of 1 in 1,440 pregnancies (1). As frequent as this is, appendiceal stump appendicitis is a very rare surgical event, and occurs due to an incomplete appendix resection and misleading cecum base identification due to cecum edema, abscesses, abnormal anatomical position of the appendix, or multiple adhesions (2). The incidence of appendiceal stump appendicitis is not well known; however, there are some reports that suggest a slight increase in this pathology possibly due to laparoscopic surgical techniques (2).

Chorioamnionitis is defined as inflammation of the amniochorionic (fetal) membranes of the placenta in response to microbial invasion or due to other pathological processes (3). It is traditionally defined under two main classifications: histologic – based on microscopic evidence of inflammation of the membranes (infiltration of polymorphonuclear leukocytes and other immunocytes, such as macrophages and T cells) and clinical – based on clinical manifestations of local and systemic inflammation (fever >37.5°C), uterine tenderness, abdominal pain, foul-smelling vaginal discharge, maternal [>100 beats/min] and fetal [>160 beats/min] tachycardia, and elevated white blood cell

Address for correspondence: Sedat BELLİ
Başkent University, Department of General Surgery,
Adana Hospital, Adana, Turkey
Phone: + 90 322 327 27 27 • Fax: + 90 322 327 12 74
E-mail: sedatbelli@hotmail.com

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count (>15,000 cells/mm^3) (3). It is prevalent in patients with preterm premature rupture of the membranes and spontaneous preterm birth (birth before 37 weeks gestation) (3). While maternal mortality caused by intraamniotic infection (IAI) is rare, neonatal mortality directly related to IAI is more than 10% for preterm infants (4).

We report herein a case of stump appendicitis that had caused chorioamnionitis and preterm delivery in a pregnant woman with a history of previous appendectomy performed in another medical center.

CASE REPORT

A 33-year-old female at 27 weeks of gestation was admitted to our hospital with fever (40°C) and chills for 24 hours. The medical history was significant for an appendectomy and a cesarean section operation performed three weeks and five years prior to presentation, respectively. There were surgical scars on the right lower quadrant (paramedian) and suprapubic region (Pfannenstiel) with reported history of previous appendectomy and cesarean section. Her body temperature measurements were approximately 40.0°C (axillary), blood pressure was 130/60 mmHg, and pulse rate was 102 beats/minute. Laboratory examination revealed: C-reactive protein 188 mg/L, hemoglobin 9.5 g/dl, and a white blood cell count of 12.04 cells/mm^3 with 94.4% neutrophils; urinalysis was normal. The remainder of the laboratory values were within normal limits. Amniotic fluid was dense and hyperechogenic with ultrasound. Amniotic fluid index was 2.7 cm and consistent with oligohydramnios. Purulent discharge was observed in the amniocentesis and she was operated under spinal anesthesia. The abdomen was opened via the prior Pfannenstiel incision, and the baby was born weighing 1050 g in vertex presentation with cesarean section. APGAR score was 8 in the first minute. Significant adhesion was observed during the exploration between the uterus, right adnexal region and ileocecal bowel segments. Adhesions were opened by sharp and blunt incision. Fimbriae of the right tube of the uterus were stuck on the appendix end-to-end (Figure 1). Tubal abscess was drained following bridectomy. The appendix was transected partially and the tip of the appendix tied. Right salpingectomy and appendectomy were performed. During the operation, a 3.0 cm in diameter appendiceal stump was noted in the anatomical region of the appendix. It was significant for purulent and edematous signs. The appendiceal stump was resected and inverted into the cecal wall with 2-0 silk suture. After irrigation of the abdominal cavity, placement of a rubber drain inside the abdomen was considered necessary. The postoperative course was uneventful. On postoperative day 2, the patient was noted to have good bowel sounds and she was started on a clear liquid diet, which was progressed as tolerated. On the postoperative day 3, the drain was withdrawn. She was given five days of parenteral antibiotic therapy. After an uneventful postoperative period, she was discharged on postoperative day 6 with oral antibiotics. Her baby was followed in the newborn intensive care unit. She was still in good general health after three months. The histopathologic examination of the operative specimen was reported as: appendectomy material consisting of polymorphonuclear leukocyte infiltration in the wall of the appendix vermiformis and fecalith in the lumen (Figure 2), tube of uterus material with

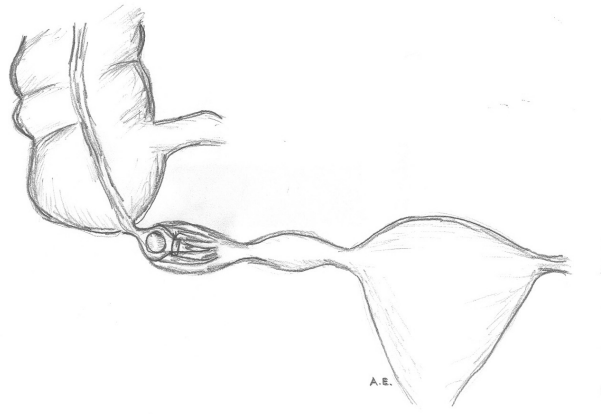

Figure 1. Adhesion between appendiceal stump with fecalith and fimbriae of the right tube.

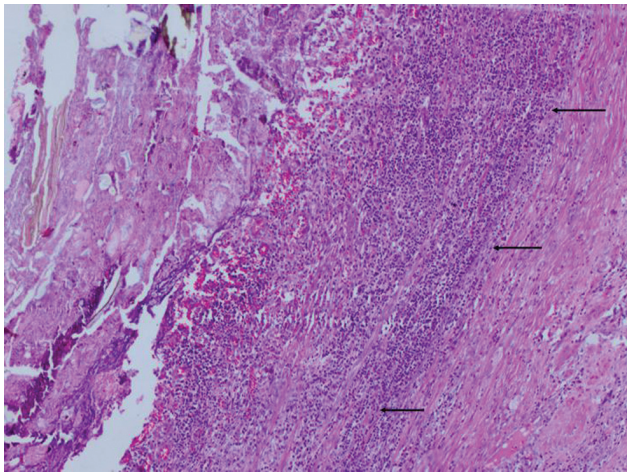

Figure 2. Polymorphonuclear leukocyte infiltration in the wall of the appendix vermiformis (arrows) (HE x100).

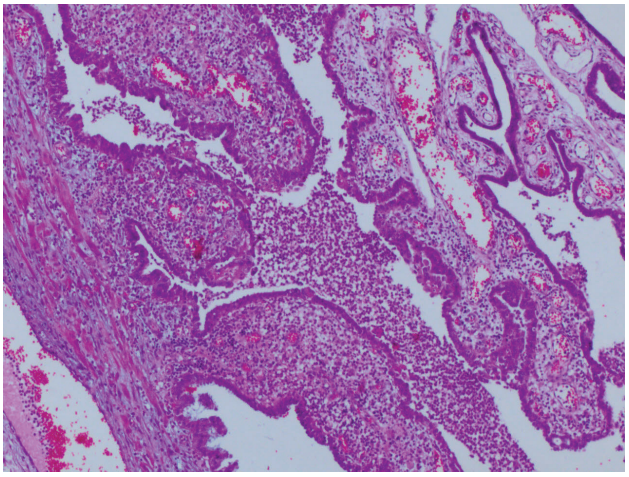

Figure 3. The microphotograph reveals the active chronic inflammation in the tube (HE X100).

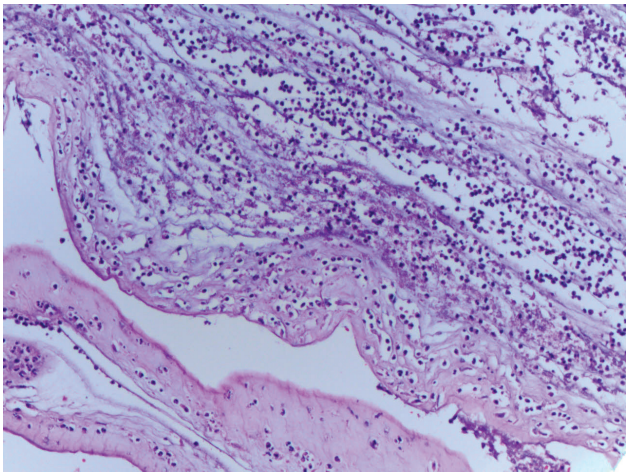

Figure 4. Acute inflammation extending to the chorion and amnion epithelium (HE X200).

acute and chronic inflammatory infiltrate in the tubal plica (Figure 3) and placenta proceeding to amniotic epithelium rich in polymorphonuclear leukocytes (Figure 4).

DISCUSSION

The reported incidence of acute appendicitis in pregnancy varies widely; however, the largest study to date reports an incidence of 1 in 1,440 pregnancies (5). Traditionally, the incidence of appendicitis in pregnancy has been considered identical to that in the non-pregnant population, although a recent case-control study suggested a lower incidence in pregnant women, with the third trimester being particularly protective (5). It has been suggested that the physiological and anatomical changes of pregnancy make the diagnosis of acute appendicitis more difficult in pregnant patients (5).

The more common complications of appendectomy include superficial wound infections, postoperative adhesions and intramural abscesses; stump appendicitis is an exceedingly rare condition. It is an acute inflammation of the residual part of the appendix and a rare complication of incomplete appendectomy. It can present clinically as acute appendicitis and/or as an appendiceal stump abscess, as presented in the literature. It was reported for the first time by Baumgartner in 1949 (6). Since then, some sporadic case reports have appeared in the literature.

There are 37 cases of residual appendicitis in the literature. The majority of these case reports involve stump appendicitis. The incidence of stump appendicitis has been increasing in recent years, mainly due to laparoscopic approaches to appendectomy and length of the retained stump. It has been recommended that the appendix be dissected carefully from the top to the base before resection; a residual long appendiceal stump must be avoided due to the infrequent, but reported, complications after the surgery (6). As laparoscopic surgery does not have the three-dimensional perspective and tactile feedback, a longer stump is sometimes left behind, and chronic inflammation of the appendiceal stump is considered to result from the stump that is left longer (6).

There is no consensus regarding how to avoid stump appendicitis. A long stump may be occluded by a fecalith, become ischemic and eventually perforate. Inversion of the long stump into the cecal wall also does not prevent later events (7). In our case, there was no perforation, but there was occlusion by the direct impact of the fecalith causing adnexitis and chorioamnionitis.

Intraamniotic infection (IAI) complicates between 0.5% and 10% of all pregnancies and approximately 0.5% to 2.0% of term pregnancies (4). Furthermore, it is now believed that subclinical IAI is a cause of preterm premature rupture of membranes and/or preterm labor and, as such, is an important contributor to the leading cause of infant morbidity and mortality complications from prematurity (4). In this case, IAI related with stump appendicitis was also ended with preterm birth. Our case is unique and has not been presented in the literature before. It was characterized by chorioamnionitis secondary to stump appendicitis

with associated tubal abscess. Our case is special from this aspect.

The ages of the patients reported to have stump appendicitis range from 11 to 72 years. The time from appendectomy to the development of stump appendicitis ranges from 2 months to 21 years. The length of the stump ranges from 1.3 cm to 5.1 cm (6). Our patient was a 33-year-old female presented at 27 weeks of gestation, an otherwise healthy individual with a history of classic, open appendectomy three weeks prior to presentation. As previously noted, our exploratory laparotomy showed a retained appendiceal stump of 3.0 cm. In our case of inflamed residual appendiceal tip, presentation was three weeks post-appendectomy. It thus differed from the literature data with respect to development time.

The clinical diagnosis of acute appendicitis may be obscured by underlying conditions such as mental retardation, pregnancy, immunosuppression, and steroid use. Another condition that may delay the diagnosis and surgical therapy is a history of a prior appendectomy (8). There is a high morbidity rate in this setting due to a combination of delayed diagnosis and a high rate of stump perforation (9). The rate of perforation of stump appendicitis at the time of operation has been reported as 68% in one review of the literature (10). During the physical examination of a patient with acute abdomen, the presence of appendectomy incision scars must alert the physician for possible stump appendicitis.

Data on the optimal surgical approach to acute appendicitis in pregnant women are conflicting. Prompt surgical intervention prevents maternal and fetal complications. The accepted treatment for acute appendicitis is appendectomy (11). Recent prospective trials have shown no advantages gained by inverting the appendiceal stump (12). The majority of problems can be prevented with a complete appendectomy with a good visualization of the appendix. However, the appendectomy can sometimes be done insufficiently (13) without complete dissection in retrocecal subserous appendicitis. During the appendectomy, the stump must be left shorter than 5 mm. If longer than 5 mm, it may serve as a reservoir for the fecalith and cause complications such as stump appendicitis (7). The surgical treatment of residual appendicitis is most commonly reported as an open operation, but cases have been successfully treated using laparoscopic intervention.

In conclusion, this case illustrates a rare complication of chorioamnionitis secondary to stump appendicitis. Direct spread of infection from the stump appendicitis to the fetal membranes is hypothesized. Acute appendicitis can be treated easily when diagnosed in a timely manner and has few postoperative complications. However, when appropriate surgical treatment is not done, partial appendectomy may cause significant maternal and neonatal morbidity and mortality in pregnancy. Complete appendectomy prevents most of the complications.

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