CASE REPORT
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Laparoscopic partial cecum resection in appendiceal intussusception

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ABSTRACT

Appendiceal intussusception (AI) is a difficult disease to diagnose. Various features of the disease were analyzed in a 35-year-old female patient admitted with abdominal pain and diagnosed with AI. The diagnosis was made with colonoscopy and abdominal computed tomography. Laparoscopic partial cecum resection was performed. Pathology examination revealed foci of endometriosis externa, which infiltrated the muscular layer of the appendix. AI should be kept in mind in the differential diagnosis of recurrent abdominal pain. Colonoscopy is an indispensable examination for differential diagnosis. Laparoscopic partial cecum resection, preserving the ileocecal valve, is an appropriate treatment approach in irreducible cases that are not suspected to be malignant.

Key words: Appendix, intussusception, laparoscopy

INTRODUCTION

Appendiceal intussusception (AI), which is one of the rare types of intussusception, is seen in 0.01% of the patients who undergo appendectomy (1). Anatomical changes such as partially mobile meso-appendix or large proximal appendicular lumen may be the cause of AI. Appendiceal intussusception-related symptoms include lower abdominal pain, irregular defecation, nausea, vomiting, or rectal hemorrhage. Making a preoperative diagnosis of AI is quite difficult, and usually a computed tomography (CT) of the abdomen and colonoscopy are required (2). The aim of this study was to report a case of AI, secondary to endometriosis, on whom laparoscopic partial cecum resection was performed, preserving the ileocecal valve.

CASE REPORT

A 35-year-old female patient presented to the general surgery outpatient clinic with lower abdominal pain, nausea, and vomiting persisting for the past one week. The patient did not have any defecation problems, did not describe weight loss, altered defecation habit, or urinary tract complaints but had a history of left oophorectomy performed due to endometriosis 6 years ago.

On physical examination, the patient was hemodynamically stable. There was no abdominal distention. Tenderness was found in the right lower quadrant, and a palpable mass could be detected on deep palpation. No defense or rebound was determined. Rectal examination was normal. Intestinal sounds were active. Routine blood tests demonstrated C-reactive protein (CRP) of 16 mg/L, white blood cell count of 8490/mm^3, hemoglobin of 9.5 g/dL, hematocrit of 31%, and platelet count of 340.000/mm^3.

A polypoid mass lesion measuring 3 x 2.5 cm, protruding toward the cecum lumen in the right lower quadrant, was detected on abdominal CT (Figure 1). On colonoscopic examination, a mass lesion, which had exudative and necrotic fields, appearing as the appendix, protruding into the cecum was detected at the appendix root site (Figure 2). Pathology of the colonoscopic biopsy revealed that the findings could be related to gangrenous appendicitis and also an inflammatory condition involving the ileocecal region.

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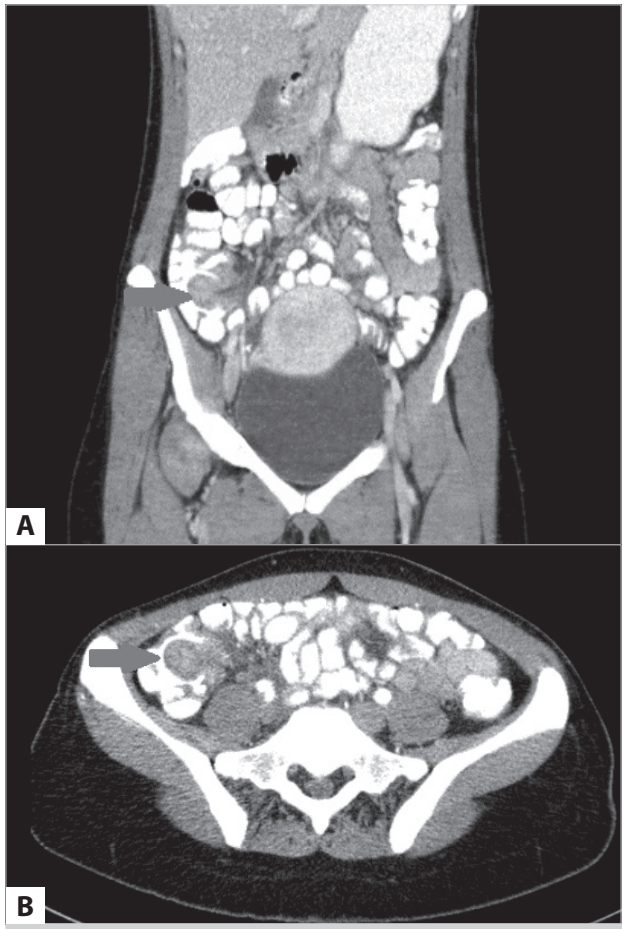

Figure 1 (A,B). Coronal **(A)** and axial **(B)** CT images of AI.

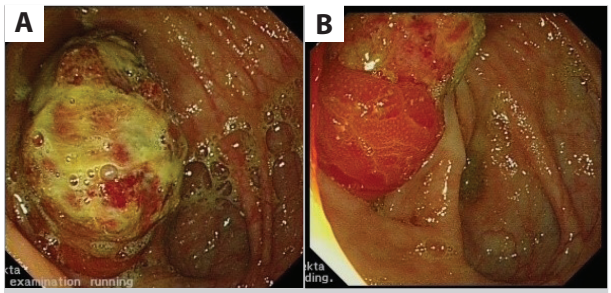

Figure 2 (A,B) Colonoscopy images of AI.

Laparoscopic surgery was planned with a preliminary diagnosis of AI. The patient was informed that different interventions could be applied if needed during the operation. Verbal and written informed consent were obtained from the patient. First, diagnostic laparoscopy was performed. On exploration, the appendix was found to be completely inverted into the cecum (Figure 3). After having decided that the inverted appendix could not be reduced, laparoscopic partial cecum resection was performed, preserving the ileocecal valve (Figure 4).

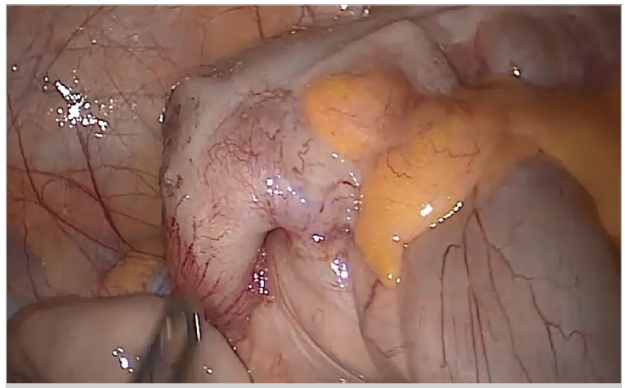

Figure 3. Intraoperative image of inverted appendix.

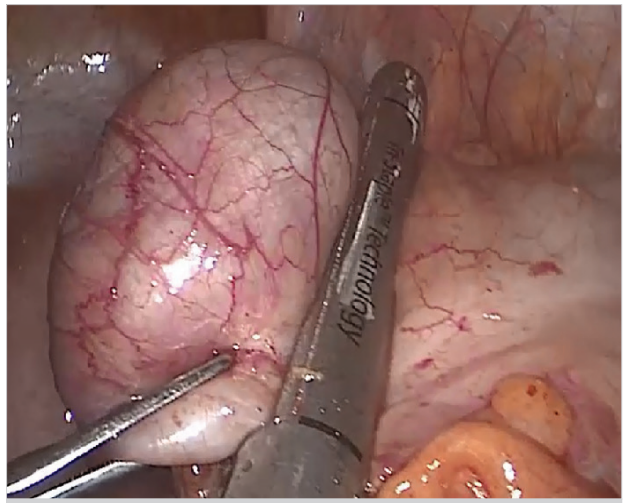

Figure 4. Intraoperative image of laparoscopic partial cecum resection.

The patient was followed in the hospital for 3 days without any complications. No complications developed during the postoperative 30 days. Foci of endometriosis externa infiltrating the muscular layer were detected on histopathological examination.

Laparoscopic surgery was planned with the pre-diagnosis of AI. The patient was informed that different interventions could be applied if needed during the operation. Verbal and written informed consent was obtained from the patient. First, diagnostic laparoscopy was performed. On exploration, the appendix was found to be completely inverted into the cecum (Figure 3). After having decided that the inverted appendix could not be reduced, laparoscopic partial cecum resection was performed, preserving the ileocecal valve (Figure 4).

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DISCUSSION

AI is a rare condition. It was first reported by McKidd in 1858 (3). Collins have reported the incidence of AI as 0.01% as a result of the study conducted with 71.000 patients suffering appendicitis over the course of 40 years (4). Chaar et al. have reported in his study investigating 191 AI cases that 76% of the cases were adult and 24% were children (2).

Anatomical changes such as partially mobile meso-appendix or large proximal appendicular lumen may be the cause of AI. While inflammation is the most common cause of AI in children, endometriosis is the most common cause in adults (2, 5, 6). Other common causes include mucocele, adenoma, carcinoid, and adenocarcinoma (7-14). Papilloma, hamartoma, juvenile polyp, Crohn's disease, and melanosis coli are rare causes of AI (15-18).

Endometriosis is a common disease, which affects approximately 15% of the menstruating women in the United States. In the review of Robert et al. including 29 studies, appendix endometriosis has been reported in 336 out of 87.343 patients (0.4%) undergoing appendectomy (19).

Four different clinical types of AI have been reported. The first type mimics the classical type of acute appendicitis. The second type shows typical intussusception signs, which include abdominal pain and sometimes vomiting, accompanied by diarrhea and melena. The third type has signs and symptoms such as melena, vomiting, and recurrent right lower quadrant pain that can persist for weeks or months. The forth type includes patients who are completely asymptomatic (20). The most common signs are abdominal pain (78%), vomiting (26%), and rectal hemorrhage (23%). A mass lesion is detected in the right lower quadrant in 13% of adult patients and 37% of pediatric patients (2).

Preoperative diagnosis of AI is difficult. It is made postoperatively in many cases (57%). Diagnosis is made with postoperative pathological examination in 11% of the cases. Consequently, correct preoperative diagnosis has been made in only 32% of the cases (2). Barium contrast studies and abdominal ultrasonography have a limited value in the diagnosis of this rare condition. Abdominal CT is the most common imaging method. Colonoscopy is a very useful method in the diagnosis of AI in cases with abdominal pain and suspicious imaging findings (21). Our patient was evaluated with abdominal CT and the diagnosis was made with colonoscopy.

Different approaches have been used in the treatment of AI. Despite reports of successful colonoscopic appendectomy using the endo-loop ligation system, this approach may be harmful in patients who have partial intussusception (22-24). Spontaneously reduced AI cases have also been reported in the literature (25).

A total of 191 cases have been analyzed in one of the largest series in the literature, and appendectomy has been reported as the most common intervention (42% in adults, 71% in children). Ileocecectomy (27%) and right hemicolectomy (21%) have been performed in the remaining patients. Treatment with colonoscopy has been reported in four adult patients (3%) (2). While appendectomy is sufficient in cases with only intussusception, right hemicolectomy is more appropriate for patients who are suspected to have neoplasia (26,27). In our case, laparoscopic partial cecum resection was perfomed, preserving the ileocecal valve, as appendix reduction was not possible.

CONCLUSION

Preoperative diagnosis of AI, which is a rare condition, is important. We consider that laparoscopic partial cecum resection through preservation of the ileocecal valve anatomy is an appropriate approach in patients who are not suspected to have malignancy and whose appendix cannot be reduced.

Informed Consent: Verbal informed consent was obtained from the patient.

Peer-review: Externally peer-reviewed.

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OLGU SUNUMU-ÖZET
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Apendiks intususepsiyonunda laparoskopik parsiyel çekum rezeksiyonu

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ÖZET

Apendiks intususepsiyonu klinik tanısı zor bir hastalıktır. Bu olgu sunumunda karın ağrısı nedeniyle başvuran ve apendiks intususepsiyonu tanısı ile tedavi edilen 35 yaşındaki kadın hasta vesilesiyle, hastalığın değişik yönleri incelenmiştir. Tanı kolonoskopi ve karın tomografisi ile konuldu. Laparoskopik parsiyel çekum rezeksiyonu uygulandı. Patolojik değerlendirmede apendiksin kas tabakasına infiltre olan endometriozis eksterna odakları tespit edildi. Apendiks intususepsiyonu tekrarlayıcı karın ağrısının ayırıcı tanısında düşünülmelidir. Kolonoskopi ayırıcı tanıya ulaşmada vazgeçilemez bir incelemedir. Redükte edilemeyen ve malignite şüphesi olmayan olgularda, ileoçekal valvi koruyarak laparoskopik parsiyel çekum rezeksiyonu uygun bir tedavi yaklaşımıdır.

Anahtar Kelimeler: Apendiks, intususepsiyon, laparoskopi

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