

Complicated appendicitis with scrotal fistula: case report and review of the literature

Yasin Dalda, M.D.,¹ Hasan Buran, M.D.,¹ Tevfik Tolga Şahin, M.D.,¹ Kutay Sağlam, M.D.²

¹Department of General Surgery and Liver Transplantation Institute, Inonu University Faculty of Medicine, Malatya-Türkiye

²Department of Gastrointestinal Surgery and Liver Transplantation Institute, Inonu University Faculty of Medicine, Malatya-Türkiye

ABSTRACT

Appendicitis is the most common emergency abdominal surgery today. Although its common complications are well-known, retroperitoneal abscess and scrotal abscess are rare and less known complications. In this study, we presented our patient who presented with appendicitis complicated with retroperitoneal abscess and scrotal fistula after appendectomy, and the literature review we conducted through PubMed. A 69-year-old man was admitted to the emergency department with complaints of abdominal pain, nausea-vomiting continuing for about 7 days, and fever and mental status change in the last 24 h. He was taken to emergency surgery with the preliminary diagnosis of perforation and retroperitoneal abscess. At laparotomy, perforated appendicitis and associated retroperitoneal abscess were seen. An appendectomy was performed, and the abscess was drained. The patient, who stayed in the intensive care unit for 4 days due to sepsis, was discharged on the 15th postoperative day with full recovery. He was admitted 15 days after his discharge because of an abscess from the scrotum. Percutaneous drainage was performed in the patient, whose tomography revealed an abscess extending from the retroperitoneal area to the left scrotum. The patient, whose abscess regressed, was discharged with recovery 17 days after hospitalization. These rare complications associated with appendicitis should be on the minds of surgeons to make an early diagnosis. Delay in treatment may lead to increased morbidity and mortality.

Keywords: Apandicitis; retroperitoneal abscess; scrotal abscess or fistula.

INTRODUCTION

Currently, acute appendicitis is the most common cause of acute abdominal surgery and its morbidity and mortality are low when diagnosis and treatment are applied.^[1,2] The outcomes of acute appendicitis are satisfactory with the rapid institution of surgical therapy. Delay in diagnosis can cause serious complications. Retroperitoneal abscesses and scrotal abscesses are some of the rare complications. Retroperitoneal abscesses are observed in patients who are diagnosed late because of the non-specific symptoms and signs. However, advances in the imaging techniques have made the diagnosis of appendicitis easier and have reduced these com-

plications.^[3,4] Mortality due to retroperitoneal abscesses can reach up to 100% when left untreated.^[4] Cases of scrotal abscesses associated with appendicitis have been reported much less frequently, and most cases are pediatric patients. In this study, we aimed to present management of a patient who developed scrotal fistula after perforated appendicitis with a detailed review of the literature.

CASE REPORT

A 69-year-old man was admitted to the emergency department with complaints of abdominal pain, nausea-vomiting that had lasted for about 7 days, and fever and mental status change in the last 24 h. The patient had chronic renal dis-

Cite this article as: Dalda Y, Buran H, Şahin TT, Sağlam K. Complicated appendicitis with scrotal fistula: case report and review of the literature. *Ulus Travma Acil Cerrahi Derg* 2023;29:837-840.

Address for correspondence: Yasin Dalda, M.D.
Inonu University Faculty of Medicine, Malatya, Türkiye
E-mail: yasindalda@gmail.com

Ulus Travma Acil Cerrahi Derg 2023;29(7):837-840 DOI: 10.14744/tjtes.2022.00890 Submitted: 21.11.2022 Revised: 22.11.2022 Accepted: 18.12.2022
OPEN ACCESS This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).



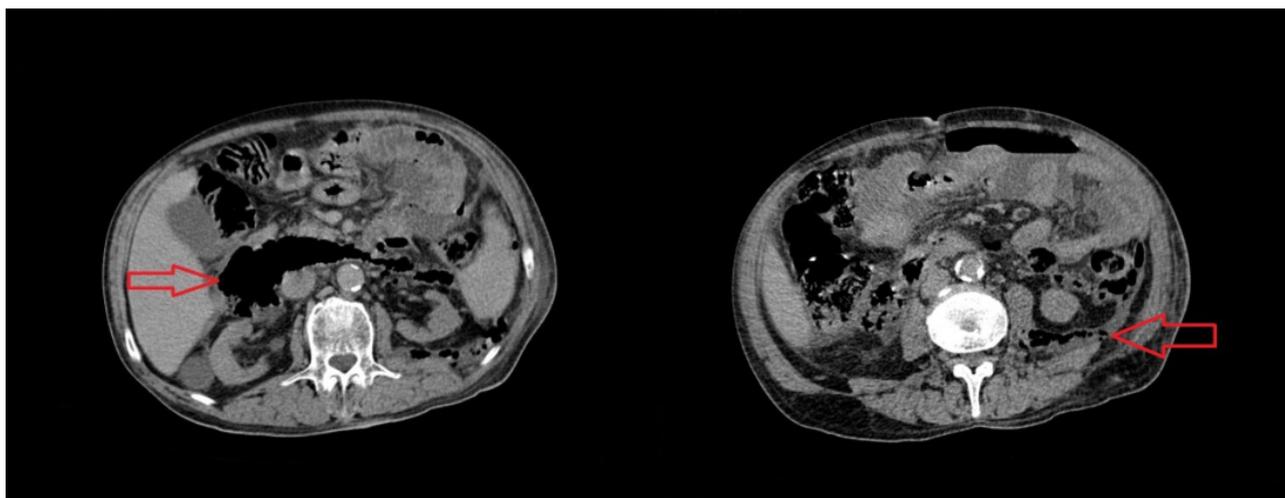


Figure 1. (a) Fluid collection with free air in the perirenal space (Abscess). (b) Fluid collection with free air in the retroperitoneum (Abscess)

ease, primary hypertension, diabetes mellitus, and a history of coronary bypass surgery. The patient had mildly elevated fever (37.6°C), tachycardia (110 beats per minute), and normal blood pressure ($105/65$ mmHg). Glasgow coma scale score was 11. In his physical examination, he had tenderness in all four quadrants, mostly in the right lower quadrant. There was abdominal distension but no signs of acute abdomen. The patient had obstipation for the last three days and his bowel sounds were decreased, and the rectum was empty during the rectal examination. Laboratory findings revealed leukocytosis ($12.9 \times 10^3/\mu\text{L}$), increased levels of serum C-reactive protein (27.1 mg/dL), procalcitonin (11.5 ng/mL), creatinine (5.3 mg/dL), glucose (388 mg/dL), and lactate (2.3 mmol/L). Abdominal ultrasound showed minimal free fluid. Abdominal tomography was performed and showed 13×7 cm fluid collection, especially extending to the right lower quadrant. There was diffuse free air within the fluid collection. It extended to the bilateral pararenal fascia and perirenal space (Figures 1a and b). The patient's tomography was interpreted as duodenal perforation, free air, and abscess in the retroperitoneal space. The patient received prophylactic broad-spectrum antibiotics and underwent emergency surgery. We observed retroceally appendicitis that had perforated and associated purulent contents spreading to the right and left retroperitoneal area. After performing the appendectomy, we

drained the abscess and inserted multiple drains to ensure complete drainage of the abscess. No perforation area was detected in the upper gastrointestinal tract. Cultures of the abscesses obtained during the operation were negative. The patient was followed up in the intensive care unit for 4 days. During the initial phases, he had septicemia which gradually subsided. The patient was discharged without complications on the 15th postoperative day.

Fifteen days after his discharge, he presented with complaints of a painful swelling, fluctuation, and purulent discharge from the left side of his scrotum. There were no signs of peritonitis in the abdominal examination. There was a fistula orifice in the left scrotum with purulent discharge. Abdominal tomography showed 17×7 cm abscess cavity extending from the left retroperitoneal area to the left testis (Fig. 2). Laboratory findings revealed normal leukocyte ($7.09 \times 10^3/\mu\text{L}$), increased levels of serum C-reactive protein (7.27 mg/dL), procalcitonin (0.58 ng/mL), and lactate (2.7 mmol/L). Percutaneous drainage was performed. Broad-spectrum antibiotics were started. Abscess culture taken during drainage was negative. Control tomography showed that the abscess had regressed, and the drainage from the fistula orifice. The patient was discharged 17 days after hospitalization.

Table 1. Patients with scrotal abscess and appendicitis in the literature (demographic data of patients with scrotal abscess in literature)

Author	Publication year	Country	Age	Comorbidity	Diagnosis	Treatment
Ahlering et al. ^[5]	1985	USA	31	None	Appendicitis	Appendectomy
Lantsberg et al. ^[6]	1997	Israel	20	None	Gangrenous Appendicitis	Laparoscopic Appendectomy
Lee et al. ^[7]	2003	Taiwan	19	NA	Perforated Appendicitis	Appendectomy
Mishra. ^[8]	2006	Libya	43	None	Perforated Appendicitis	Appendectomy
Ohara et al. ^[9]	2014	Japan	59	Lung Cancer	Retroperitoneal Abscess (Pericolic)	Percutan Drainage
Buzatti et al. ^[10]	2018	Brazil	18	None	Perforated Appendicitis Scrotal Abscess	Appendectomy Surgical D
Present case	2022	Turkey	69	Chronic Renal Disease Primary Hypertension Diabetes Mellitus	Perforation Retroperitoneal Abscess	Appendectomy Surgical D

DISCUSSION

The most often complication of acute appendicitis is perforation. In the present study, we report our rare and unusual patient who perforated appendicitis complicated by retroperitoneal abscess and scrotal fistula and patients in the literature. We performed a thorough literature search. After exclusions and reference cross-check, we collected 6 studies. In our literature review, we found six adult cases resembling the case we have presented (Table 1). All of these cases had scrotal abscess associated with appendicitis at initial presentation or after surgery. Year, country, age, comorbidities, treatments, complication time, side of the scrotal abscess, length of stay hospital, and mortality are all summarized in Table 1.^[5-10] Two of the seven patients had comorbidities. Only one of them had scrotal abscess at first diagnosis. Scrotal abscess was observed in other patients following surgery or percutaneous drainage. Abscess developed in the left scrotum in 3 patients and in the right scrotum in 4 patients. No mortality was observed in any of the patients following various different treatment modalities such as surgical and percutaneous drainage and medical treatment.^[5-10]

The retroperitoneal abscess is one of the rare but serious complications of acute appendicitis, especially in the presence of perforation. It was first described in 1948.^[11] Most of the studies in the literature are case reports due to its rarity. Hsieh et al. presented a summary of cases published between 1955 and 2005 and they found a mortality rate of 16.7%.^[12] Historically, it has been very hard to diagnose this complication. However, the accurate diagnosis of retroperitoneal abscesses has increased 100% with the use of computed tomography. However, computed tomography may not always show the acute perforated appendicitis as the probable cause these cases. Therefore, patients should be evaluated together with clinical laboratory and radiological findings and the correct treatment should be selected. Treatment may be performed by surgical or percutaneous drainage. Percutaneous abscess drainage is a less invasive and successful method in non-septic patients with retroperitoneal abscesses. Benoist et al. showed a success rate of 81% with percutaneous drainage in non-septic patients.^[13] Cantasdemir et al. successfully used the percutaneous drainage in their study with 21 patients with primary and secondary iliopsoas abscesses.^[14] The important thing

here is to determine septic patients and to reduce morbidity and mortality by determining the treatment accordingly. This atypical condition seen in adult appendicitis patients may have resulted from patent processus vaginalis (PV). In addition, the clinical course of our patient was severe since he had comorbid diseases. Scrotal abscess due to appendicitis is a rare condition that is usually seen in pediatric patients and has been associated with the open PV.^[15]

Conclusion

Although appendicitis is very common and its clinical findings are well known, rarely, it may occur as retroperitoneal abscess and scrotal abscess. Retroperitoneal abscess is a rare but serious complication that can be seen after acute appendicitis. Therefore, patients with atypical presentation should be well evaluated in the light of clinical, laboratory, and radiological findings and the necessity of emergency surgery must be kept in mind.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: Y.D., K.S.; Design: Y.D., H.B.; Supervision: Y.D., H.B.; Data: H.D., K.S.; Analysis: Y.D., T.T.S.; Literature search: Y.D., T.T.S.; Writing: Y.D., H.B., T.T.S., K.S.; Critical revision: K.S., T.T.S.

Conflict of Interest: None declared.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

- Blomqvist PG, Andersson RE, Granath F, Lambe MP, Ekbohm AR. Mortality after appendectomy in Sweden, 1987–1996. *Ann Surg* 2001;233:455–60. [\[CrossRef\]](#)
- Hale DA, Molloy M, Pearl RH, Schutt DC, Jaques DP. Appendectomy: A contemporary appraisal. *Ann Surg* 1997;225:252–61. [\[CrossRef\]](#)
- Crepps JT, Welch JP, Orlando R 3rd. Management and outcome of retroperitoneal abscesses. *Ann Surg* 1987;205:276–81. [\[CrossRef\]](#)
- Gordon DH, Macchia RJ, Glanz S, Koser MW, Laungani GB. Percutaneous management of retroperitoneal abscesses. *Urology* 1987;30:299–306. [\[CrossRef\]](#)
- Ahlering TE, Weinberg AC, Lieskovsky G. Pelvic abscess following ap-

	Complication Time	Complication	Scrotal Side	Treatment	Length of Stay	Mortality
omy	13 Days	Pelvic Abscess Scrotal Abscess	Left	Transrectal Drainage	NA	None
	1 Day	Scrotal Abscess	Left	Medical (Antibiotics)	5 Days	None
Drainage	3 Days	Retroperitoneal Abscess Scrotal Abscess	Right	Surgical Drainage Percutan drainage	NA	None
	2 Months	Pelvic Abscess Scrotal Abscess	Right	Surgical Drainage	NA	None
	NA	Perforated Appendicitis Scrotal Abscess	Right	Appendectomy Surgical Drainage	NA	None
	NA	Intra-Abdominal Abscess	Right	Percutan Drainage	44 Days	None
	15 Days	Retroperitoneal Abscess Scrotal Abscess	Left	Percutan Drainage	33 Days	None

- pendicitis presenting as a scrotal abscess. *J Urol* 1985;133:1058–9.
6. Lantsberg L, Mor I, Levy I, Khoda J. Infected hydrocele following laparoscopic appendectomy: Case report. *Surg Laparosc Endosc* 1997;7:262.
 7. Lee YC, Wu WJ, Huang SP, Tsai HN, Chou YH, Huang CH. Scrotal abscess originating from appendicitis: A case report. *Kaohsiung J Med Sci* 2003;19:242–5. [CrossRef]
 8. Mishra A. Spontaneous appendico-cutaneous fistula: A rare complication. *Eur J Radiol Extra* 2006;59:19–21. [CrossRef]
 9. Ohara G, Kondo T, Kagohashi K, Watanabe H, Kawaguchi M, Kurishima K, et al. Retroperitoneal abscess shortly after chemotherapy for lung cancer: A case report. *Mol Clin Oncol* 2014;2:302–4. [CrossRef]
 10. De Lacerda Rodrigues Buzatti KC, Gonçalves MV, da Silva RG, Rodrigues BD. Acute appendicitis mimicking acute scrotum: A rare complication of a common abdominal inflammatory disease. *J Coloproctol* 2018;38:65–9. [CrossRef]
 11. Bird GC, Fissel GE, Young BR. A pathognomonic roentgen sign of retroperitoneal abscess; Report of two cases of ruptured appendix with positive roentgen findings. *Am J Roentgenol Radium Ther* 1948;59:351–3.
 12. Hsieh CH, Wang YC, Yang HR, Chung PK, Jeng LB, Chen RJ. Retroperitoneal abscess resulting from perforated acute appendicitis: Analysis of its management and outcome. *Surg Today* 2007;37:762–7. [CrossRef]
 13. Benoist S, Panis Y, Pannegeon V, Soyer P, Watrin T, Boudiaf M, et al. Can failure of percutaneous drainage of postoperative abdominal abscesses be predicted? *Am J Surg* 2002;184:148–53. [CrossRef]
 14. Cantasdemir M, Kara B, Cebi D, Selcuk ND, Numan F. Computed tomography-guided percutaneous catheter drainage of primary and secondary iliopsoas abscesses. *Clin Radiol* 2003;58:811–5. [CrossRef]
 15. Saleem MM. Scrotal abscess as a complication of perforated appendicitis: A case report and review of the literature. *Cases J* 2008;1:165. [CrossRef]

OLGU SUNUMU - ÖZ

Skrotal fistül ile komplike olan apandisit: Olgu sunumu ve literatürün gözden geçirilmesi

Dr. Yasin Dalda,¹ Dr. Hasan Buran,¹ Dr. Tevfik Tolga Şahin,¹ Dr. Kutay Sağlam²

¹İnönü Üniversitesi Tıp Fakültesi, Genel Cerrahi Anabilim Dalı ve Karaciğer Nakli Enstitüsü, Malatya, Türkiye

²İnönü Üniversitesi Tıp Fakültesi, Gastrocerrahi ve Karaciğer Nakli Enstitüsü, Malatya, Türkiye

Apandisit günümüzde yapılan acil abdominal cerrahilerin en sık sebebidir. Sık görülen komplikasyonları iyi bilinmesine rağmen, retroperitoneal abse ve skrotal abse nadir görülür ve daha az bilinen komplikasyonlardır. Bu çalışmada apendektomi sonrası retroperitoneal abse ve skrotal fistül ile komplike olan hastamızı ve PubMed üzerinden yaptığımız literatür taramasını sunduk.

69 yaşında erkek hasta yaklaşık 7 gündür devam eden karın ağrısı, bulantı-kusma ve son 24 saat içinde ateş ve mental durum değişikliği şikayetleri ile acil servise başvurdu. Perforasyon ve retroperitoneal abse ön tanısı ile acil ameliyata alındı. Laparotomide perforate apandisit ve buna bağlı retroperitoneal abse görüldü. Apendektomi yapıldı ve abse boşaltıldı. Sepsis nedeniyle 4 gün yoğun bakım ünitesinde kalan hasta postoperatif 15. günde taburcu edildi. Taburcu olduktan 15 gün sonra skrotumdan kötü kokulu akıntı nedeniyle tekrar başvurdu. Tomografisinde retroperitoneal alandan sol skrotuma uzanan abse tespit edilen hastaya perkütan drenaj uygulandı. Absesi gerileyen hasta yatışından 17 gün sonra şifa ile taburcu edildi.

Apandisit ile ilişkili bu nadir komplikasyonlar, erken ve doğru tanı koyabilmek için mutlaka cerrahların aklında olmalıdır. Tedavide gecikme morbidite ve mortalitenin artmasına neden olabilir.

Anahtar sözcükler: Apandisit; retroperitoneal abse; skrotal abse veya fistül.

Ulus Travma Acil Cerrahi Derg 2023;29(7):837-840 doi: 10.14744/tjtes.2022.00890