

Operative management and in-hospital outcomes of appendiceal abscess at a tertiary referral hospital in Dakar: An eight-year retrospective cohort of 82 patients

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Abstract

Introduction: Appendiceal abscess remains a familiar problem in emergency surgical practice in Dakar, where some patients reach hospital only after several days of symptoms. Yet, few data describe how these patients are treated or how they fare in West African hospitals. We reviewed our experience at a tertiary referral centre, focusing on presentation, operative management, and early outcome.

Methods: We retrospectively reviewed patients aged 5 years or older who were operated on for an appendiceal abscess at Idrissa Pouye General Hospital between 1 January 2017 and 31 December 2024. Only abscesses confirmed at operation were retained. Demographic, clinical, laboratory, imaging, operative, and in-hospital outcome data were collected from the available records and analysed descriptively.

Results: Eighty-two patients were included; 54 (65.9%) were male. Mean age was 27.4 ± 12.8 years (range, 8-64 years). All patients had right iliac fossa pain, 68 (82.9%) had symptoms for more than 48 hours, and 54 (65.9%) had a palpable right iliac fossa mass. Ultrasonography identified an abscess in 39 of 44 patients examined (88.6%), whereas computed tomography identified an abscess in 46 of 48 patients examined (95.8%). All patients underwent open surgery. Drainage with appendicectomy was performed in 48 (58.5%), drainage alone in 26 (31.7%), and appendicectomy without separate drainage in 8 (9.8%). Six patients (7.3%) developed a postoperative complication, most commonly surgical-site infection (4/82; 4.9%). One patient required reoperation, and no in-hospital deaths occurred. Mean length of stay was 7.8 ± 3.5 days.

Conclusion: Most patients in this operative series were young, and delayed presentation was common. Open drainage, combined with appendicectomy whenever dissection was considered safe, resulted in few early complications and no in-hospital deaths. These results describe what was achievable in our setting; they do not settle the question of surgery versus initial non-operative treatment.

Keywords: Appendiceal abscess, complicated appendicitis, appendicectomy, abscess drainage, postoperative outcomes, Senegal

Introduction

Acute appendicitis is one of the conditions most often encountered in emergency general surgery [1, 3, 16]. When perforation is contained by the omentum and neighbouring bowel loops, the patient may develop an inflammatory mass or a localized abscess rather than generalized peritonitis. At that stage, treatment is less straightforward. The anatomy can be difficult to recognize, tissues are often friable, and an attempt at appendicectomy may carry a risk of bowel injury or postoperative infection [2, 3, 10].

There is still no single approach that suits every patient. Antibiotics, sometimes combined with image-guided drainage, are widely used in stable patients [9, 12]. Early laparoscopic appendicectomy is another option in centres with the required experience [2, 5, 7]. In children, randomized evidence has likewise compared immediate laparoscopy with drainage followed by interval appendicectomy [17]. In daily practice, however, the decision also depends on abscess size and location, the patient's clinical condition, and whether CT, interventional radiology, laparoscopy, and reliable follow-up are available. These constraints matter. Recommendations developed in well-resourced health systems cannot always be transferred unchanged to our working environment.

Reports from West Africa remain scarce, even though delayed and complicated appendicitis is part of routine emergency practice. We therefore reviewed eight years of experience at Idrissa Pouye General Hospital. Our aim was practical: to describe who our patients were, how the diagnosis was established, what was found and done at operation, and what happened before discharge.

Materials and methods

1. Study design and setting

This was a retrospective, single-centre cohort study carried out in the Department of General Surgery at Idrissa Pouye General Hospital in Dakar, Senegal. The hospital is a tertiary referral centre. Our emergency workload includes patients who come directly to the hospital as well as patients transferred from health centres and other hospitals.

2. Study period and eligibility

The study covered the eight-year period from 1 January 2017 to 31 December 2024. We included all patients aged 5 years or older who underwent surgery and had an appendiceal abscess confirmed intraoperatively. An appendiceal abscess was defined as a localized intraperitoneal collection of pus associated with perforated

or severely inflamed appendicitis. We excluded patients with uncomplicated appendicitis, generalized peritonitis due to appendiceal perforation, an intra-abdominal abscess of another origin, or an incomplete medical record.

3. Data sources and variables

Data were abstracted from patient medical records, operating theatre registers, and discharge summaries using a standardized collection form. Variables included age, sex, referral source, symptom duration, presenting symptoms and signs, white blood cell count, C-reactive protein (CRP), imaging performed, operative approach, abscess size and location, appearance of pus, operative procedure, postoperative complications, reoperation, length of hospital stay, and in-hospital death.

4. Diagnostic assessment

The preoperative diagnosis rested on the clinical examination and on abdominal ultrasonography or computed tomography (CT) when these examinations were available. A right iliac fossa collection compatible with appendiceal disease was considered diagnostic on imaging. For inclusion in this series, however, the abscess had to be confirmed at operation. Imaging was not prescribed according to a uniform study protocol, and some patients underwent both tests. We have therefore reported how often each examination showed the abscess among patients tested, without treating these figures as a head-to-head comparison of sensitivity.

5. Treatment

On admission, patients received intravenous fluids, correction of electrolyte disturbances when required, analgesia, and antibiotics active against enteric Gram-negative and anaerobic organisms. In most cases, this consisted of a third-generation cephalosporin and metronidazole; an aminoglycoside was added selectively. Surgery was performed through a McBurney, right paramedian, or midline incision. After evacuation of the collection, the operative field was washed. We removed the appendix when it and its base could be identified without unsafe dissection. When the inflammatory mass made this hazardous, we limited the procedure to drainage. Antibiotics, wound care, mobilization, and oral feeding were then adapted to the patient's clinical course.

6. Outcomes and statistical analysis

The primary outcome was in-hospital postoperative morbidity, defined as any documented complication before discharge. Secondary outcomes were reoperation, length of stay, and in-hospital mortality. Data were entered in Microsoft Excel and analysed with Python using pandas and NumPy. Continuous variables are presented as mean $\pm$ standard deviation and range; categorical variables are presented as counts and percentages. Owing to the small number of postoperative events, the analysis was descriptive and no multivariable modelling was performed

Results

1. Patient characteristics

Eighty-two patients met the eligibility criteria, corresponding to a mean of 10.3 cases per year. Annual case numbers increased from 8 in 2017 to 13 in 2024 (Table 1). Mean age was 27.4 ± 12.8 years (range, 8-64 years), and 50

patients (61.0%) were aged 30 years or younger. There were 54 male (65.9%) and 28 female (34.1%) patients. Forty-four patients (53.7%) were referred from another health facility (Table 2).

Table 1: Annual distribution of operated appendiceal abscesses (2017-2024)

Year	Patients, n
2017	8
2018	9
2019	10
2020	11
2021	10
2022	10
2023	11
2024	13

Table 2: Demographic characteristics (N = 82)

Characteristic	Value
Age, years; mean $\pm$ SD	27.4 $\pm$ 12.8
Age, years; median	24.5
Age range, years	8-64
Age group, n (%)	
<15 years	12 (14.6)
15-30 years	38 (46.3)
31-45 years	20 (24.4)
>45 years	12 (14.6)
Sex, n (%)	
Male	54 (65.9)
Female	28 (34.1)
Referral source, n (%)	
Direct presentation	38 (46.3)
Health centre	32 (39.0)
Other hospital	12 (14.6)

SD, standard deviation.

2. Clinical presentation

All patients reported right iliac fossa pain, and 68 (82.9%) had symptoms for more than 48 hours before presentation. The mean interval from symptom onset to hospital presentation was 3.8 ± 2.5 days (range, 0.5-18 days). The most frequent associated symptoms were anorexia (95.1%), nausea or vomiting (85.4%), and fever (79.3%). A palpable right iliac fossa mass was documented in 54 patients (65.9%), and localized guarding in 66 (80.5%) (Table 3).

Table 3: Clinical findings at presentation (N = 82)

Finding	n (%)
Symptoms	
Right iliac fossa pain	82 (100)
Symptom duration >48 hours	68 (82.9)
Anorexia	78 (95.1)
Nausea and/or vomiting	70 (85.4)
Reported fever or temperature >38 °C	65 (79.3)
Bowel disturbance	42 (51.2)
Physical signs	
Right iliac fossa tenderness	82 (100)
Palpable right iliac fossa mass	54 (65.9)
Right iliac fossa guarding	66 (80.5)
Generalized guarding	16 (19.5)
Rebound tenderness	78 (95.1)
Tachycardia (>90 beats/min)	58 (70.7)
Clinical dehydration	34 (41.5)

3. Laboratory and imaging findings

Mean white blood cell count was $14.8 \pm 4.2 \times 10^3/\text{mm}^3$, and leukocytosis above $10 \times 10^3/\text{mm}^3$ was present in 72 patients (87.8%). CRP was measured in 78 patients and was elevated above 6 mg/L in all 78. Ultrasonography was performed in 44 patients and demonstrated an abscess in 39 (88.6%). CT was performed in 48 patients and demonstrated an abscess in 46 (95.8%). The mean abscess diameter on CT was 5.2 ± 2.1 cm (range, 2.0-12.0 cm) (Table 4).

Table 4: Laboratory and imaging findings

Parameter	Value
White blood cell count, $\times 10^3/\text{mm}^3$; mean $\pm$ SD	14.8 ± 4.2
White blood cell count range, $\times 10^3/\text{mm}^3$	7.5-28.0
Leukocytosis $>10 \times 10^3/\text{mm}^3$	72/82 (87.8%)
CRP, mg/L; mean $\pm$ SD	89.6 ± 42.3
CRP range, mg/L	12.0-245.0
CRP >6 mg/L	78/78 (100%)
Ultrasonography performed	44/82 (53.7%)
Abscess detected on ultrasonography	39/44 (88.6%)
CT performed	48/82 (58.5%)
Abscess detected on CT	46/48 (95.8%)

CRP, C-reactive protein; CT, computed tomography; SD, standard deviation. Denominators vary because investigations were not performed in all patients.

4. Operative management

A McBurney incision was used in 56 patients (68.3%), a right paramedian incision in 18 (22.0%), and a midline laparotomy in 8 (9.8%). Mean operative abscess diameter was 5.4 ± 2.3 cm. Drainage with appendicectomy was performed in 48 patients (58.5%), drainage alone in 26 (31.7%), and appendicectomy without separate drainage in 8 (9.8%). In patients managed by drainage alone, appendicectomy was deferred when the appendix or its base could not be safely identified within the inflammatory mass. All patients underwent lavage and drain placement. Mean operating time was 65 ± 22 minutes (range, 30-140 minutes) (Table 5).

Table 5: Operative findings and procedures (N = 82)

Parameter	n (%) or summary
Operative approach	
McBurney incision	56 (68.3)
Right paramedian incision	18 (22.0)
Midline laparotomy	8 (9.8)
Abscess diameter, cm; mean $\pm$ SD	5.4 ± 2.3
Right iliac fossa location	74 (90.2)
Pelvic extension	8 (9.8)
Appearance of pus	
Purulent	62 (75.6)
Seropurulent	15 (18.3)
Feculent	5 (6.1)
Procedure	
Drainage and appendicectomy	48 (58.5)
Drainage alone	26 (31.7)
Appendicectomy without separate drainage	8 (9.8)
Omental patch	12 (14.6)
Peritoneal lavage	82 (100)
Drain placement	82 (100)

SD, standard deviation.

5. In-hospital outcomes

Six patients (7.3%) developed at least one postoperative complication. Four had a surgical-site infection (4.9%), one had prolonged ileus (1.2%), and one developed a residual

intra-abdominal abscess (1.2%). The patient with residual abscess underwent reoperation for drainage. Mean length of stay was 7.8 ± 3.5 days (range, 3-21 days). No in-hospital deaths occurred (Table 6).

Table 6: Postoperative outcomes (N = 82)

Outcome	Value
Any postoperative complication	6 (7.3%)
Surgical-site infection	4 (4.9%)
Prolonged ileus	1 (1.2%)
Residual intra-abdominal abscess	1 (1.2%)
Reoperation	1 (1.2%)
Length of stay, days; mean $\pm$ SD	7.8 ± 3.5
Length of stay range, days	3-21
In-hospital mortality	0

SD, standard deviation.

Discussion

Over eight years, we operated on 82 patients with an appendiceal abscess. The typical patient in this series was a young man who had been symptomatic for several days. More than four patients in five arrived after at least 48 hours of pain, and slightly more than half had been referred by another health facility. Despite this delayed presentation, six patients developed an in-hospital complication, one required another operation, and none died.

The mean age was 27 years, which is in keeping with the usual concentration of appendicitis among adolescents and young adults ^[1, 3]. What stands out more in our results is the time spent before reaching definitive surgical care. This interval probably reflects several realities: patients may initially wait at home, seek treatment elsewhere, or pass through another facility before referral. Our records did not allow us to separate these different components of delay. Nor can this selected operative series tell us how often an abscess occurred among all patients treated for appendicitis during the same period.

Both imaging methods were useful. Ultrasonography showed the abscess in 39 of 44 examinations, and CT in 46 of 48. In our setting, ultrasonography has the advantage of being accessible and free of ionizing radiation. CT, when it can be obtained, better defines the collection, pelvic extension, an appendicolith, or another diagnosis and can guide percutaneous drainage ^[2, 3, 12, 16]. The apparent difference between the two tests should nevertheless be read cautiously. They were requested according to clinical circumstances, not within a planned diagnostic comparison, and not every patient underwent both examinations. We therefore cannot conclude from these data that one test was more sensitive than the other.

The debate over treatment is not merely academic. Earlier reviews generally favoured initial non-operative management, but much of that evidence came from retrospective and heterogeneous studies ^[4, 5, 10]. Image-guided drainage may improve source control in selected collections, although outcomes depend on abscess morphology and local expertise ^[11, 12]. Trials and later reviews have shown that early laparoscopic appendicectomy can also give good results when performed by experienced teams ^[6, 7, 13, 17]. The 2020 WSES guidelines accepted antibiotics, with percutaneous drainage when appropriate and available, while recognizing laparoscopy as an alternative in experienced hands ^[2]. The 2025 update continues to emphasize that management should be individualized and adapted to local resources ^[9].

Our patients followed a different pathway. All were treated by open surgery, and none underwent percutaneous drainage as part of the management recorded in this series. This reflects how source control was obtained in our department during the study period rather than a claim that open surgery is preferable in every setting. We completed appendicectomy in 56 patients. In the remaining 26, the inflammatory mass obscured the appendix or made dissection unsafe, and drainage alone was judged the safer operation. That decision avoids immediate injury, but it also makes follow-up important. Unfortunately, our records did not provide reliable information on recurrence, interval appendicectomy, or a subsequently discovered tumour. The last point deserves particular attention in older patients because an appendiceal abscess can occasionally mask a neoplasm^[8, 9, 14].

Four of the six complications were surgical-site infections, an unsurprising pattern after contaminated emergency surgery. Only one patient needed reoperation, for a residual intra-abdominal abscess. These early results are reassuring, but the study had no non-operative comparison group. They should be viewed as a benchmark for our own practice, not as proof that surgery is superior. The duration of postoperative antibiotics also deserves prospective evaluation because prolonged courses have not consistently reduced intra-abdominal or wound infection after surgery for complicated appendicitis^[9, 15]. A useful next step would be a protocol that records how patients are selected for surgery, antibiotics alone, or image-guided drainage and that follows them after discharge. Such a protocol would also make it possible to assess laparoscopy, culture results, recurrence, and pathology in a consistent manner.

1. Strengths and limitations

The study reflects eight years of routine surgical practice in a West African referral hospital, a context that is seldom represented in the literature. It must nevertheless be read with several limitations in mind. We relied on records that had been created for care rather than research, and some potentially useful details were not consistently available. Because only operated patients were included, selection bias is unavoidable and no comparison with non-operative treatment is possible. Imaging was not standardized. With only six complications, a reliable multivariable analysis would have been inappropriate. Finally, complications were not prospectively graded and follow-up after discharge was incomplete, leaving recurrence, interval surgery, and histopathological outcomes insufficiently documented.

Conclusion

In our department, patients operated on for appendiceal abscess were usually young and often arrived after several days of symptoms. Open drainage, with appendicectomy when the anatomy allowed it, resulted in six early complications, one reoperation, and no in-hospital deaths among 82 patients. This experience shows that the approach was workable in our setting. It does not demonstrate that it is better than initial non-operative treatment. Future work should prospectively document treatment selection, postoperative complications, pathology, recurrence, and longer-term outcome.

Declarations

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Conflicts of interest: The authors reported no conflicts of interest.

Data availability: The data underlying this study are held by the study institution and may be available from the corresponding author subject to institutional authorization and applicable confidentiality requirements.

References

1. Ferris M, Quan S, Kaplan BS, *et al.* The global incidence of appendicitis: a systematic review of population-based studies. *Ann Surg.* 2017;266(2):237-241.
2. Di Saverio S, Podda M, De Simone B, *et al.* Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. *World J Emerg Surg.* 2020, 15, 27.
3. Bhangu A, Søreide K, Di Saverio S, Assarsson JH, Drake FT. Acute appendicitis: modern understanding of pathogenesis, diagnosis, and management. *Lancet.* 2015;386(10000):1278-1287.
4. Andersson RE, Petzold MG. Nonsurgical treatment of appendiceal abscess or phlegmon: a systematic review and meta-analysis. *Ann Surg.* 2007;246(5):741-748.
5. Simillis C, Symeonides P, Shorthouse AJ, Tekkis PP. A meta-analysis comparing conservative treatment versus acute appendectomy for complicated appendicitis (abscess or phlegmon). *Surgery.* 2010;147(6):818-829.
6. Mentula P, Sammalkorpi H, Leppäniemi A. Laparoscopic surgery or conservative treatment for appendiceal abscess in adults? A randomized controlled trial. *Ann Surg.* 2015;262(2):237-242.
7. Gavrilidis P, de'Angelis N, Katsanos K, Di Saverio S. Acute appendicectomy or conservative treatment for complicated appendicitis (phlegmon or abscess)? A systematic review by updated traditional and cumulative meta-analysis. *J Clin Med Res.* 2019;11(1):56-64.
8. Mällinen J, Rautio T, Grönroos J, *et al.* Risk of appendiceal neoplasm in periappendicular abscess in patients treated with interval appendectomy vs follow-up with magnetic resonance imaging: 1-year outcomes of the Peri-Appendicitis Acuta randomized clinical trial. *JAMA Surg.* 2019 ;154(3):200-207.
9. Podda M, Ceresoli M, De Simone B, *et al.* Diagnosis and treatment of acute appendicitis: 2025 edition of the World Society of Emergency Surgery Jerusalem guidelines. *JAMA Surg.* 2026;161(3):283-295.
10. Olsen J, Skovdal J, Qvist N, Bisgaard T. Treatment of appendiceal mass: a qualitative systematic review. *Dan Med J.* 2014;61(8):A4888.
11. Zerem E, Salkic N, Imamovic G, Terzic I. Comparison of therapeutic effectiveness of percutaneous drainage with antibiotics versus antibiotics alone in the treatment of periappendiceal abscess: is appendectomy always necessary after perforation of appendix? *Surg Endosc.* 2007;21(3):461-466.
12. Marin D, Ho LM, Barnhart H, Neville AM, White RR, Paulson EK, *et al.* Percutaneous abscess drainage in patients with perforated acute appendicitis: effectiveness, safety, and prediction of outcome. *AJR Am J Roentgenol.* 2010;194(2):422-429.
13. Zhou S, Cheng Y, Xiong XZ, *et al.* Early versus delayed appendicectomy for appendiceal phlegmon or

- abscess. Cochrane Database Syst Rev. 2024;5:CD011670.
14. Teixeira FJR Jr, Couto Netto SDD, Akaishi EH, Utiyama EM, Menegozzo CAM, Rocha MC. Acute appendicitis, inflammatory appendiceal mass and interval appendectomy: a retrospective study. *World J Emerg Surg.* 2017;12:3.
 15. Ramson DM, Gao H, Penny-Dimri JC, *et al.* Duration of post-operative antibiotic treatment in acute complicated appendicitis: systematic review and meta-analysis. *ANZ J Surg.* 2021;91(7-8):1397-1404.
 16. Moris D, Paulson EK, Pappas TN. Diagnosis and management of acute appendicitis in adults: a review. *JAMA.* 2021;326(22):2299-2311.
 17. St Peter SD, Aguayo P, Fraser JD, *et al.* Initial laparoscopic appendectomy versus initial nonoperative management and interval appendectomy for perforated appendicitis with abscess: a prospective, randomized trial. *J Pediatr Surg.* 2010;45(1):236-240.