



From the Umbilicus to McBurney's Point: A Clinically Classic Presentation of Acute Appendicitis with Clinical-Ultrasonographic-Operative Concordance-A Case Report

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Abstract

Background: Acute appendicitis is a common surgical emergency in which early recognition and timely intervention are essential to prevent complications such as perforation and peritonitis. Diagnosis is primarily clinical but may be supported by laboratory investigations and imaging where available.

Case Presentation: A 21-year-old male student, previously well, presented with a one-day history of sudden-onset abdominal pain that initially began in the periumbilical region before migrating approximately eight hours later to the right iliac fossa, where it became sharp, constant and severe. The pain was associated with anorexia, nausea, two episodes of non-projectile vomiting and fever and was aggravated by walking and coughing. On examination, he was ill-looking, febrile, mildly dehydrated and had marked right iliac fossa tenderness with localized guarding. Rovsing's and psoas signs were positive. Laboratory investigations revealed leukocytosis of $15,000/\text{mm}^3$ with neutrophilia of 82% and an elevated C-reactive protein of 60 mg/L. Abdominal ultrasonography demonstrated a non-compressible, blind-ending tubular structure measuring greater than 6 mm in diameter, with a thickened wall and peri appendiceal fluid, findings highly suggestive of acute appendicitis. His Alvarado score was 9/10. Following initial resuscitation and antimicrobial therapy, he underwent emergency open appendectomy through a McBurney incision.

Intraoperatively, the appendix was inflamed, hyperemic and edematous, with minimal serous fluid and no evidence of perforation. He had an uncomplicated postoperative recovery and was discharged on postoperative day three with wound-care advice, analgesia and follow-up instructions.

Conclusion: This case demonstrates the value of integrating characteristic clinical features with laboratory and ultrasonographic findings in the diagnosis of acute appendicitis. Early recognition and timely surgical intervention resulted in an uncomplicated outcome, highlighting the importance of prompt assessment and definitive management in patients presenting with a classic clinical picture.

Keywords: Acute appendicitis; Alvarado score; Appendectomy; Abdominal ultrasonography; Emergency surgery

Introduction

Acute appendicitis is an acute inflammation of the vermiform appendix and is one of the most common causes of acute abdominal pain requiring emergency surgical assessment. Early and accurate diagnosis is important because progression of inflammation may result in perforation, abscess formation, peritonitis and other complications. Contemporary guidelines recommend integrating clinical assessment with laboratory investigations and, when indicated, imaging to establish the diagnosis and guide management. The classical presentation includes abdominal pain that initially develops around the umbilicus and subsequently migrates to the right lower quadrant, often accompanied by anorexia, nausea, vomiting and fever. In the reported patient, a 21-year-old previously

healthy man presented with a one-day history of abdominal pain that began in the periumbilical region and migrated to the right iliac fossa, becoming severe and constant. He also had anorexia, nausea, vomiting and fever. Examination demonstrated marked right iliac fossa tenderness, localized guarding and positive Rovsing and psoas signs.

Laboratory investigations demonstrated leukocytosis with neutrophilia and an elevated C-reactive protein, while ultrasonography showed a non-compressible blind-ending tubular structure measuring more than 6 mm, with wall thickening and peri appendiceal fluid, findings highly suggestive of acute appendicitis. Ultrasound is an established imaging



modality for suspected appendicitis, particularly where clinical assessment alone does not provide sufficient diagnostic certainty.

The importance of this case lies not in a rare presentation or unusual pathology, but in the clear correlation between the patient's symptom progression, physical examination, inflammatory markers, ultrasonographic findings and operative diagnosis. At surgery, the appendix was inflamed, hyperemic and edematous, with minimal serous fluid but no perforation. This provides a clinically coherent example of the diagnostic pathway from presentation to definitive treatment and highlights the importance of timely recognition of acute appendicitis before progression to complicated disease.

The purpose of reporting this case is to demonstrate the clinical, laboratory, ultrasonographic and operative correlation in a patient with uncomplicated acute appendicitis and to highlight the importance of systematic clinical assessment and timely diagnosis in preventing disease progression.

Case Presentation

A 21-year-old male student, previously well, was admitted on 14 July 2026 with a one-day history of abdominal pain. He had no known chronic medical illness, no history of previous surgery and no reported drug or food allergies. The patient was reportedly well until one day before admission, when he developed sudden-onset abdominal pain. The pain initially began around the umbilicus and was dull and aching, moderate in severity and poorly localized. Approximately eight hours after onset, the pain migrated to the right lower abdomen/right iliac fossa, where it became sharp, constant and severe, with a reported intensity of 8/10.

The pain was aggravated by walking and coughing and was relieved by lying still with the knees slightly flexed. He took Panadol at home without significant improvement. The abdominal pain was associated with anorexia, nausea, two episodes of non-projectile vomiting and fever. There was no history of diarrhea, constipation, blood-stained stool, abdominal distension, dysphagia, odynophagia or weight loss. He also denied urinary symptoms, including dysuria, hematuria, urinary frequency, urgency and incontinence.

The available case information did not document additional family or social history or regular medications apart from the reported use of Panadol for the presenting pain. On examination, the patient was ill-looking, febrile and mildly dehydrated. His temperature was 38.2°C, pulse rate 104 beats/minute, blood pressure 118/86 mmHg, respiratory rate 21 breaths/minute and oxygen saturation 98% on room

air. His weight was 59 kg. Abdominal examination revealed marked tenderness at McBurney's point with localized guarding in the right iliac fossa. Rovsing's and psoas signs were positive. Other systemic examinations were essentially unremarkable.

Based on the characteristic migration of pain from the periumbilical region to the right iliac fossa, associated anorexia, nausea, vomiting and fever, together with localized right iliac fossa peritoneal signs, the initial clinical impression was acute appendicitis. The documented differential diagnoses were gastroenteritis, intestinal obstruction, acute pancreatitis, perforated peptic ulcer disease, right ureteric colic, Meckel's diverticulitis and caecal diverticulitis. Laboratory investigations demonstrated a white blood cell count of 15,000/mm³ with neutrophils of 82%. Hemoglobin was 16.5 g/dL and C-reactive protein was 60 mg/L. Urinalysis was normal and the patient's blood group was a Rh-positive. Abdominal ultrasonography demonstrated a non-compressible, blind-ending tubular structure measuring greater than 6 mm in diameter, with a thickened wall and peri appendiceal fluid. The findings were reported as highly suggestive of acute appendicitis.

The Alvarado score calculated from the documented clinical and laboratory findings was 9/10, comprising migration of pain, anorexia, nausea/vomiting, right iliac fossa tenderness, fever, leukocytosis and neutrophilia. Rebound tenderness was not included because it was not explicitly documented in the detailed examination. The patient was admitted, kept nil per os and intravenous access was secured. Intravenous normal saline was administered. The documented preoperative medications were ceftriaxone 2 g once daily for three days, metronidazole 500 mg every eight hours for three days, paracetamol 1 g every eight hours for three days and ondansetron 4 mg twice daily for two days. The original case record also documented insertion of a nasogastric tube, urinary catheterization and booking of two units of blood.

The patient subsequently underwent emergency open appendectomy under general anesthesia through a McBurney incision. The mesoappendix was ligated, the appendiceal base was ligated and the appendix was removed. The stump was inspected and the wound was closed. Intraoperatively, the appendix was inflamed and hyperemic with an edematous wall. There was minimal serous fluid, with no evidence of perforation.

Postoperatively, the patient received intravenous fluids, analgesia and antimicrobial therapy. The documented postoperative regimen consisted of intravenous normal saline 2.5 L over 24 hours, tramadol 100 mg three times daily for three days, ceftriaxone 1 g



once daily for three days and metronidazole 500 mg three times daily for three days. On postoperative day one, the patient was clinically stable, with reduced pain and tolerance of oral fluids. By postoperative day two, he was ambulating, was afebrile and had passed stool. On postoperative day three, the wound was clean and dry and his appetite had returned; discharge was therefore planned.

At discharge, he was prescribed metronidazole 400 mg eight-hourly for five days and paracetamol 1 g three times daily for three days. He was advised on wound care, avoidance of heavy lifting for four to six weeks and to return to hospital in case of fever, vomiting, wound discharge or severe pain. Surgical outpatient review was planned for two weeks. The documented outcome was an uncomplicated postoperative recovery following emergency open appendicectomy for an inflamed, oedematous, non-perforated appendix. No longer-term follow-up findings beyond the planned two-week surgical review were documented in the available case information.

Discussion

This case demonstrates a clinically typical episode of uncomplicated acute appendicitis in a 21-year-old previously healthy man, characterized by migration of abdominal pain from the periumbilical region to

the right iliac fossa, anorexia, nausea, vomiting and fever, with localized right iliac fossa tenderness and guarding. These clinical findings were accompanied by leukocytosis with neutrophilia and an elevated C-reactive protein, while ultrasonography demonstrated a non-compressible blind-ending tubular structure greater than 6 mm with wall thickening and peri appendiceal fluid. Operative exploration subsequently confirmed an inflamed, hyperemic and edematous appendix without perforation.

The clinical presentation is consistent with the established description of acute appendicitis. Migration of pain, right lower-quadrant tenderness, anorexia, nausea/vomiting, fever and leukocytosis are among the clinical variables incorporated into the Alvarado score, which was originally developed to support early diagnosis of appendicitis [1]. Based on the findings documented in this case, the patient would have an Alvarado score of 9/10: Migration of pain, anorexia, nausea/vomiting, right lower-quadrant tenderness, fever, leukocytosis and neutrophilia. However, this score should be interpreted as supportive rather than definitive because contemporary guidance recommends combining clinical assessment with appropriate investigations rather than relying on a score alone [1,2].

The inflammatory laboratory findings also support

the clinical diagnosis. The white-cell count was 15,000/mm³ with 82% neutrophils and the CRP was 60 mg/L. These findings are compatible with acute appendiceal inflammation, but neither leukocytosis nor CRP is sufficiently specific to establish the diagnosis independently. The strength in this case was therefore the convergence of several independent clinical and laboratory findings, rather than reliance on a single test. Current WSES guidance similarly supports the use of clinical risk assessment together with imaging where appropriate to improve diagnostic accuracy [3-7].

Ultrasonography provided additional confirmation. The examination demonstrated a non-compressible blind-ending tubular structure measuring more than 6 mm, with wall thickening and peri appendiceal fluid. These findings are consistent with commonly used sonographic criteria for appendicitis.

Nevertheless, published evidence indicates that ultrasound has variable diagnostic performance, with sensitivity and specificity influenced by patient characteristics, operator expertise and the ability to visualize the appendix. A 2021 meta-analysis reported a sensitivity of 77.2% and specificity of 60% for abdominal ultrasound in suspected acute appendicitis [3]. Thus, the positive ultrasound in this patient strengthened an already strong clinical diagnosis, but the case should not be interpreted as demonstrating that ultrasound alone is sufficient for diagnosis.

An important feature of this case is the agreement between the preoperative assessment and operative findings. The appendix was described intraoperatively as inflamed, hyperaemic and oedematous, with minimal serous fluid and no perforation. This is consistent with uncomplicated appendicitis, rather than perforated or abscess-forming disease. The absence of perforation despite the patient's fever, marked localized tenderness and inflammatory laboratory abnormalities illustrates that the severity of systemic or local inflammatory findings should not automatically be equated with perforated disease. However, because no histopathology result is documented in the available case information, microscopic confirmation of the diagnosis cannot be discussed.

The patient underwent open appendectomy. Current international guidelines identify laparoscopic appendectomy as the standard surgical approach where appropriate and evidence comparing laparoscopic with open surgery generally demonstrates advantages of laparoscopy in postoperative recovery and wound-related outcomes [2,4]. The use of an open McBurney incision in this case may therefore reflect the surgical practice or resources available in the treating setting, but the available case information does not document the reason for selecting an open rather than



laparoscopic approach. It would consequently be inappropriate to infer a specific resource-related or clinical rationale [8].

The postoperative course was uncomplicated. The patient remained clinically stable, resumed oral intake, ambulated, passed stool and had a clean wound before planned discharge on postoperative day three. This outcome is compatible with the generally favourable prognosis expected following treatment of uncomplicated appendicitis. Current guidelines also emphasize that management should distinguish uncomplicated from complicated disease and that postoperative antimicrobial therapy should be limited according to the operative classification and clinical circumstances [9]. In this case, however, the documented antibiotic regimen was relatively extensive and the available information does not provide a specific rationale for its duration. This should be acknowledged rather than retrospectively attributing an indication that was not recorded.

Clinical Implications

The principal clinical lesson is the importance of integrating sequential information rather than waiting for a single definitive test. In this patient, the diagnosis became increasingly supported as the clinical history, examination, inflammatory markers, ultrasound and operative findings converged. The case therefore provides a useful practical example of structured diagnostic reasoning in a patient with a classical presentation.

The case also illustrates the continuing value of careful history-taking. The migration of pain from the periumbilical region to the right iliac fossa occurred over approximately eight hours and was accompanied by worsening pain with movement and coughing. Such temporal information can materially increase clinical suspicion before imaging is performed. Current guidance supports integrating clinical assessment, risk stratification and imaging rather than treating any one component as independently definitive [10-12].

Strengths and Limitations

A major strength is the complete diagnostic sequence documented in the case: characteristic symptom evolution, focused physical examination, inflammatory laboratory findings, supportive ultrasound and operative confirmation. The case also documents postoperative clinical progress, allowing the immediate outcome to be described.

Several limitations should nevertheless be recognized. First, this is a single case of a common condition and therefore has limited generalizability. Second, histopathology is not documented, so

pathological confirmation cannot be reported. Third, the case does not provide a longer-term follow-up beyond the early postoperative period. Finally, some management decisions, including the rationale for open rather than laparoscopic appendectomy and the precise rationale for perioperative antibiotic use, are not documented. CARE guidance recommends transparent discussion of such limitations and cautions against drawing broad conclusions from individual cases [5,6].

This case reinforces that acute appendicitis can often be recognized through careful assessment of symptom evolution and physical findings, supported by inflammatory markers and appropriately interpreted imaging. Its principal educational value is the close clinical, laboratory, ultrasonographic operative concordance demonstrated in one patient. The case should therefore be viewed as an example of systematic diagnostic reasoning and timely management of uncomplicated acute appendicitis, rather than as evidence of a rare presentation or a novel treatment approach.

Conclusion

This case highlights the importance of prompt clinical recognition and systematic evaluation of acute appendicitis, particularly when the characteristic progression of pain from the periumbilical region to the right iliac fossa is accompanied by supportive clinical, laboratory and ultrasonographic findings. The high Alvarado score, neutrophilic leukocytosis, elevated C-reactive protein and ultrasonographic evidence of an inflamed appendix was concordant with the intraoperative finding of a non-perforated, acutely inflamed appendix. Early diagnosis and timely surgical intervention resulted in an uncomplicated postoperative recovery, emphasizing the value of integrating clinical assessment with appropriate investigations to facilitate definitive management and minimize the risk of complications.

Ethical Approval

Ethical approval for this case report was obtained from Kayunga Regional Referral Hospital. Consent for publication

Written informed consent for publication of this case report and its accompanying clinical information was obtained from the patient. The patient was informed about the purpose of the case report, the clinical information to be presented and the potential for publication in a scientific journal. He was assured that reasonable measures would be taken to protect his identity and confidentiality. No, personally identifiable information is included in the manuscript.



Competing Interests

The authors declare that they have no competing interests.

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