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| RESEARCH ARTICLE

Stump Appendicitis: A Complication of Post Appendectomy

Dr. Maawa Merza Juma[1], Dr. Tahera Ahmed Fateel[2], Dr. Rahul Sam Mathew[3], Soumya Sunil Nair[4], Ali Merza Juma[5], Dr. Ali Haider Ali[6] ✉ and Dr. Zainab Khalil Mohamed Al-Saati[7]

[1]Specialist Emergency Medicine, Salmaniya Medical Complex, Kingdom of Bahrain.
[2]Chief Resident, Department of General Surgery, Salmaniya Medical Complex, Kingdom of Bahrain.
[3]Medical Intern, Salmaniya Medical Complex, Kingdom of Bahrain.
[45]Medical Student, Royal College of Surgeons Ireland, Kingdom of Bahrain.
[6]Resident Emergency Medicine, Salmaniya Medical Complex, Kingdom of Bahrain.
[7]Consultant Emergency Medicine, Acting Chief of Health Studies and Specialities, Supreme Council of Health, Kingdom of Bahrain
Corresponding Author: Dr. Ali Haider Ali, **E-mail**: Alihaiderali97@outlook.com

| ABSTRACT

Stump appendicitis is a rare but serious complication that can occur after an appendectomy, characterized by inflammation and infection of the remaining portion of the appendix (1). Patients typically present with symptoms similar to those of appendicitis, such as abdominal pain, fever, and nausea. However, the diagnosis can be challenging because the patient has previously undergone an appendectomy, potentially leading to delays in treatment and increased risk of complications (1). In this case, a 38-year-old male, who had a smooth recovery following a laparoscopic appendectomy 15 years prior presented to the emergency department with worsening abdominal pain. Despite his initial postoperative recovery, he developed stump appendicitis, as confirmed by a CT scan. The condition was managed with antibiotics and a percutaneous drain, leading to significant improvement. He is now scheduled for a completed appendectomy to remove the remaining appendix stump. This case highlights the critical importance of including stump appendicitis in the differential diagnosis for patients with a history of appendectomy who present with acute abdominal pain. Timely diagnosis and intervention are essential to prevent complications and ensure appropriate management.

| KEYWORDS

"Stump," "Surgical Intervention," "General Surgery," "Abdominal Pain," and "laparoscopy."

| ARTICLE INFORMATION

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1. Introduction

Although appendectomy is a frequently performed surgical procedure, stump appendicitis, or inflammation of the remaining appendiceal tissue, is still an uncommon side effect that happens in approximately 1 in 50,000 cases (2). This disorder frequently results from incomplete appendix resection, especially after laparoscopic surgery (2). Symptoms of stump appendicitis are similar to those of acute appendicitis and can appear months or years after the initial procedure (3). Diagnosing this complication is difficult and necessitates careful imaging and clinical evaluation. This case emphasizes how crucial it is to rule out stump appendicitis in patients who have had an appendectomy in the past and who exhibit recurrent abdominal pain.

1.1 Case Report

A 38-year-old Middle Eastern male presented to the Emergency Department with a two-day history of worsening abdominal pain localized to the right side. The pain, which lasted for approximately 20 minutes with brief pain-free intervals, was not accompanied by nausea, vomiting, changes in bowel or urinary habits, abdominal distension, or genitourinary symptoms. Notably, the patient

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did not exhibit any B symptoms, such as weight loss, night sweats, or fevers, which are often associated with malignancies. This was the second episode of such pain; the first episode led to his initial appendectomy.

The patient's medical history was otherwise unremarkable. He had no chronic illnesses or significant past medical conditions, was not on any regular medications, and reported no known drug allergies. His immunizations were up to date, including routine childhood vaccinations and COVID-19 vaccines. The laparoscopic appendectomy he underwent 15 years ago was performed without complications, and his postoperative course was smooth, with no subsequent issues or complications reported. On physical examination, the patient was vitally stable, alert, and oriented, though he displayed noticeable discomfort on the right side of his abdomen. He was conscious and holding his right side in apparent pain. His Glasgow Coma Scale (GCS) score was 15/15, and the neurological examination was normal, with intact cranial nerves and no focal deficits. Cardiovascular examination revealed normal S1 and S2 heart sounds with no added murmurs. The respiratory examination showed bilateral air entry with no abnormal breath sounds. The abdominal examination noted that the abdomen was not distended, and there were no signs of bruising, erythema, or color changes around the abdomen or the laparoscopic scars. There was no pus accumulation or evidence of any surgical site infection. Palpation did not reveal petechiae or masses. However, rebound tenderness was positive in the right iliac fossa (RIF), and normal bowel sounds were auscultated.

Initial laboratory tests were ordered to investigate a possible post-surgical complication. Concurrently, surgical notes from the prior appendectomy were reviewed, confirming that the procedure had been uneventful with no complications or anesthetic issues. The patient was managed conservatively at the start, following pain management guidelines according to the WHO ladder. Intravenous Perfalgan (1 gram) and 1 liter of intravenous saline were administered.

Table One: Initial Laboratory Investigation:

White Blood Count	13.34
Haemoglobin	13.8
Platelets	349
Neutrophils	66.3
Urea	5.2
Creatinine	76.35
Sodium	136
Potassium	4.5
Chloride	103
Bicarbonate	24
Urine dipstick	-ve

Given the clinical presentation and initial imaging results, an ultrasound was performed, which showed no evidence of acute bleeding or free fluid. A CT scan with contrast was arranged to evaluate the patient's condition further. The findings were as follows:

- **Appendix Stump:** The residual appendix stump appeared short, retro-caecal, and dilated, with a thickened wall measuring 1.5 cm. Minimal subtle mesenteric fat stranding and air pockets were observed within the lumen.
- **Lymph Nodes:** Loco-regional subcentimeter lymph nodes were seen; size criteria noted no significant enlargement.
- **Urinary Tract:** No hyperdense urinary tract stones were present. Both kidneys were normal in size and attenuation pattern, with no signs of hydronephrosis or hydroureter. The urinary bladder appeared normal.
- **Abdominal Organs:** No focal abnormalities were noted in the liver or spleen, and no significant lesions were identified in other solid organs. Fatty liver infiltrations were observed (Grade 1).
- **Bowel:** No abnormal thickening or dilatation of the small or large bowel was seen.
- **Fluid and Pneumoperitoneum:** There was no free fluid or pneumoperitoneum.
- **Skeletal System:** No significant abnormalities were noted in the visualized skeleton.

Conclusion: The CT findings, in the context of the patient's history, were suggestive of stump appendicitis (stumpitis). There was no evidence of obstructive uropathy. Fatty liver infiltration was noted as Grade 1. Clinical correlation is recommended. The case was then referred to the surgery department, which had previously performed the patient's appendectomy. Arrangements were made for a completed appendectomy to remove the residual appendix stump. He is now scheduled for the planned surgical intervention to resolve the stump appendicitis completely.

2. Discussion:

Stump appendicitis is a rare but significant complication that can occur after an appendectomy, often overlooked due to the patient's prior history of the procedure. The clinical presentation can mimic acute appendicitis, complicating the diagnosis and potentially leading to delays in appropriate treatment (3). This case underscores the importance of considering stump appendicitis in patients with a history of appendectomy who present with recurrent abdominal pain.

Fig. 1. Computed tomography (CT) performed following oral and intravenous contrast administration showing features of stump appendicitis; inflammatory changes in the fat surrounding a thickened appendix stump (arrow).

The diagnostic challenge of stump appendicitis lies in its subtle presentation and the scar tissue from the initial appendectomy (3). Traditional physical examination techniques may be insufficient due to the absence of a visible appendix. Hence, imaging studies

play a crucial role in identifying this condition. Ultrasound can reveal signs similar to acute appendicitis, such as a non-compressible, dilated, and wall-thickened tubular structure arising from the cecum and peri-appendiceal inflammatory changes (4). However, computed tomography (CT) of the abdomen is superior for accurate diagnosis. CT can detect peritoneal inflammatory changes, fat stranding, thickening of the cecum wall, and the presence of an abscess in the periodical region or right para-colic gutter (4). The "arrowhead sign," indicating focal cecal thickening centered on the appendicular opening, is a secondary sign useful in diagnosing both acute appendicitis and stump appendicitis (4).

Despite these imaging advancements, the choice of surgical approach for treating stump appendicitis remains debated. Completion appendectomy is the standard treatment, but the optimal surgical approach—open laparotomy versus laparoscopic surgery—depends on several factors, including the extent of inflammation and the surgeon's expertise. In some cases, extensive inflammation or complications such as perforation may necessitate an ileocecal resection (5). While laparoscopic surgery provides a broader view and can facilitate the identification of other pathologies, its limited tactile feedback may sometimes contribute to the misidentification of the appendiceal base (6). Conversely, open surgery may offer better tactile feedback but is more invasive.

A retrospective study by Dikicier et al. involving 3,130 patients highlighted the variability in surgical approaches (7). In their series, some patients were successfully managed with open McBurney laparotomy, while others required conversion from laparoscopic to open surgery (7). This variability suggests that neither approach is universally superior and emphasizes the need for individualized surgical planning based on the patient's specific condition and the surgeon's judgment (7).

The prevention of stump appendicitis is a critical consideration in appendectomy techniques. Leaving an appendiceal stump larger than 3 mm has been associated with a higher risk of stump appendicitis (8). Strategies such as invagination or simple ligation of the stump have been debated, with no clear evidence favoring one technique over the other. The use of stapling devices during appendectomy could theoretically minimize stump size and reduce the risk of stump appendicitis (9). However, this approach's practicality and economic feasibility, especially in emergency settings, warrant further investigation through prospective trials.

3. Conclusion

Despite being uncommon, stump appendicitis highlights a crucial component of postoperative care that should not be disregarded. This condition is a poignant reminder of the complexity of surgical procedures and the need for continued vigilance following the initial procedure. As demonstrated by this case, the diagnostic challenge of stump appendicitis necessitates an understanding of its potential to mimic other abdominal pathologies, particularly in patients who have had an appendectomy. While CT is one of the most important imaging modalities for accurately diagnosing stump appendicitis, surgical management varies widely, emphasizing the need for customized strategies.

It is essential to use precise surgical techniques to reduce the risk of stump appendicitis. This includes making sure that no appendiceal stump larger than 3 mm is left behind and, when practical, taking into account innovative methods like stapling devices. Ongoing research is essential to refine these techniques and improve our understanding of the most effective strategies for prevention and treatment.Ultimately, this case reinforces the necessity of maintaining a high index of suspicion for stump appendicitis in patients with prior appendectomies and underscores the critical role of thorough imaging and tailored surgical interventions. By addressing these factors, we can enhance patient outcomes, prevent complications, and advance the field of postoperative care.

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