

# Stump Appendicitis due to Retained Fecalith after Laparoscopic Surgery

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## Abstract

Stump appendicitis is a rare cause of right iliac fossa pain in patients with a previous history of appendectomy for acute appendicitis. The presentation is often delayed and may pose a clinical diagnostic challenge to the surgeon. More often, a high index of suspicion backed with relevant radiologic investigations is required for diagnosis. Open and laparoscopic appendectomy may be complicated by stump appendicitis. We report our experience in a 49-year-old Nigerian who presented to us with recurrent right iliac fossa pain and abdominal distension of 2 weeks' duration. The patient had laparoscopic appendectomy 1 year prior to presentation to us. A diagnosis of stump appendicitis with small-bowel obstruction was made with an abdominal computed tomography scan. He had an open stump appendectomy and small-bowel adhesiolysis with a good postoperative outcome.

**Keywords:** Appendicitis, fecalith, intestinal obstruction, stump

## INTRODUCTION

Acute appendicitis is a leading cause of acute abdomen requiring surgical intervention worldwide. Mechanical obstruction of the appendiceal lumen due to fecalith is a well-documented cause of appendicitis as reported in literature. Laparoscopic appendectomy is becoming the favored option over the traditional open appendectomy due to its inherent advantages.<sup>1</sup> Rarely, residual appendix stump after surgery may contain a trapped mass of fecalith which may subsequently cause inflammation and perforation.

Stump appendicitis has been defined as an inflammation of the remnant of Vermiform appendix after a surgical appendectomy. However, the entity "stump appendicitis" was first described and reported in 1945 by Rose in Australia. He reported stump appendicitis in two patients who had surgery for acute appendicitis and later presented with appendiceal abscess.<sup>2</sup>

In recent times, there were sporadic reports on stump appendicitis following traditional open and laparoscopic appendectomies. Till date, stump appendicitis appears to have remained a rare clinical entity and may be considered an infrequent cause of recurrent iliac fossa pain following appendectomy.

We report our experience in a 49-year-old Nigerian diagnosed with stump appendicitis and small bowel obstruction on abdominal computed tomography (CT) scan. The patient had presented to us with recurrent abdominal pain 12 months after having laparoscopic appendectomy. This is the first case of stump appendicitis after laparoscopic surgery to be reported in our environment.

## CASE REPORT

A 49-year-old male presented to us with recurrent right iliac fossa pain and abdominal distension of 2 weeks' duration. He admitted to moving bowel and had no history of vomiting or fever. There were no other symptoms.

He had laparoscopic appendectomy for acute suppurative appendicitis 1 year prior to his presentation to us. The patient was admitted and managed conservatively for adhesive small-bowel obstruction 3 months after laparoscopic appendectomy with full resolution of symptoms.

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Clinical examination revealed a respiratory rate of 16 cycles/min vesicular breath sounds and a pulse rate of 88 beats/min, with normal volume. Blood pressure was 127/79 mmHg. The abdomen was full and moved with respiration. There were tenderness and rebound tenderness in the suprapubic and right iliac fossa areas. Bowel sounds were normoactive.

Full blood count (FBC) showed leukocytosis (16,500/mm<sup>3</sup>) and neutrophilia (88%). Other FBC parameters and his serum electrolytes were within normal range.

Abdominal CT at presentation [Figure 1] showed inflamed, thick-walled appendiceal stump containing a calcific density mass. There were surrounding fat stranding, inflammatory thickening of sigmoid, and dilated ileal loops.

A clinical diagnosis of stump appendicitis to exclude mucocele and mitotic lesion of the appendix was made. The patient was then prepared for an exploratory laparotomy. The abdomen was accessed via a midline incision. Intraoperative findings

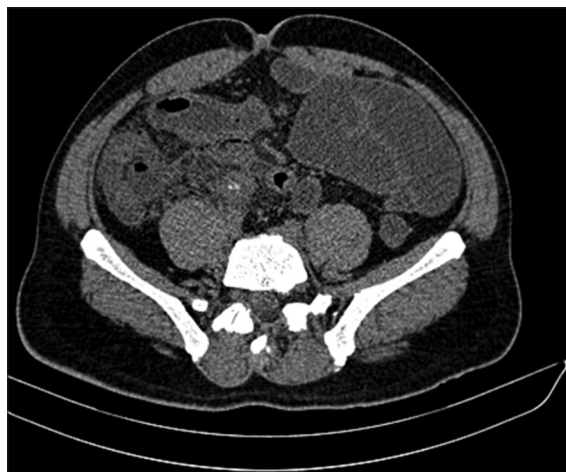
were as follows: dilated small-bowel loops; inflamed, tense, bulbous appendix; and adherent greater omentum [Figure 2].

Completion appendectomy, adhesiolysis, and peritoneal lavage were done at surgery. The excised appendiceal stump was found to contain a ball of fecalith [Figures 2-4].

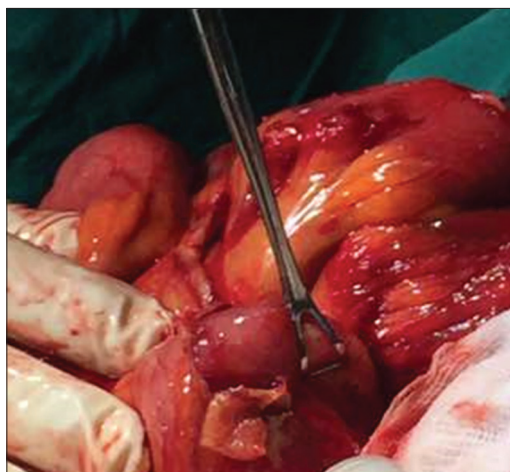
His postoperative recovery was uneventful, and he was discharged home at 4 days after surgery. Histology of the excised appendiceal stump confirmed acute appendicitis.

## DISCUSSION

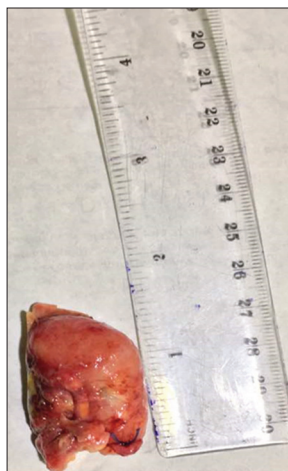
The relative rarity of stump appendicitis may explain why it is not commonly listed as a differential diagnosis of right iliac fossa pain in adults. In surgical practice, having a patient present with a recurrent right iliac fossa pain weeks to years after an apparently successful appendectomy may pose a clinical diagnostic challenge. A diagnosis of “appendicitis” or “recurrent appendicitis” under such a scenario only comes to mind when other possible differential diagnoses have



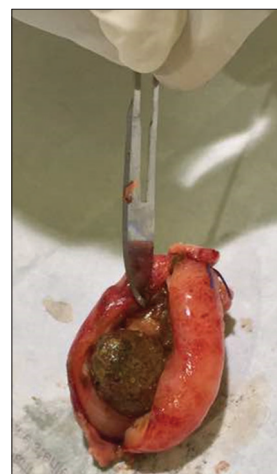
**Figure 1:** Abdominal computed tomography showing a thick-walled, inflamed appendix with calcified fecalith, edema of the cecum, and dilated ileal loops



**Figure 2:** Intraoperative photograph showing stump appendicitis and adjacent inflamed bowel loops



**Figure 3:** The appendix stump



**Figure 4:** Longitudinal section of the appendiceal stump showing a thick, smooth-walled appendix stump and retained fecalith

been excluded. Occasionally, a coexisting right-sided pelvic pathology may add to the diagnostic confusion.

The true incidence of stump appendicitis following appendectomy is unknown, but has been estimated to be 0.15% in a study of 3130 appendectomies.<sup>3</sup> In recent times, the incidence of stump appendicitis appears to be increasing.<sup>4</sup> This may be attributed to the increased reporting of cases. However, some recent meta-analyses suggest that <200 reported cases exist in literature.<sup>3,5</sup>

A number of reports on stump appendicitis in adult and pediatric age groups have been published in literature. As reported, in most series, the time interval between surgery and the clinical presentation of stump appendicitis varies from months to several decades.<sup>5,6</sup> Possible risk factors for stump appendicitis include long appendiceal stump (>5 mm) and retained fecalith and difficult appendectomies (peri-appendiceal adhesions and appendiceal mass) which preclude proper identification of the junction of the appendix with the cecum. Currently, there is a paucity of evidence to suggest that laparoscopic surgery increases the risk of future stump appendicitis compared to the traditional open appendectomy. In fact, most cases of stump appendicitis that have been reported were from the open procedures.<sup>5</sup> Similarly, simple stump ligation or invagination has not been shown to increase the risk of developing stump appendicitis.<sup>6</sup> In our patient, we found an impacted hard fecalith inside a thick-walled, inflamed appendix stump [Figure 3]. There were peri-appendiceal flimsy inflammatory exudates which caused terminal ileal obstruction. Other complications of stump appendicitis such as perforation and abscess formation were absent in our patient.

Diagnosing stump appendicitis on clinical grounds is difficult. Even though in uncomplicated cases, the symptoms and signs of stump appendicitis are similar to those of acute appendicitis,<sup>7</sup> often times, an abdominal CT scan is required to make a definitive diagnosis.<sup>8</sup> Our patient had initially presented with features of adhesive bowel obstruction 3 months after his laparoscopic appendectomy. A plain abdominal X-ray done at that time revealed multiple air–fluid levels and dilated small-bowel loops. He was managed conservatively with resolution of obstructive gastrointestinal symptoms within 24 h. However, about 8 months later, he presented with recurrent symptoms. A definitive diagnosis of stump appendicitis with small-bowel obstruction was then made with an abdominal CT scan.

Treatment of stump appendicitis is completion appendectomy. Both open and laparoscopic modalities have been employed in the treatment of stump appendicitis. Contraindications to laparoscopic procedures include obstruction, perforation, and abscess formation. The patient under discussion presented with stump appendicitis complicated by small-bowel obstruction. He had small-bowel adhesiolysis and completion appendectomy with an excellent outcome.

Measures to minimize stump appendicitis following appendectomy have been proposed in a review by some researchers.<sup>9</sup> These include a deliberate identification of cecal-appendiceal junction prior to the application of ligating

sutures or clips, separation of adherent retrocecal appendix to the base before ligation, and leaving a maximum of 3 mm length of the appendiceal stump. The issue of appendiceal stump inversion at surgery is controversial.<sup>10</sup> In our practice, we do not routinely bury the appendiceal stump. However, in addition to the aforementioned prophylactic measures, we are of the opinion that attention should be paid to the appendiceal stump at appendectomy and any trapped fecalith should be milked out with forceps after appendiceal stump ligation. This practice may help minimize the incidence of postoperative peri-appendiceal abscess and stump appendicitis.

## CONCLUSION

Stump appendicitis should be suspected in any patient with a previous scar from appendectomy presenting with recurrent right iliac fossa pain. In complicated cases, there may be accompanying features of perforation and adhesive intestinal obstruction. The use of abdominal CT scan is invaluable in arriving at a definitive diagnosis. Treatment of stump appendicitis is completion appendectomy. Meticulous appendiceal stump management during surgery may assist in reducing the incidence of stump appendicitis.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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