



Stump Appendicitis - An Underreported Complication of Appendectomy?

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Keywords

Stump appendicitis; Completion appendectomy; Laparoscopic appendectomy

Introduction

Acute appendicitis is a common cause of acute abdomen and surgical emergencies and is managed by appendectomy. Stump appendicitis is rare after appendectomy with an incidence of 1:50,000 [1]. It can occur after month to years after open as well as laparoscopic appendectomy. Stump appendicitis can be a real diagnostic dilemma and subsequent management [1-3]. High index of suspicion is needed to diagnose stump appendicitis in appropriate clinical setting [4,5]. Delay in appropriate management may result in complications. Completion appendectomy either by laparoscopy or open method is the current standard of care [3-5]. More awareness of this clinical situation is needed [3-6].

We report a case of 21-years female with a history of the previous laparoscopic appendectomy 4 months back, who presented with symptoms of acute abdominal pain. The diagnosis was made clinically and confirmed by Computed Tomography Scan of the abdomen and she was managed by open completion appendectomy.

Case Report

A 21-years female medical student presented with sudden onset, dull aching pain in right lower quadrant of abdomen, severe in intensity and was non-radiating for two days. Bowel habit was normal. She had undergone laparoscopic appendectomy at her medical school four months back for similar complaints and had an uneventful recovery. On review of the operating details of that surgery, it was a difficult surgery with duration of 3.5 h.

Histopathology reported acute appendicitis with specimen size 2 cm.

On abdomen examination, there were port site scars of previous appendectomy. There was localized tenderness and guarding on palpation at right iliac fossa. There was no rebound tenderness. Total leukocyte and neutrophil count were well within normal range. Abdominal X-ray and urinalysis were also normal. On Ultrasound abdomen (USG), there was a focal bowel thickness (of 7 mm to 8 mm) in right iliac fossa, likely involving distal bowel loops with multiple lymph nodes. Subsequent Contrast Enhanced Computed Tomography (CECT) abdomen showed ill defined heterogeneous lesion measuring 5 cm × 4 cm in right iliac fossa medial to the caecum displacing the terminal ileum and ileocaecal junction anteriorly, which were splayed around it. Hypodense necrotic component was seen within it, with no air foci or calcification. There was surrounding fat stranding and thickening of retroperitoneal fascia with clumped up distal ileal loops (Figure 1). There was mild mural thickening of distal ileum. CECT reported possibility of stump appendicitis. However, appendicular stump could not be visualized.

Patient was taken up for open appendectomy given the diagnostic dilemma and large-sized dense phlegmonary mass which may pose challenges during laparoscopic dissection. Intraoperatively there was dense adhesion around the ileocecal region. A large omental wrapped abscess (5 cm × 5 cm) filled with purulent fluid (10 ml) was present posterior to the caecum. After adhesiolysis and lavage, the appendicular remnant was found, which was post ileal and retro caecal in location (Figure 2). Completion appendectomy was performed. There was no meckels diverticulum. Cut-section of the appendicular remnant had no fecolith.

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Figure 1: CECT.



Figure 2: Intra-operative Picture.

She made an uneventful recovery and was discharged on second postoperative day and is doing well in the follow up. Histopathology of the specimen showed acute appendicitis with confirmed the diagnosis of stump appendicitis.

Discussion

The treatment for acute appendicitis is surgery either laparoscopic or open [1]. Surgical site infection, intra-abdominal collection and bleeding are early complications of appendectomy. While late complications may be small bowel obstruction, incisional hernia and less commonly stump appendicitis [2-4]. Stump appendicitis is a rare clinical entity, with an incidence of about 1 per 50,000 appendectomies [2,3]. The exact incidence is not known. Stump appendicitis is due to the repeated inflammation of the residual appendiceal tissue after an appendectomy [2-5]. The remaining part of the appendix after surgery, act as a source of infection probably due to impaction of fecolith and poor blood supply. This will cause recurrent inflammation leading to stump appendicitis. Stump appendicitis can happen after open (63%) or laparoscopic appendectomy (37%) [4-6].

Various hypotheses have been put forward for this; including surgical and anatomical reasons. The main surgical reason is leaving behind a long stump of the appendix during surgery. Appendicular stump more than 0.5 cm is a risk factor for impaction of fecolith which may lead to stump appendicitis [2-5]. Most of the authors recommended that the appendicular stump must be shorter than 3 mm in length to minimize the risk. So every effort should be made to remove the appendix as close as possible to the caecum. Clear identification of the junction of the appendix and caecum is mandatory during appendectomy [5,6]. The length of the resected appendix specimen has also shown correlation to the development of subsequent stump appendicitis. The incidence decreases if the appendectomy specimen is longer than 6.5 cm [6,7].

Management of appendicular stump during appendectomy has

also come in to discussion. The appendiceal stump can be managed by simple ligation, ligation and inversion and inversion without ligation. But there is no difference in the incidence of stump appendicitis after these methods [6]. Recently, use of stapling devices at open or laparoscopic appendectomy; where the appendix can be stapled-off at its base leaving virtually no appendicular tissue could be considered as an option to prevent the development of stump appendicitis [5].

Another issue is the appendectomy during complicated appendicitis like appendicular abscess or phlegmon stage may increase the incidence of stump appendicitis. It may due to difficulty in delineating the appendicular-caecum junction during the primary surgery and leaving behind a long stump [6,7]. In fact patients presented with clinical symptoms mimicking acute appendicitis after appendectomy with a history of appendectomy for complicated appendicitis and appendectomy taking a prolong duration should raise a red flag as in our index case.

Rare anatomical cause may be duplication of appendix, subserosal appendix, retrocecal and post-ileal appendix, which may cause inappropriate identification of the appendicular-cecal junction during surgery [5-8]. Stump appendicitis is difficult to diagnose because of the previous history of appendectomy. A strong index of clinical suspicion is needed to diagnose it. Diagnosis can be aided by ultrasonography and more importantly CECT [9]. CECT can enable exquisite delineation of the anatomy including the length of the remnant. When stump appendicitis is diagnosed completion appendectomy is the treatment of choice, which may be done by open or laparoscopy methods. Identification of the appendix-cecal junction is crucial for successful management of the stump. Taenia coli should be traced till the base of the appendix or the recurrent branch of the appendicular artery should be traced to locate and ligate the stump. It may be difficult to locate the true appendicular base, in presence of local inflammation or in retro-caecal or sub-serosal appendix. Every attempt should be made to remove the base of the appendix which might require extensive surgery like right hemicolectomy or local ileocolic resection [10].

In conclusion, Stump appendicitis is a delayed but a serious complication of appendectomy. A high degree of clinical suspicion is needed for successful management of this condition. Completion appendectomy either by laparoscopy or open surgery is the treatment of choice.

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