Drain Appendicitis: A Bewildering Anecdote

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Abstract

Background & Aim: Appendicitis is one of the most common conditions seen by surgeons. It has many causes described in the literature with varied presentations and long list of differential diagnosis. We herein report our experience of a unique case of drain appendicitis in the postoperative period, its distinctive cause, mode of presentation and management.

Materials and Methods: This unique case of acute appendicitis was caused due to herniation of appendix in the abdominal drain. Its cause was unique, with distinctive presentation and management.

Results: Herniation of appendix in the drain via its side holes along with kinking and constriction of appendicular mesentery can pose unique set of problems and can present with acute abdomen in the postoperative period. It can rapidly cause downhill course of the patient if not diagnosed correctly and at correct time. Appendectomy can be curative for such condition.

Conclusion: This paper presents a unique case scenario with bewildering presentation of acute appendicitis caused due to herniation of appendix into abdominal drain, diagnosis of which if delayed can catastrophic. The cause of this drain appendicitis is well defined, though its presentation and diagnosis can be challenging.

Keywords: Appendix; Appendicitis; Acute appendicitis; Postoperative appendicitis

Introduction

Appendicitis is one of the most common conditions seen by surgeons. It is also the most common urgent or emergent general surgical operation performed by surgeons worldwide and is usually the first major surgery performed by the surgeons in training. Though a lot is known about its etiology, pathogenesis, diagnosis and treatment; but still surgeons are frequently challenged and often handicapped by such an entity due to its varied presentation.

Material and Methods

A 42 years old patient presented with features suggestive of acute dynamic complete small bowel obstruction. Contrast enhanced CT scan suggested ileal obstruction for which the patient underwent small bowel resection anastomosis along with peritoneal drain kept in pelvis from the left side of abdomen. Though the patient made a good initial recovery, however on postoperative day 5 there was distention of abdomen with non passage of faeces or flatus. Drain output was also insignificant with only 10 ml to 15 ml of sero-sanguineous fluid over 24 hrs. Oral contrast CT scan was suggestive of minimal free fluid and minimal passage of contrast distally into large bowel on delayed scan. Conservative trial was continued for few more days; however on postoperative day 9 patient starting having spikes of fever along with leukocytosis, there was still non movement of bowels and abdominal distention with nothing significant in the drain. Failure of recovery made us to re-explore the patient suspecting a small enteric leak (probably at anastomotic site) or a new perforation and collection. On re-exploration, the small and large intestines were normal with no spill of enteric contents. However, we found that appendix itself had herniated into one of the side holes of the abdominal drain, which then kept on herniating more proximally in the drain. The tip of the appendix had herniated form one of the distal side hole of the drain and then herniated out of another side hole in the abdominal drain more proximally to the previous one. This herniation and angulations of appendix into the drain along with extrinsic compression on the appendicular artery by the lumen of the hole in drain caused the appendix to get inflamed and present with acute appendicitis with appendix wall seen bulging out of the side holes of the drain. The patient underwent appendectomy and then made a smooth postoperative recovery.
Though there was leukocytosis with fever, we suspected a minor leak from the anastomosis or a new perforation and collection to be the cause. Drain was not draining anything as the lumen of the same was blocked by the herniating appendix. Moreover, we were lucky that we did not pull out the drain thinking that it is not draining anything.

This being the first such case of what we can call as Drain Appendicitis or Singh’s Appendicitis is a new addition to the cause of appendicitis in postoperative period where the cause of acute appendicitis is herniation of appendix into the abdominal drain. The difficulty to diagnose acute appendicitis in the postoperative period is challenging. This cause of Drain Appendicitis or Singh’s Appendicitis is a cause peculiar to postoperative cases and should be kept in mind if a patient is not responding to conservative management after initial surgery.

**Result and Discussion**

Appendicitis is one of the most common conditions seen by surgeons. It is also the most common urgent or emergent general surgical operation performed by surgeons worldwide and is usually the first major surgery performed by the surgeons in training [1]. It affects 7% of general population in their life time, with the peak incidence in second decade of life [2]. However, there is no reported data on drain appendicitis as elucidated here. Despite its high prevalence, its diagnosis is challenging and requires a high index of suspicion on the part of the surgeon. Appendicitis must be considered in every patient presenting with acute abdomen who has not had an appendectomy [3]. The same holds true even in the postoperative condition as many clinical features are masked in this group of patients. The tip of appendix may have variable locations, most common being retrocecal (intraperitoneal) in 60%, pelvic in 30%, and retroperitoneal in 7% to 10%. This variable position account variable clinical presentation, as the tip of the appendix causes localized peritonitis. However, in the current case with acute appendicitis in the postoperative period the pain of incision, drain and other features may mask this localization making it non reliable. Acute appendicitis usually presents with “classical presentation” of vague periumbilical pain which later migrates to right iliac fossa, anorexia, nausea with or without vomiting, and either diarrhea or constipation. This migratory pain is a reliable symptom of appendicitis [3,4]. However, in postoperative cases all these signs and symptoms become non reliable as the patient may be having pain of surgery, nausea and /or vomiting due to drugs, or the pain may even be masked due to analgesics in the postoperative period. Similarly, constipation may well be due to ileus in the early postoperative period making all these finding no reliable. Patients with acute appendicitis typically appear ill; lying still in bed due to localized peritonitis, have tachycardia and mild dehydration and fever. Absence of fever does not exclude a diagnosis of appendicitis [1,3,4]. Localized peritonitis with tenderness, guardning, and rebound tenderness especially at Mc Burney point is present in classical presentation. Diffuse peritonitis or rigidity suggests perforation [1,4]. However, in patients presenting with appendicitis in the postoperative period, all these features are non reliable due to combination of various factors like clinical condition of patient and medications. Similarly, localized tenderness may well be due to surgical incision related or drain site related pain. In acute appendicitis, the golden rule about making a diagnosis of appendicitis is that it is usually the clinical picture along with the whole supportive laboratory tests that clinches the diagnosis as no single sign or symptom or laboratory test is reliable to make a diagnosis [1,5]. Leukocytosis with “left shift” is seen in 90% but a normal white blood cell count is present in 10% [5]. Plain X-ray of abdomen, though often done in patient presenting with acute abdomen, is seldom reliable; a calcified fecalith in the right iliac fossa is seen in only 5% [6]. CT scan is the most common imaging study used and has a sensitivity of 90% to 100%, specificity of 91% to 99%, positive predictive value of 92% to 98%, and negative predictive value of 95% to 100%. CT shows thick, inflamed appendix of more than 7 mm diameter with mural enhancement (“target sign”) with peri appendiceal “stranding” and fluid [6,7]. Ultrasound (USG) sensitivity is 78% to 83%; specificity is 83% to 93%. The inflamed appendix typically appears as enlarged, immobile, non compressible tubular structure in right iliac fossa. It is especially useful in cases where radiation is avoided like pediatric and pregnant patients. However, in the postoperative cases like this one all the laboratory and imaging finding are unreliable. Therefore, the golden rule of making a diagnosis of acute appendicitis as always should be kept in mind in this clinical presentation also, that is, any patient in whom appendix has not been removed, and who presents with acute abdomen should be suspected to have acute appendicitis (Figure).

**References**