CASE REPORT

Stump appendicitis: a relatively under-reported reality

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SUMMARY

Stump appendicitis (SA) is a rare and under-reported complication of open as well as laparoscopic appendectomy. Diagnosis of SA is often delayed and requires a high index of suspicion in those presenting with signs and symptoms of appendicitis and a history of appendectomy. We presented a case of SA in a 20-year-old man with a history of open appendectomy. He was managed conservatively using intravenous antibiotics. The risk of SA is influenced by surgical technique; however, it is unclear whether the incidence is higher with laparoscopic or open procedures. There is little evidence guiding the management of SA with the majority of reported cases treated operatively. This diagnosis should be suspected on the basis of history and examination and CT scanning is a useful tool in most adult cases aiding diagnosis. Management may be guided by the progression of the patient's symptoms either towards operative intervention or a conservative approach.

BACKGROUND

Appendicitis is the most common intra-abdominal surgical emergency with a lifetime risk of 6% and appendectomy is the second most common general surgical procedure in the developed world after laparoscopic cholecystectomy.¹ In 1945, Rose² was the first to describe stump appendicitis (SA) in patients who had previously undergone an appendectomy for appendicitis. Currently, only 48 cases of SA are reported in the English medical literature.³ SA is a difficult condition to diagnose clinically; however, modern radiology has made it a more easily recognisable condition due to relatively frequent use of CT scanning in patients with acute abdominal pain. The diagnosis is usually delayed and needs a high index of suspicion in cases presenting with typical features of appendicitis with a history of appendectomy either open or laparoscopic. We reported a case of SA in a 21-year-old man who had an open appendectomy 10 years earlier.

CASE PRESENTATION

The patient presented to accident and emergency department with a 4-day history of constant right lower quadrant pain with associated nausea and vomiting. There was a history of open appendectomy 10 years earlier. He denied any diarrhoea, rectal bleeding or a family history of inflammatory bowel disease and was found to have a temperature of 37.6°C. Abdominal examination revealed tenderness in the right iliac fossa with rebound tenderness and voluntary guarding. There was a scar of previous open appendectomy operation in right iliac

Figure 1 Calcified appendicolith in residual stump.

fossa. Per rectal examination revealed palpably normal mucosa and no tenderness.

INVESTIGATIONS

Routine full blood count on admission showed elevated white cell count 13.1 g/dL and C reactive protein 50 mg/L. The abdominal and chest radiographs showed no abnormality. Routine urine analysis was also unremarkable.

After 12 h his symptoms persisted despite adequate analgesia and CT of the abdomen and pelvis with contrast was performed which revealed area of high attenuation in right iliac fossa consistent with calcified appendicolith in the residual appendix stump (figure 1), adjacent reactive periappendiceal lymph nodes were noted (figure 2) with inflammatory stranding below the residual stump (figure 3). There was no free fluid, gas or collection and the terminal ileum was normal. The remainder of the abdominal organs appeared normal.

Figure 2 Reactive periappendiceal lymphadenopathy.

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Figure 3 Inflammatory stranding below the appendicular stump.

DIFFERENTIAL DIAGNOSIS

- ▶ Stump appendicitis
- ▶ Meckel's diverticulitis
- ▶ Crohn's terminal ileitis
- ▶ Ureteric colic (right)
- ▶ Caecal diverticulitis
- ▶ Acute cholecystitis

TREATMENT

The patient was admitted for observation and was kept nil by mouth overnight by the admitting emergency team. The patient was started on broad spectrum intravenous antibiotics according to the hospital policy and intravenous fluids and analgesia were administered.

OUTCOME AND FOLLOW-UP

After 24 h the patient's symptoms started to gradually improve and within 48 h he was completely asymptomatic. He was discharged home with a further 5 days course of oral antibiotics and advised to return to hospital in case of symptoms recurrence. Outpatient CT of the abdomen and pelvis and outpatient clinical review at 6 weeks was undertaken and revealed complete resolution of the aforementioned radiological findings.

DISCUSSION

The incidence of SA is approximately 1 in 50 000⁴ although the true incidence is probably higher.⁵ SA is an uncommon cause of acute abdominal pain, often mimicking other acute abdominal conditions and most patients present with right lower quadrant pain, nausea, vomiting, fever, right lower quadrant tenderness, rebound and muscular guarding.⁶

At the beginning of the millennium, there was an increase in the number of cases of SA reported a phenomenon that was temporally associated with the increasing adoption of laparoscopic appendectomy.⁴ There was a concern that laparoscopic appendectomy may be a risk factor for SA as the laparoscopic approach lacks three-dimensional perspective and tactile feedback;⁷ however, the current literature does not seem to support this theory as most SA cases reported follow open appendectomy (68% according to a recent review).³ However, as, laparoscopic appendectomy is a relatively newer technique, it is not entirely clear whether it may be a risk factor for stump appendicitis.

The causes of SA include insufficient inversion of the stump, long proximal remnant of the appendix, incomplete removal of the distal remnant and partial laparoscopic or open

appendectomy.^{4 8 9} Rao *et al*¹⁰ reported that all cases reported in literature undergo simple ligation of the appendix without invagination of the appendix stump, suggesting that simple ligation with failure to amputate the appendix close to its origin from the caecum is a prerequisite for developing stump appendicitis. However, Mangi and Berger⁴ reviewed 2185 cases of appendectomy and found no correlation between simple ligation of the appendix and stump appendicitis. Previously, it has been recommended that stump more than 5 mm can be a reservoir for fecolith¹¹ hence regardless of the technique used to close the appendix stump it should be performed at the true base of the appendix in all cases.

The majority of cases of SA reported in literature were treated with exploratory laparotomy or diagnostic laparoscopy and excision of residual stump or limited ileocecal resection. In contrast, our patient's symptoms resolved following 24 h of antibiotics use hence operative intervention was not undertaken. If the patient's symptoms had not improved with antibiotic treatment then a laparoscopy±laparotomy with excision of the residual appendix stump or limited caecal resection would be performed.

Learning points

- ▶ Stump appendicitis (SA) is an uncommon condition and usually presents with signs and symptoms pointing to a diagnosis of acute appendicitis. It may mimic other acute abdominal conditions such as acute cholecystitis infrequently.
- ▶ A clinician should have a high index of suspicion if there is a history of previous appendectomy either open or laparoscopic while signs and symptoms favouring a diagnosis of acute appendicitis.
- ▶ CT scan should be the investigation of choice in adults. Ultrasonography can be an alternative in younger adults and children.
- ▶ SA can be treated conservatively with antibiotics and may be a preferred option.

Competing interests None.

Patient consent Obtained.

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