

CASE REPORT

Recurrent right iliac fossa pain in patients with previous appendicectomy

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SUMMARY

Recurrent appendicitis can occur up to 40 years after appendicectomy. A history of appendicectomy has often led to late diagnosis, as sepsis is attributed to other organs, usually the urinary tract. A case of a patient presenting with retained faecolith and recurrent/stump appendicitis 2 years after laparoscopic appendicectomy is presented. The case for having a low threshold for early CT scanning in patients post-appendicectomy presenting with sepsis to prevent delay in diagnosis is made, and this case is a useful reminder for surgeons to dissect as far as possible to the appendix base. The literature including important medicolegal cases is reviewed.

BACKGROUND

Stump appendicitis is a rare entity. A 2011 review of the literature found only 40 reported cases of stump appendicitis in the English medical literature.¹ The first documented case was reported in 1945.² Stump appendicitis usually presents with symptoms and examination findings similar to appendicitis, with or without signs of abscess formation or perforation. The Society of American Gastrointestinal Endoscopic Surgeons (SAGES) Guidelines state that complication rates are comparable between open versus laparoscopic approaches in uncomplicated appendicitis, but they do not comment on rates of incomplete appendicectomy.³ There has been an increase in frequency of stump appendicitis alongside the rise of laparoscopic surgery.⁴ Its incidence may be reduced with accurate visualisation of the base of the appendix and creation of a stump smaller than 3 mm.⁴ No relationship has been identified between rates of stump appendicitis and simple ligation or inversion of the stump.⁴

Incorrect identification of the caecal/appendiceal junction increases the incidence of incomplete appendicectomy; this can be influenced by severe inflammation and a fear of caecal perforation affecting tissue handling. An appendix lying in a retrocaecal position also increases the incidence.¹ Treatment of stump appendicitis is by completion appendicectomy, which is usually performed open rather than laparoscopically.⁵ Average stump length at completion appendicectomy is 3.4 cm.¹

CASE PRESENTATION

A 63-year-old man presented to the emergency department with 3 weeks of lower abdominal pain, which had worsened over 24 h and migrated to the right iliac fossa, with associated anorexia. The pain felt 'similar to the pain from his appendix' he had experienced before undergoing laparoscopic



Figure 1 Laparoscopic visualisation of appendix at initial appendicectomy.

appendicectomy 2 years prior ([figure 1](#)), which, histologically, had proven appendicitis. On examination, he was haemodynamically stable but was febrile at 38°C. He was tender in the right iliac fossa with voluntary guarding.

INVESTIGATIONS

Urinalysis was negative, white cell count was $18 \times 10^9/L$ and C reactive protein 43 mg/L. Examination of the histology from previous appendicectomy showed an unperforated congested appendix 78×7 mm, with microscopic confirmation of transmural appendicitis. An initial diagnosis of pyelonephritis was made, and intravenously antibiotics and fluids were given, and blood cultures taken. A CT scan was requested due to the presence of guarding; this demonstrated a localised perforation with a densely calcified 12 mm opacity in the right iliac fossa and possible stump appendicitis ([figure 2](#)).



Figure 2 The patient's CT scan, demonstrating an appendicolith.



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TREATMENT

At operation, the remaining appendix was removed and the patient made an uneventful recovery, with confirmation of inflamed residual appendix tissue on histology.

DISCUSSION

Incomplete appendectomy can cause recurrent presentation of right iliac fossa pain through various aetiologies including stump appendicitis, presence of a duplicate appendix,⁶ or failure to resect the appendix at initial operation (due to misidentification of the appendix, and inadvertent resection of ovarian tissue, fallopian tube or fat). Any of these can have significant medicolegal ramifications—in May 2013, a patient was awarded US\$1 359 548 in a case of stump appendicitis following incomplete appendectomy.⁷ While to the authors it is difficult to determine that the payout made was justifiable, and while this highlights incomplete resection is not the standard of care, it is not certain that such a verdict would be reached in the UK. While incomplete resection could form part of the consent form for laparoscopic appendectomy, this is not ideal; however, it may be merited in patients with significant comorbidities where the surgeon is keen not to convert to an open operation and it is difficult to completely determine where the base is. Furthermore, it is recommended that surgeons take a photo of the transected appendix base where possible during laparoscopic appendectomy as this can provide valuable evidence at a later date.

There is no comprehensive literature following up long-term complications of incomplete appendectomy, and there are no documented cases of malignant change within a residual appendix stump—although one study documented the presence of mucinous cystadenoma leading to a mucocoele.⁸ Laparoscopic identification and removal of a faecolith may help guarantee complete appendectomy, however, not all inflamed appendices will have a faecolith. It should also be noted that in the event of incomplete appendectomy and a following ‘grumbling’ appendicitis, a faecolith may develop subsequent to the primary procedure.

Incomplete appendectomy should, as such, remain in the back of the physician’s mind when confronted with a patient presenting with right iliac fossa pain and previous appendectomy, along with other relevant differential diagnoses including intra-abdominal collection, caecal/ovarian malignancy or diverticulitis—all frequently identifiable at CT. Cases of incomplete appendectomy may be diagnosed late as a failure to consider it a plausible diagnosis and may increase the morbidity associated through perforation/abscess formation.

It has previously been demonstrated that CT is more useful than ultrasound scan (USS) for preoperative diagnosis of stump appendicitis,⁹ we recommend that physicians should have a low threshold for CT scanning due to its high sensitivity and specificity, and ability to aid prompt, accurate diagnosis. The role of diagnostic laparoscopy is also valid when investigating recurrent right iliac fossa pain in establishing a specific diagnosis, but there is often reluctance to choose this option in a patient who

has already undergone surgery. This reluctance is both on the part of the surgeon and, not infrequently, the patient, in the absence of a clear therapeutic benefit for surgery.

It should also be noted that CT scanning is better than USS when looking for an *initial* presentation of appendicitis, while USS is usually a better modality for identifying ovarian pathology. However, hospital policy often varies regarding CT versus USS and the clinical picture and/or most likely differential should be considered when making this decision.

We feel that positive predictors in this patient group (and thus indicators to consider early CT) include the ‘typical’ migratory presentation of appendicitis, which the patient may even be familiar with from the previous episode, and the presence of sepsis. Timing of the episode may not be a positive predictor; cases have been documented from between a few months to >50 years after the initial operation. However, this should remind physicians that time elapsed does not rule out this rare but highly significant diagnosis.

Learning points

- ▶ Consider early CT scanning in adult patients with recurrent right iliac fossa pain and a history of appendectomy.
- ▶ ‘Positive predictors’ could include the typical ‘migratory’ pain of appendicitis, and presence of sepsis.
- ▶ Do not exclude stump appendicitis from differential diagnosis on the basis of time since operation.

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REFERENCES

- 1 Roberts KE, Starker LF, Duffy AJ, *et al.* Stump appendicitis: a surgeon’s dilemma. *JLS* 2011;15:373–8.
- 2 Rose TF. Recurrent appendiceal abscess. *Med J Aust* 1945;32:652–9.
- 3 Korndorffer JR Jr, Haggerty S, Stefanidis D, *et al.* *Society of American Gastrointestinal and Endoscopic Surgeons*. Los Angeles: SAGES publication #5 printed Oct 1992, revised Apr 2009. Cited 1 Oct 2014. <http://www.sages.org/publications/guidelines/guidelines-for-laparoscopicappendectomy/>
- 4 Mangi AA, Berger DL. Stump appendicitis. *Am Surg* 2000;66:739–41.
- 5 Liang MK, Lo HG, Marks JL. Stump appendicitis: a comprehensive review of literature. *Am Surg* 2006;72:162–6.
- 6 Heetun M, Stavrinides V, Keeler B, *et al.* A tale of two appendices—an unexpected finding. *J Surg Case Rep* 2012;2012:5.
- 7 Verdictsearch [Internet]. Cited 1 Oct 2014. <http://verdictsearch.com/verdict/incomplete-appendectomy-led-to-infection-patient-claimed/>
- 8 Johnson MA, Jyotibas D, Ravichandran P, *et al.* Retention mucocoele of distal viable remnant tip of appendix: an unusually rare late surgical complication following incomplete appendectomy. *World J Gastroenterol* 2006;12:489–92.
- 9 Shin LK, Halpern D, Weston SR, *et al.* Prospective CT diagnosis of stump appendicitis. *Am J Roentgenol* 2005;184:S62–4.

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