Appendiceal faecaliths are associated with right iliac fossa pain

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ABSTRACT

INTRODUCTION There is debate over whether a normal-looking appendix should be removed at diagnostic laparoscopy performed for right iliac fossa (RIF) pain. Faecaliths are associated with appendicitis. This study assessed whether there was an association between the removal of normal appendices containing faecaliths and improvement of symptoms.

PATIENTS AND METHODS Analysis of the histology database for all appendicectomies during 2003–2007 with normal histology, noting presence of a faecalith. Retrospective study using a telephone questionnaire for frequency/duration of pre-operative symptoms, postoperative symptom recurrence, re-admission rates and complications. The faecalith-positive (f+) group was compared to a similar control group of patients who had a normal appendix removed which did not contain a faecalith (f-).

RESULTS Out of 203 appendicectomies performed with normal histology, 26 (13%) were f+. Of these, 21 responded to the questionnaire. Thirty-one consecutive patients with normal histology and no faecalith were identified. A similar proportion in each group presented with three or more episodes of pain prior to appendicectomy (38% f+; 39% control). Only one (5%) of the f+ patients had recurring symptoms after the operation, compared with 14 (48%) of the control group ($P = 0.0016$). Only one (5%) of the f+ patients underwent further investigations, compared with 11 (36%) of the control group ($P < 0.02$). None of the f+ patients were re-admitted, compared to 19% of the control population. There were no significant postoperative complications in either group.

CONCLUSIONS Appendiceal faecaliths may be a cause of right iliac fossa pain in the absence of obvious appendiceal inflammation. In this study, the policy of routine removal of a normal-looking appendix at laparoscopy in the absence of any other obvious pathology appeared to be an effective treatment for recurrent symptoms in those cases with a faecalith. Further studies are needed to assess this putative association.

KEYWORDS

Appendicitis – Faecalith – Appendicolith

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There has been much debate in the literature as to whether a normal appendix should or should not be removed at diagnostic laparoscopy. On the one hand, it has been argued that a normal appendix should be removed as it may contain endoluminal inflammation, only apparent on histology.¹ Removal of the appendix ensures that future presentations of right iliac fossa pain are not due to appendicitis. On the other hand, it has been argued that removal of a normal-looking appendix constitutes unnecessary surgery and risks complications such as stump leakage and is, therefore, not justified.^{2,3}

We examined the role of the appendiceal faecalith as a possible cause of abdominal pain in people with histologically normal appendices. We hypothesise that faecaliths may cause intermittent abdominal symptoms by causing temporary luminal obstruction; this is relieved when the

distal luminal pressure in the appendix becomes sufficient to expel the faecalith. Repeated cycles of obstruction–expulsion would thus cause recurrent abdominal symptoms, which would never amount to convincing appendicitis but cause repeated admissions and investigations. Thus removal of a normal appendix containing a faecalith would lead to resolution of symptoms.

Patients and Methods

The Hinchingsbrooke Hospital histology database from 2003–2007 was searched for the keyword ‘appendix’. Each individual pathology report was then analysed for its findings and a note made of all those that were histological normal and which did and did not contain a faecalith. We retrospectively studied the group of patients that had normal

Table 1 Characteristics of patients with and without appendiceal faecaliths

	Faecalith (<i>n</i> = 21)	No faecalith (<i>n</i> = 31)	<i>P</i> -value
Migratory pain	7 (33%)	9 (29%)	NS
Recurrent postoperative pain (same pain)	1 (5%)	14 (48%)	0.0016
Referred to other specialty	1 (5%)	5 (16%)	NS
Further investigations	1 (5%)	11 (36%)	0.0166
Re-admitted	0	6 (19%)	NS
Postoperative complications	0	0	NS

NS, not significant.

histology but contained a faecalith (f⁺) using a telephone questionnaire, looking at pre-operative symptoms, postoperative symptoms, recurrence of the pain, re-admission rates, further investigations and postoperative complications. For those who had recurrent pain, we asked whether this was the same pain as they had prior to the operation, or whether it was a different sort of pain. We compared this group to a control group of patients with normal appendices but no faecalith (f⁻). This control group was derived from the first 31 patients at the beginning of the database who had a normal appendix, no faecalith and responded to the questionnaire. Statistical significance was obtained using Fisher's exact test.

Results

Database analysis showed the proportion of normal appendices to the total number of appendices removed was consistent at approximately 30% (range, 28–31%). Of a total of 203 normal appendices, 26 (13%) were found on histology to contain faecaliths. Of the 26 (f⁺ group), 21 responded to the questionnaire and these were compared with the f⁻ group (Table 1). The duration of follow-up (time between operation and questionnaire) was 3 months to 5 years in the faecalith group, and 2 months to 2 years in the non-faecalith group. A similar proportion reported presenting with pain

that started centrally but then 'moved' to the right hand side (33% f⁺; 29% f⁻), or with right iliac fossa pain alone (86% f⁺; 79% f⁻). There was little in the presenting history to distinguish between the two groups (Table 2). In both groups, the total number of times patients had experienced the pain before varied from once, to daily for several months, or intermittently for several years. Similarly, the total duration of symptoms prior to operation varied from hours to weeks, months or years. However, there was marked differences in symptoms postoperatively. Only one (5%) of the f⁺ group had recurrence of the same pain after the operation and underwent an ultrasound scan. None were referred to another specialty. No other diagnosis was obtained and the pain then settled spontaneously.

This compared with 16 (52%) of the f⁻ group who said they had recurrent pain after the operation, 14 (48%) of whom said that this was the same pain as before the operation. Of these 14 patients, five said although the pain was the same, it was milder than before the operation. Eleven (36%) of the f⁻ group were referred to another specialty, and underwent further investigation. Overall, the relative risk of recurrence of the same pain following surgery for those without a faecalith compared with the control group, was 9.48.

None of the f⁺ group were re-admitted, compared with six of the f⁻ group, one of whom was re-admitted six times

Table 2 Pre-operative symptom characteristics

	Faecalith	No faecalith
Pain once (<i>n</i>)	11	16
Pain several times (<i>n</i>)	8	11
Pain all the time (<i>n</i>)	2	4
Duration from first symptom to operation (median)	14 days (range, 1 day to 2 years)	10 days (range, 1 day to 9 years)

and underwent a variety of investigations (CT, barium swallow and ultrasound) with no other diagnosis being made. There were no postoperative complications in either group.

Discussion

There have been few studies looking at the role of appendicoliths in adults presenting with right iliac fossa pain. Studies in children have suggested that those presenting with symptoms of appendicitis and treated conservatively, are more likely to have recurrent symptoms and to require appendectomy.⁴ Similarly, removal of a non-inflamed appendix relieved symptoms in 98% of children with chronic right iliac fossa pain, with 26% of these appendices containing faecaliths, and only 14% being histologically entirely normal.⁵ Other findings on histology in the non-inflamed appendix included enterobius, lymphoid hyperplasia and fibrosis.

Another paediatric study found that, when appendices were removed for right iliac fossa symptoms, the incidence of faecalith was similar in normal and uncomplicated appendicitis, but higher in perforated appendices. However, similar to our study, all patients with a faecalith in a normal appendix presented with acute abdominal pain mimicking appendicitis. The frequency of faecaliths in non-inflamed appendices removed for suspicion of appendicitis was greater than expected from published autopsy data.⁶

A study in adults which looked at the removal of the appendix in 11 patients with cramping recurrent right iliac fossa pain found that four of these contained faecaliths. At follow-up (which ranged from 2 weeks to 20 years), all but one were symptom-free.⁷ A similar study looking at CT findings in a series of adults with chronic right lower quadrant pain found this was associated with a faecalith and appendiceal wall thickening. There was an absence of fever, peritoneal tenderness or leukocytosis.⁸ These studies appear to agree with our findings that faecaliths in a normal appendix may be symptomatic and removal of such may relieve the symptoms.

Other published literature shows that 7–18% of histologically normal appendices contain faecaliths when removed for symptoms and signs of clinical appendicitis. This is more frequent than for appendices removed for other reasons (2%) as part of a procedure such as colectomy for inflammatory bowel disease or colonic neoplasm, again suggesting that they may be associated with symptoms and signs of appendicitis. These studies also show that faecaliths are associated with complicated appendicitis, being present in an estimated 42% of appendiceal abscesses, 18% of perforated appendicitis and 39% of acutely inflamed appendices.^{9,10} Furthermore, faecaliths are associated with earlier and higher rates of perforation in children.¹¹ In addition, there is some evidence that the

presence of an appendiceal faecalith may increase the risk of subsequent appendicitis.¹²

Although it is not our policy to perform imaging in cases of suspected appendicitis routinely, a recent systematic review looking at accuracy of imaging in detecting appendicitis showed CT scanning to have an overall sensitivity of 0.94 (CI, 0.91–0.95) and specificity of 0.95 (CI, 0.93–0.96). For ultrasound, the overall sensitivity was 0.86 (CI, 0.83–0.88) and specificity of 0.81 (CI, 0.78–0.84).¹³ However, both have a lower positive predictive value for appendicitis than a typical history or leukocytosis, and thus may delay diagnosis and treatment.¹⁴

Study limitations

Our study is limited in that it was a small and retrospective study. The questionnaire style meant that there may have been an element of re-call bias in the answers to the questions posed. This association between right iliac fossa pain and faecaliths does not prove causation. A prospective randomised controlled trial comparing patients with right iliac fossa pain and normal biochemical and haematological parameters who fail to improve with conservative management would be the next step in investigating this further.

Conclusions

This study suggests that appendiceal faecaliths may be associated with recurrent right iliac fossa pain. Routine removal of a normal-looking appendix during diagnostic laparoscopy will pick up the 10–15% that contain a faecalith. Such a policy would not only offer these patients a potential cure, preventing further unnecessary re-admissions and investigations, but would also for the same reasons yield an economic benefit. As faecaliths are also associated with complicated appendicitis, routine removal may prevent later admission with perforated or purulent appendicitis. Further studies are recommended in order to evaluate this putative association.

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