A mass in the right iliac fossa

A palpable mass in the right iliac fossa is a common clinical finding and is an important and interesting exercise in differential diagnosis. Naturally, effective treatment depends on elucidating the underlying pathology of the mass. As with so many clinical problems, this depends on taking an accurate history, performing a careful clinical examination and reinforcing one's clinical diagnosis with the appropriate laboratory and imaging investigations.

As with a mass in any other anatomical area, a wise plan is to consider the anatomical entities that may be found in that region and then the pathological conditions which may affect those structures. These are summarized in *Table 1*.

The appendix mass

The acutely inflamed appendix may resolve but, if it does, a further attack is very likely to occur. It is not uncommon for a patient, after the diseased appendix has been removed, to recall one or more similar but milder episodes of pain which were labelled 'food poisoning' or 'gastro-enteritis'. More often, the inflamed appendix, if not removed, undergoes gangrene and then perforates. In the majority of cases this results in general peritonitis. However, the patient may be fortunate in that a localized appendix abscess forms, in which the inflamed organ becomes walled off between the body wall and the adjacent viscera, most commonly the omentum. These possibilities are summarized in *Figure 1*.

The typical clinical picture is a young patient who presents with a history of 4, 5 or even more days of severe abdominal pain (which often may have commenced centrally then shifted to the right iliac fossa) who now has a localized tender mass in the right iliac fossa (*Figure 2*). The rest of the abdomen is soft, bowel sounds are present and there are no features of a general peritonitis. The patient is febrile. Immediate surgery in such cases is difficult and dangerous, and carries with it the risk of damage to adjacent adherent bowel loops.

Initial treatment is therefore conservative. The outline of the mass is marked out on the abdominal wall and its size, together with the temperature and pulse, carefully monitored. Fluids are allowed by mouth and a short course of antibiotics given – metronidazole is a good choice. On this regimen, 80% of masses resolve. In the remainder, the abscess obviously enlarges over the next few days and is drained – either by open surgery or, more often, by an ultrasound-guided percutaneous approach.

If the mass subsides, interval appendicectomy is performed after 3 months, which allows resolution to take place and obviates the danger of a further attack. In older subjects, this is probably not necessary, since the appendix has probably completely sloughed away. It is interesting that King Edward VII, at the age of 59 years, had his appendix abscess drained by Sir Frederick Treves the day before his coronation was due to take place in 1902. He had no recurrence of his problem in the remaining 8 years of his reign.

Carcinoma of the caecum and ascending colon

Tumours of the right side of the large bowel are the second commonest cause of a mass in the lower right abdomen. These tumours are often papilliferous in nature (*Figure 3*) rather than the common stricture-like carcinoma of the left side of the colon. This, combined with the fact that the bowel content in the right colon is semi-liquid compared with the more solid left-sided bowel content, means that right-sided tumours often present with anaemia rather than the obstructive picture of left-sided colonic growths.

Figure 4 shows the barium enema of an woman who had been treated with iron tonic for a year by her practitioner until her abdomen was examined by a surgeon, who discovered a large right iliac fossa mass. The X-ray shows a bulky papilliferous carcinoma of the ascending colon. Her anaemia was cured by a right hemicolectomy.

Full clinical examination may reveal evidence of dissemination of the tumour and put the diagnosis firmly into the category of advanced malignant disease. This

Table 1. Causes of a mass in the right iliac fossa

Appendix	Appendix mass*
Caecum and ascending colon	Carcinoma*
Terminal ileum	Crohn's disease
	Meckel's diverticulitis
	Tuberculosis
	Lymphosarcoma
Mesenteric lymph nodes	Mesenteric adenitis
	Tuberculous adenitis
Gall bladder	Mucocele
Female genitalia	Ovarian cyst
	Tumour
	Pyosalpinx
	Ectopic pregnancy
	Pedunculated fibroid
Right kidney	Renal mass
	Pelvic kidney
	Renal transplant
Right iliac arteries	Aneurysm

* most common causes

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Figure 1. The pathological course of acute appendicitis.

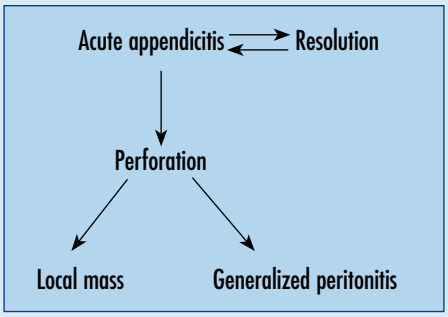

Figure 2. An appendix mass marked out on the patient's abdominal wall.

includes the presence of hepatomegaly, ascites and hard, enlarged supraclavicular nodes. While it is true that a right iliac fossa mass is more likely to be caused by a large bowel tumour in the older age groups and an appendix mass is more likely to be found in younger subjects, there are, of course, wide variations. In the author's personal series of 75 right hemicolectomies for right-sided large bowel carcinomas, five of the patients were in their thirties. In contrast, when surgeon to the Royal Hospital, Chelsea, an appendix mass was drained in a much-decorated veteran of World War I who was aged 85 years.

Figure 3. Resected specimen of a papilliferous carcinoma of the ascending colon, which presented with a right iliac fossa mass and anaemia.

Figure 4. Barium enema of a patient with a large carcinoma of the ascending colon treated for a year as a 'case of anaemia'.

Other pathologies

Most of the other conditions listed in *Table 1* will be encountered in the course of the clinical career of a clinician with a general type of practice.

Crohn's disease will be seen in young adults with a local mass, diarrhoea, weight loss and general ill health. A barium meal follow-through examination shows a typical 'string sign of Kantor' (*Figure 5*), most commonly in the terminal ileum, although it is now well recognized that the condition may affect any part of the alimentary tract.

Other features of Crohn's disease may occasionally occur. These include perianal involvement, with multiple fissures and fistulae, ulcerating skin lesions (pyoderma gangrenosa), sacro-ileitis and primary sclerosing cholangitis.

Figure 5. Barium follow-through demonstrating the 'string sign of Kantor' in the terminal ileum.

Figure 6. A similar 'string sign' to that in Figure 5, but here the pathology was a lymphosarcoma of the terminal ileum.

Not every ileal stricture is Crohn's disease – *Figure 6* demonstrates the X-ray of a patient with a lymphosarcoma of the terminal ileum whose pathology was only diagnosed on the resected specimen.

Hodgkin's disease and the rarer lymphomas may present with a mass in the right iliac fossa. Palpable lymphadenopathy, splenomegaly and anaemia may be accompanying clinical features.

A distended gall bladder may project downwards into the lower right abdomen, especially in a thin female. A mal-ascended (pelvic) kidney is not rare and, of course, a transplanted kidney is invariably sited in one or other iliac fossa. Ovarian and tubal masses, and retroperitoneal tumours must be considered. An expansile pulsating mass will be an iliac aneurysm. Ileocaecal tuberculosis is rare in this country, but is not uncommon in the Indian subcontinent.

Actinomycosis, caused by the micro-aerophilic, Gram-positive filamentous *Actinomyces israelii*, may rarely produce an inflammatory mass in the right iliac fossa. The portal of entry is probably the appendix. (The author has seen one example in 40 years of general surgery.) *Yersinia enterocolitica* may occasionally produce an acute ileitis with mesenteric lymphadenopathy. Fortunately, the organism is sensitive to a wide range of antibiotics.

Conclusions

A mass in the right iliac fossa is a fascinating clinical problem. Most patients can be sorted out using simple diagnostic modalities, before a computed tomography scan is ordered. BJHM

Conflict of interest: none.

KEY POINTS

- A mass in the right iliac fossa is a common clinical problem.
- The two commonest causes are an appendix mass (likely to be in the younger patient) or a carcinoma of the caecum or ascending colon (in older subjects), but there is a wide spectrum of differential diagnosis.
- Diagnosis is often made after a careful history and clinical examination, and confirmed by modern imaging techniques.