Modern management of diverticular disease in men

Kathryn Oakland, Head of Digestive Diseases and Renal Department; Sina Dorudi, Consultant Colorectal Surgeon, London Digestive Centre, Princess Grace Hospital, London

The presentation of diverticular disease and its complications are varied: it is common and most people with diverticulosis are asymptomatic. In this article the authors review the burden of diverticular disease and its causes, and present two clinical cases of complicated diverticulitis with a urology theme.

Colonic diverticular disease is a condition where small ‘outpouchings’ of the inner lining of the colon herniate through the bowel wall (see Figure 1). Most people with diverticulosis are asymptomatic; however, diverticula can bleed, become inflamed, or in some cases perforate, leading to abscess formation within the abdomen. Over time, inflammation can cause stricturing of the bowel or fistulation into other organs, such as the bladder.

Diverticular disease is very common, affecting 5% of men in their 40s and up to 50% men in their 80s.1 Most cases of diverticulosis are identified as an incidental finding on colonoscopy or computed tomography (CT). Diverticular disease is thought to be caused by insufficient fibre in the diet;2 although a recent study found that other lifestyle characteristics were also associated with its development, such as high intake of red meat, high body mass index (BMI), smoking and low vigorous physical activity.3 Dietary modifications, weight loss, staying well hydrated and avoiding constipation can therefore reduce the risk of developing diverticular disease; however, once diverticula have formed the process of developing diverticulosis cannot be reversed.

Case one: diverticulitis presenting as urinary retention
Our first case is a 52-year-old man who presented with acute urinary retention. He had presented to another hospital two days previously with the same problem and had been managed with an ‘in-and-out’ catheter and tamsulosin. Abdominal examination demonstrated signs of focal peritonitis in his left iliac fossa. His inflammatory markers were elevated; C-reactive protein (CRP) 149 mg/L and white cell count (WCC) 13.8 x 10⁹/L. A CT scan demonstrated perforated sigmoid diverticulitis with a large pelvic collection containing faeculent material, pus and gas. A CT-guided pelvic drain was sited that immediately drained 100ml of pus. The patient was treated with intravenous antibiotics, total parenteral nutrition (TPN) and bowel rest.

A repeat CT scan one week later demonstrated a significant reduction in the size of the pelvic collection, which was associated in an improvement in the patient’s symptoms and inflammatory markers. Three days later an ultrasound demonstrated a marked resolution of the collection and the drain was removed and the patient discharged home. Over the next three months the patient was monitored clinically and underwent further CT and MRI. There was no evidence of a recurrent pelvic abscess clinically or on radiological imaging. Despite developing intra-abdominal sepsis, the patient managed to avoid major abdominal surgery and was successfully treated with interventional radiology and remains well.

Figure 1. Illustration of colon diverticulitis. Small growths appear on the outer colon wall (seen coloured brown). They may develop at weak points along the length of the gut and their frequency increases with age. The remains of digested food may collect in these inflamed growths, and the condition is also associated with abscess formation.
Treatment of complicated diverticulitis

Complicated diverticulitis can be classified using the Hinchey system (see Table 1). Treatment options for complicated diverticular disease include antibiotics, CT-guided percutaneous drainage or surgery. In the past, management involved major abdominal surgery in the form of a sigmoid colectomy and formation of colostomy (Hartmann’s procedure), which was associated with significant morbidity and mortality. A recent systematic review of 8766 pooled patients with a pericolic or pelvic abscess compared antibiotics alone, percutaneous drainage and surgery, finding that percutaneous drainage was associated with fewer recurrent abscesses in comparison with antibiotics alone. In the same analysis, surgery was associated with a mortality rate of 12.1%.

Once the initial perforation and abscess has been treated, treatment options include an elective resection or ‘watch and wait’ conservative therapy. A further systematic review has demonstrated that in the longer term, recurrent abscess formation was found in 39% of patients awaiting elective surgery. The quality of evidence supporting elective surgery versus ‘watch and wait’ in these patients is limited, and patients should be fully appraised of all options, including the morbidity of surgery and risk of stoma formation, but also the likelihood of further attacks of severe diverticulitis if they elect for conservative management.

Case two: colovesical fistula caused by diverticular disease

Our second case is a 54-year-old man who presented with abdominal pain, fevers and dysuria. He had experienced several milder episodes over the previous two years and had been treated by his GP with oral antibiotics without hospital admission. An ultrasound showed an inflammatory mass around the sigmoid colon with a small abscess and some adjacent thickening of the bladder wall. There was no air in the bladder. The patient was treated with intravenous antibiotics and bowel rest. He settled initially but several days later his abdominal pain worsened, he developed fevers and experienced problems passing urine; reporting intermittent stops to his urinary stream. His midstream urine (MSU) grew no organisms and his blood cultures were clear. A CT scan showed that the inflammatory mass now extended to the dome of the bladder, which contained bubbles of extraluminal gas (see Figure 2). The patient was treated with a further week of intravenous antibiotics, bowel rest and total parenteral nutrition (TPN). He was then commenced on an elemental diet to allow further bowel rest and was discharged home.

On review a month later, the patient’s abdominal pain was improved and he reported no further episodes of pneumaturia or other urinary symptoms, but he still had a palpable abdominal mass. A repeat CT scan demonstrated that although the extraluminal gas bubbles had resolved, the inflammatory colonic mass had persisted. He received another course of oral antibiotics, but over the next few weeks he developed low-grade fevers and his abdominal pain became more severe. He reported several further episodes of pneumaturia and passed faecal matter urthally.

Ten weeks after the patient’s initial admission to hospital he was admitted for a sigmoid colectomy and repair of colovesical fistula. At laparotomy it was found that he had a large inflammatory mass involving the sigmoid colon, bladder and small bowel. It was unsafe to proceed to full resection. The descending colon and splenic flexure was mobilised and a colostomy was formed.

Immediately after the operation, his fevers and urinary symptoms settled. He passed no further faecal matter in his urine and his MSU cleared. He is scheduled for elective sigmoid resection and closure of his colostomy in six months.

Diagnosis of colovesical fistula

Colovesical fistulae are a rare complication of diverticular disease, occurring in 1% of cases. Symptoms include pneumaturia, faecaluria, haematuria, urinary frequency and urgency and suprapubic pain. Most cases of pneumaturia do not give a classical history of bubbles in the urine, instead reporting ‘stop-starts’ in their urinary stream that represent the passage of gas via the urethra. Many patients will experience recurrent urinary tract infections, typically with organisms usually found in the bowel, such as Escherichia coli, coliforms and enterococcus.

The keystone to diagnosing a colovesical fistula is radiological imaging. The modality of choice is CT, which is diagnostic in over 90% cases. CT findings consistent with a colovesical fistula are air in the bladder, passage of contrast medium in the bladder (either oral or rectal contrast) and bladder wall thickening adjacent to a loop of inflamed colon. It is unusual to be able to delineate the fistula tract on CT, however.

The fistula is more reliably depicted on MRI, which can provide detailed soft tissue evaluation. MRI findings fall into three patterns: an

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Table 1. Hinchey classification of complicated diverticular disease

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<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tr>
<td>I</td>
<td>Localised abscess</td>
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<tr>
<td>II</td>
<td>Pericolic abscess</td>
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<tr>
<td>III</td>
<td>Purulent peritonitis (pus in the abdominal cavity)</td>
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<td>IV</td>
<td>Faeculent peritonitis</td>
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intervening abscess between the bowel wall and bladder wall; a visible fistula track; or a complete loss of the fat plane between the bladder and bowel wall. Other imaging, such as a plain abdominal radiograph, barium enema, cystoscopy or colonoscopy have low rates of detection of colovesical fistulae. Abdominal ultrasound is less diagnostic than CT, but avoids radiation exposure.

Treatment of colovesical fistulae
There are two options for treatment of colovesical fistulae – conservative therapy or surgery. Conservative therapy involves antibiotics and bowel rest. In the case described above, the patient was initially managed with TPN and then commenced on an elemental diet. The elemental diet consisted of simple carbohydrates, single amino acids of short-chain peptides, fats and vitamins. As its components are delivered in their simplest chemical form, the usual processes of digestion are not required and nearly all of the nutrients are absorbed high up the small bowel, leaving virtually no residue in the large bowel. A case series of 50 patients with colovesical fistulae demonstrated no difference in rates of sepsis or disease-specific mortality in patients who received conservative treatment versus those that underwent surgery. The aim of surgery is to resect the diseased segment of bowel and close the bladder defect. Bowel resection may be in the form of sigmoid colectomy or anterior resection with a defunctioning ileostomy. The spectrum of colovesical fistula and complicated diverticulitis
In summary, the presentation of diverticulitis disease and its complications are varied. Severe intra-abdominal sepsis and fistula formation does not necessarily mandate bowel resection, but as the risk of recurrence is high, patients should be fully counseled on the risks of conservative therapy versus the risks of surgery, including stoma formation.

Declaration of interests
Kathryn Oakland is an employee of HCA Healthcare UK; Sina Dorudi has received fees for professional services from HCA Healthcare UK.

References