

The ins and outs of diverticular disease

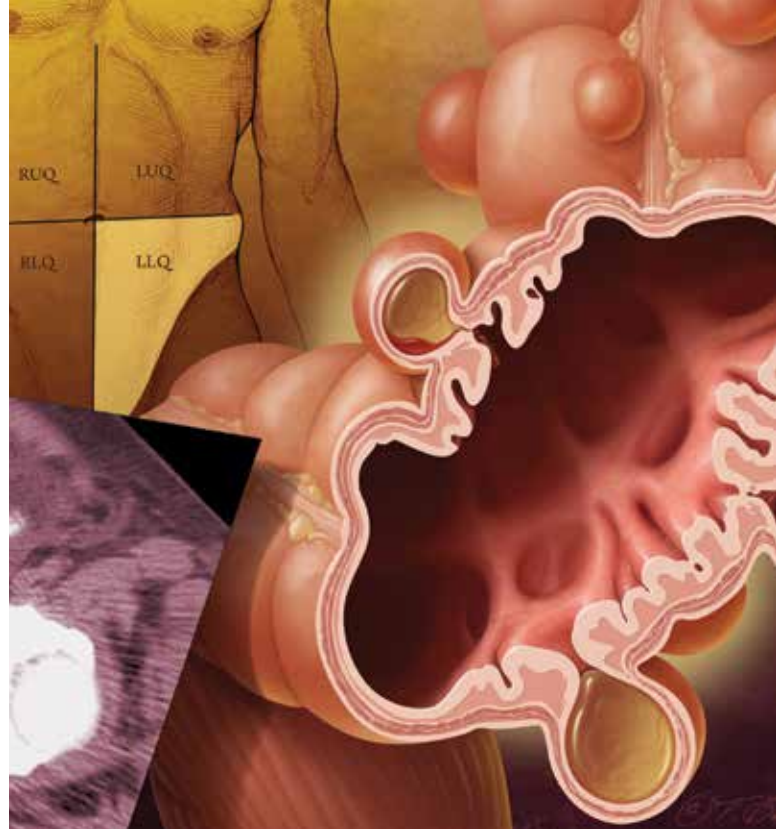
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Diverticular disease is a common condition that increases in prevalence with age. Management is multidisciplinary and can range from outpatient treatment to emergency surgery.

Remember

- Diverticular disease is a common condition that affects one-third of people in Australia over the age of 45 years and two-thirds over the age of 85 years, with a broad spectrum of clinical manifestations and possible complications.¹
- A colonic diverticulum is a false diverticulum in which the mucosa and submucosa herniate through the muscle layer of the bowel wall at natural openings where the vasa recta or nutrient vessels traverse the bowel wall.²
- 'Diverticulosis' refers to the presence of diverticula, whereas 'diverticular disease' is defined as clinically significant and



symptomatic diverticulosis and can lead to several complications, including perforation, bleeding, obstruction, abscess and fistula.

- 'Diverticulitis' refers to the presence of inflammation due to a perforated diverticulum and can range from local inflammation to generalised peritonitis.
- The pathophysiology of diverticula formation most likely relates to altered bowel motility and increased intraluminal pressure resulting in herniation. The mechanism of diverticulitis is complex and may similarly relate to altered motility and increased pressure, as well as abnormal colonic microenvironment resulting in microscopic or macroscopic perforation.³
- Increased susceptibility to injury of the vasa recta can lead to diverticular bleeding because these vessels become draped over the apex of a diverticulum.²
- The prevalence of diverticular disease increases with age. The distribution of diverticulosis within the colon is most commonly in the sigmoid colon in Western countries,⁴ whereas it occurs more commonly in the right colon in Asia.⁵
- Evidence from large prospective studies suggest that risk factors for diverticular disease include a diet low in fibre and high in total fat or red meat.⁶ Other risk factors include obesity and smoking, whereas vigorous physical exercise may decrease a patient's risk.⁷⁻⁹
- Consumption of seeds and nuts is not considered to be associated with an increased risk of diverticulosis, diverticulitis or diverticular bleeding.¹⁰

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Assessment

- The evidence on the natural history of diverticulosis is evolving. Although most patients will remain asymptomatic,

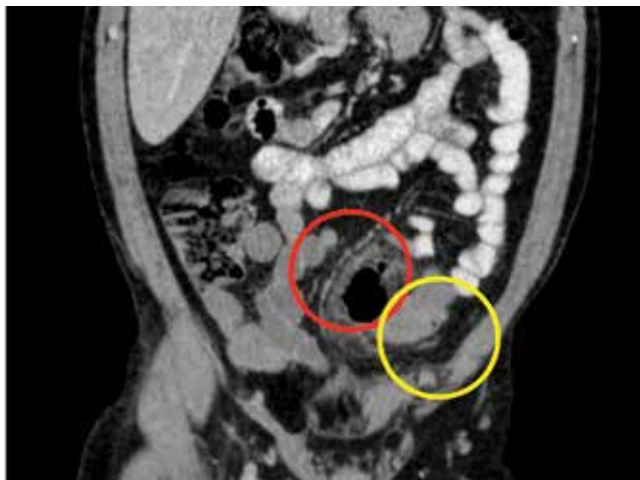


Figure 1. CT scan showing localised diverticular perforation with an abscess (red circle) and an adjacent segment of thickened sigmoid colon (yellow circle).

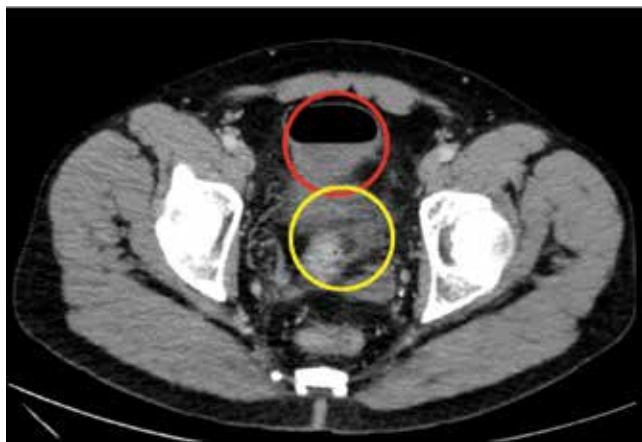


Figure 2. CT scan suggesting a colovesical fistula with air in the bladder (red circle) and an adjacent segment of thickened sigmoid colon (yellow circle).

fewer patients than historically reported may develop diverticulitis – 1 to 4% instead of 15 to 25% as previously thought – whereas about 5 to 10% will experience diverticular bleeding.^{11,12} Of those with diverticulitis, about 25% will have associated complications.¹³

- Following nonoperative management, about 20 to 30% of patients will have recurrent episodes of diverticulitis.¹⁴⁻¹⁶ However, recurrent attacks are not associated with higher complication rates.¹⁴
- The clinical presentation of diverticulitis varies, but commonly involves left lower quadrant abdominal pain and a low-grade fever. In the presence of diffuse guarding and rebound tenderness, perforation should be suspected and urgent referral to hospital should be made.

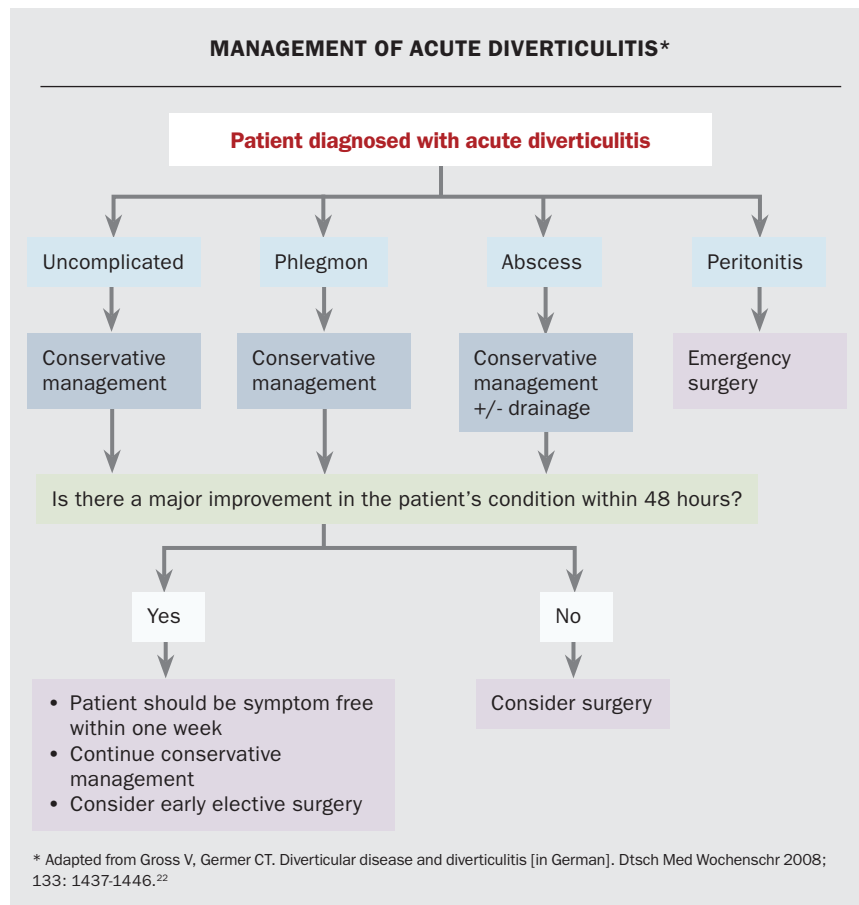
- An abdominal CT scan with contrast is the investigation of choice in patients with acute diverticulitis (94% sensitivity, 99% specificity).¹⁷ Findings in patients with uncomplicated diverticulitis include the presence of colonic diverticula, bowel wall thickening and pericolic fat stranding.
- In patients with complicated diverticulitis, a localised abscess (Figure 1) or even generalised peritonitis may occur. However, only 1 to 2% of patients with acute diverticulitis will have free perforation with purulent or faeculent peritonitis.¹⁸ Although uncommon, free perforation can be associated with a mortality rate of about 6% in purulent and 35% in faeculent peritonitis.¹⁹
- In addition to diverticular bleeding, other less common complications include bowel obstruction and fistulas between the sigmoid colon and various organs (most commonly bladder or vagina). A fistula to the bladder should be suspected if the patient reports pneumaturia, faecaluria or recurrent urinary tract infections or if free gas in the bladder is seen on CT (Figure 2).

Management

- Outpatient management with oral antibiotics may be appropriate in some patients with diverticular disease, such as those with only mild-to-moderate abdominal pain and no more than a low-grade fever or a minimal rise of inflammatory markers, provided they can tolerate clear fluids, have minimal comorbidities, good compliance and a reliable support system.²⁰ Several randomised controlled trials are now accruing patients to address this issue.
- Hospitalisation should be considered for any patient with diverticular disease not meeting outpatient management criteria, those not responding to treatment or those with complicated diverticulitis. Nonoperative hospital management typically includes bowel rest, simple and narcotic analgesia, broad-spectrum intravenous antibiotics and percutaneous drainage of any abscesses.
- There is some evidence to support the use of probiotics over placebo and the anti-inflammatory mesalazine (as an alternative to antibiotic therapy) in the management of several patient groups with diverticular disease (off-label use).³ However, given the limited evidence of these emerging therapies and the off-label use of mesalazine neither is routinely used in clinical practice.
- Emergency surgical intervention is indicated in patients who fail conservative management or who have complications such as peritonitis, failed percutaneous drainage or bowel obstruction.
- In the emergency setting, the gold standard surgical procedure to treat patients with diverticular disease has been the Hartmann's procedure; however, resection with primary anastomosis in selected patients may also achieve similar

outcomes.²¹ There may also be a role for laparoscopic lavage without resection in certain patients with purulent peritonitis.²¹ Various management algorithms exist that can guide treatment depending on the severity of presentation (see flowchart).²²

- Diverticular bleeding can be life-threatening, requiring CT angiogram for blood vessel localisation followed by formal angiography and embolisation. The success rate of this procedure is very high and this precludes colonoscopy in the acute setting. Total colectomy is rarely needed, as segmental bowel resection can often be directed based on CT angiogram findings.
- Elective bowel resection is less dependent on the number of episodes of diverticulitis than it is on the severity of the complications and comorbidities and operative risk for the patient. This tailored approach has replaced the historical recommendation of elective resection after two uncomplicated episodes.^{23,24} Specific indications for bowel resection are colovesical or colovaginal fistula and significant stenosis because stenting is not advisable.
- Given the significant rate of incidental colorectal cancer diagnosed in patients having a colonoscopy following CT-proven complicated diverticulitis (5 to 10%), routine colonoscopy should be considered in this group unless recently performed.²⁵ In patients with uncomplicated diverticulitis and no adverse features on CT, the rate is much lower (0.7%) and a selective approach can be taken.²⁵ The timing of this colonoscopy is often cited as six weeks after resolution of the attack.
- Although organisations worldwide continue to recommend a high-fibre diet to prevent diverticular disease, treat symptomatic diverticular disease and prevent recurrence of diverticulitis, these recommendations are based on a limited number of studies.²⁶ Some recent evidence has suggested that a high-fibre diet may be associated with a greater prevalence of diverticulosis.²⁷
- A proportion of patients may have a smouldering form of diverticulitis with chronic left lower quadrant pain for months as well as alteration in bowel habit or rectal bleeding. Resection of the sigmoid colon can result in complete



resolution of symptoms in about three-quarters of these patients.²⁸

Conclusions

- Diverticular disease is a common problem affecting a large portion of the general population.
- The clinical presentation can be quite variable depending on the severity of the episode and associated complications.
- Management is multidisciplinary and can range from outpatient treatment in mild cases to emergency surgery in patients with faeculent peritonitis.
- Given the risk of encountering an incidental colorectal malignancy not seen on initial CT, subsequent colonoscopy should be routinely performed in complicated diverticulitis and selectively following an uncomplicated episode. MT

References

A list of references is included in the website version (www.medicinetoday.com.au) and the iPad app version of this article.

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