**WHAT ARE DIVERTICULA?**

A diverticulum (if there are more than one they are known as diverticula) is a protrusion of the inner lining of the intestine through the outer muscular coat to form a small pouch with a narrow neck. The commonest site for diverticula to develop is the lower left part of the colon. The presence of diverticula is often referred to as diverticulosis.

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**THE INTERNAL ORGANS:**

Note: this is a schematic diagram.

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**WHAT CAUSES DIVERTICULA TO FORM?**

Some people are born with a diverticulum, most often from the small intestine. Most diverticula develop during later life and are more and more common with increasing age. In Britain over half the well population aged more than 70 years have diverticula of the large intestine. In some rural areas of the world, particularly in Africa, diverticula are rarely seen.

This difference is not fully understood but is thought to be due to diet. The colon exists to process otherwise indigestible plant foods known as dietary fibre. In the West we eat much less fibre than in other, primarily vegetarian, regions of the world. If the colon has plenty of fibre to deal with, the bulky soft contents keep the walls of the bowel apart. If little fibre is present, the stools tend to be smaller and harder, and they do not keep the walls of the tube-like colon apart when the muscle in the wall of the colon contracts.
These contractions form a ring-like narrowing to mix and push the contents along. Closed segments occur within which pressure is high and it is thought that this pressure pushes out the pouches.

Is the Presence of Diverticula Harmful?

We all begin life with an appendix, which is like a diverticulum in many ways, and we do not worry about it. In the same way many of us have diverticula projecting from the wall of our colon. We do not know we have them and they cause us no trouble. However, just like the appendix, a diverticulum can become inflamed due to infection. If this occurs, local pain can make a person feel ill, and can in some cases be dangerous if it perforates or bleeds. Inflammation of one or more diverticula is called diverticulitis.

What is Diverticular Disease?

In most people with diverticula the intestinal muscle is normal in appearance and thickness, but in some people it becomes thicker than normal and it has an unusual structure when examined under the microscope. The thickening of the muscle narrows the colon which often becomes irregular in outline. The reason for this change in the muscle is not known and may not be related to diet.
The muscle abnormality can develop when very few diverticula are present and occasionally it occurs without any diverticula. The combination of abnormal muscle and diverticula is known as diverticular disease. This is confusing because diverticula and diverticular sound the same, hence the use of the word disease.

**WHAT ARE THE SYMPTOMS OF DIVERTICULAR DISEASE?**

Symptoms are due to the muscle abnormality and consist of pain, usually in the left lower part of the abdomen, often abdominal distension, an irregular bowel habit with pellet-like stools, and sometimes small quantities of blood passed with bowel actions. These symptoms are similar to those of the irritable bowel syndrome which is not surprising because both disorders, at least in part, are due to abnormal muscle function.

**IS INVESTIGATION NECESSARY?**

Diverticula are usually discovered when a problem such as rectal bleeding or abdominal pain is being investigated by X-ray (barium enema) or endoscopy (sigmoidoscopy or colonoscopy). As diverticula are so common among older people who are well, it is very important to be sure that they are the cause of the problem and not something else. A diagnosis of diverticulitis is likely when there is tenderness in the region of the diverticula and blood tests show evidence of inflammation somewhere in the body. The muscle abnormality of diverticular disease is shown by increased folding of the lining in the lower left (sigmoid) colon.
EXPLANATION IS IMPORTANT

Reassurance that a more serious disorder is not present helps people not to worry about the symptoms. An explanation of the difference between symptoms due to infection and those due to abnormal contraction of the muscle, without inflammation, helps people understand why one treatment may be advised and not another.

TREATMENT OF SYMPTOMLESS DIVERTICULA

If diverticula are found during tests for another problem, for example rectal bleeding due to piles, no specific treatment is indicated. Once they have formed, diverticula are there to stay. It is important not to worry about them. An increase of fibre in the diet seems sensible so that the stools are soft and easy to pass. The following foods are high in fibre:

- cereals
- whole-wheat bread
- fruit, vegetables and berries.

If the change in diet does not suit you then return to one that does.

TREATMENT OF DIVERTICULITIS

The commonest type of diverticulitis is a local area of inflammation around the colon which is sore when pressed and accompanied by a slight fever. If this occurs you should see your doctor who is likely to advise an antibiotic and possibly a temporary liquid or low residue (low fibre) diet.

Diverticulitis can lead to serious complications but these are uncommon. A diverticulum can rupture causing a local abscess or generalised infection (peritonitis) within the abdomen. Admission to hospital as an emergency will be required and possible urgent surgery or other procedure to

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allow the infection to escape. A diverticulum can perforate into another organ, such as the bladder. Infection of diverticula can cause scar tissue to form in the wall of the colon which narrows the channel through which bowel contents pass. This may lead to obstruction and cause pain, distension, constipation and possibly vomiting.

Occasionally, severe bleeding from a diverticulum can occur due to rupture of a blood vessel. Blood transfusion may be needed and, occasionally, surgery.

**Treatment of Diverticular Disease**

The pain and bloating of diverticular disease may be helped by increasing the amount fibre in the diet as described above, but benefit is variable. Indeed, some people’s symptoms are made worse by increasing the intake of fibre, while others may be helped by taking less fibre. Moreover, the type of dietary fibre may also be important. Thus, in patients with diverticular disease (or irritable bowel syndrome), soluble fibres, such as ispaghula, may be more beneficial than insoluble fibres. As for irritable bowel syndrome, symptoms may be improved by avoiding large meals, especially rich or fatty meals. Extra bulk in the diet can be provided by medicinal preparations containing the plant seed, ispaghula, which can be prescribed by the doctor or bought over the counter at the chemist.

Since the symptoms are due mainly to over-contraction of colonic muscle, the doctor may prescribe an antispasmodic drug.

**What is the Role of Surgical Treatment?**

Urgent surgery is needed for some complications. A temporary opening on the abdomen (colostomy) may be needed in these circumstances.
Removal of the affected segment of bowel may be advised for recurrent episodes of diverticulitis or a non-urgent complication. The results of surgical treatment for these reasons are usually good. Surgical treatment for relief of pain due to diverticular disease, in the absence of infection or inflammation, is advised reluctantly because the result of operation is uncertain and some sufferers are helped only slightly, or the symptoms come back after an interval.

THE NEED FOR RESEARCH

We need to know:

- why diverticula are so common in the colon in Western societies;
- whether changes in life style, especially diet, by young people would prevent their development in later life;
- why some people get symptoms from diverticula but most do not;
- why in some people there is an associated abnormality of the muscle in the colon;
- what leads to infection or other complication of a diverticulum;
- how treatment of symptoms or complications can be improved.

The Digestive Disorders Foundation actively supports research into all forms of digestive disorders and disease. The Foundation relies on voluntary donations to continue its essential research work to further our understanding of the underlying mechanisms involved in the development of disorders, identifying risk factors, refining treatments and introducing novel therapies.