

## Spleen explained

The spleen is located on the left side of the abdomen and weighs around 200g in the average healthy adult. The spleen can be considered as two organs in one; it filters the blood and removes abnormal cells (such as old and defective red blood cells), and it makes disease-fighting components of the immune system (including antibodies and lymphocytes). Since the spleen is involved in so many bodily functions, it is vulnerable to a wide range of disorders. However, the human body adapts well to life without this organ, so surgically removing a diseased or damaged spleen is possible without causing any serious harm to the patient.

### Spleen structure

The body of the spleen appears red and pulpy, surrounded by a tough capsule. The red pulp consists of blood vessels (splenic sinusoids) interwoven with connective tissue (splenic cords). The red pulp filters the blood and removes old and defective blood cells. The white pulp is inside the red pulp, and consists of little lumps of lymphoid tissue. Antibodies are made inside the white pulp. Similarly to other organs of the lymphatic system, particular immune cells (B lymphocytes and T lymphocytes) and blood cells are either made or matured inside the spleen. Blood enters the spleen via the splenic artery, which subdivides into many tiny branches. Each branch is encased in a clump of lymphocytes, which means every drop of blood is filtered for foreign particles as it enters the spleen.

### A range of disorders

Some of the disorders that can affect the spleen include:

- Splenomegaly
- Hypersplenism
- Splenic rupture.

### Splenomegaly

A variety of disorders can cause the spleen to enlarge, sometimes to 2kg or more. Any conditions that cause a rapid breakdown of blood cells, such as haemolytic anaemias, can place great strain on the spleen and make it enlarge. Other causes of splenomegaly include infections (such as glandular fever), liver disease and some cancers (such as Hodgkin's disease, leukaemia and lymphoma).

### Hypersplenism

The two characteristic features of hypersplenism are splenomegaly and a deficiency of one or more blood components. It seems that an enlarged spleen is sometimes overactive and will destroy more blood cells than necessary. Symptoms depend on which blood component is lacking. For example, if red blood cells are deficient, anaemia will be the result (with symptoms including fatigue and pallor). Most cases of hypersplenism are caused by disorders somewhere else in the body, such as cirrhosis of the liver.

### Splenic rupture

Certain disorders, including glandular fever, can occasionally make the enlarged spleen delicate enough to spontaneously rupture. A sudden blow to the abdomen can split the outer capsule of the spleen and cause bleeding into the abdominal cavity. There are various degrees of splenic rupture. When bleeding is life threatening, surgery to remove the spleen (splenectomy) is needed.

### Diagnosis methods

Depending on the condition under investigation, disorders of the spleen can be diagnosed using a number of tests, including:

- Physical examination
- Blood tests
- Ultrasound
- Computed tomography (CT) scan

- Bone marrow biopsy
- Other tests to check for underlying disorders.

### **Treatment options**

Treatment depends on the disorder and its specific cause. For example, if the splenomegaly is caused by particular cancers (including Hodgkin's disease, leukaemia or lymphoma), then treatment will focus on eliminating or controlling the primary disease. Hypersplenism, triggered by cirrhosis of the liver, can be treated with abstinence from alcohol and special dietary modifications. A severely ruptured spleen is usually surgically removed.

### **Recovery after splenectomy**

The surgical removal of the spleen is called a splenectomy. The body can cope without the spleen, although the person might be more susceptible to infections after the operation. Their blood may also contain odd-shaped red blood cells. In some cases, it is possible to remove only the diseased or damaged parts of the spleen. This allows the remaining healthy portions to keep functioning as normal.

### **Immunisations and splenectomy**

People who have had their spleen removed or have a spleen disorder are at increased risk of infection, most commonly Pneumococcal infection. Some vaccines are recommended especially for these people and they should be discussed with the doctor. They are:

- Pneumococcal vaccine
- Meningococcal vaccines
- Haemophilus influenzae type b vaccine (recommended in an adult who has close contact with children less than 5 years of age).

### **Where to get help**

- Your doctor.
- Alfred Hospital - Victorian Spleen Registry.

### **Things to remember**

- Major functions of the spleen include removing abnormal blood cells and making components of the immune system.
- Since the spleen is involved in so many bodily functions, it is vulnerable to a range of disorders.
- Disorders of the spleen include splenomegaly, hypersplenism and splenic rupture.

**This page has been produced in consultation with, and approved by:**

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