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What is the spleen?
The spleen is an organ, about the size of your fist, in the upper left-hand side of your abdomen underneath your ribcage (see figure 1). The spleen's main functions are to filter old and damaged red blood cells from your blood, and to produce lymphocytes (special white blood cells) that fight infections. You can lead a normal life without a spleen as the spleen's filtering function is also carried out by the liver. However, you will be at an increased risk of infection.

Your surgeon has recommended a splenectomy to remove your spleen. However, it is your decision to go ahead with the operation or not. This document will give you information about the benefits and risks to help you make an informed decision. If you have any questions that this document does not answer, you should ask your surgeon or any member of the healthcare team.

What are the benefits of surgery?
A splenectomy can help to control your symptoms and, if your spleen has got bigger, will remove the life-threatening risk of your spleen rupturing.

Are there any alternatives to surgery?
If you have a problem with your blood, it is possible to have drug treatment to cure or manage the problem. Surgery is usually recommended only if drug treatment has failed or the side effects of the treatment have made surgery a better alternative. It is possible to have regular blood transfusions. However, this is only a temporary measure.

What will happen if I decide not to have the operation?
If you have a problem with your blood, you will continue to be treated with medication. Your spleen may rupture, which could be life-threatening.

What happens before the operation?
You will be immunised and given antibiotics two to four weeks before the operation to protect you against dangerous infections. You may also need to be admitted to hospital to correct any problems with your blood clotting and number of red blood cells.
What does the operation involve?

The healthcare team will carry out a number of checks to make sure you have the operation you came in for. You can help by confirming to your surgeon and the healthcare team your name and the operation you are having. The operation is performed under a general anaesthetic and usually takes between one and two hours. You may also have injections of local anaesthetic to help with the pain after surgery. You may be given antibiotics during the operation to reduce the risk of infection. Your surgeon will separate the spleen from the surrounding organs. They will secure the blood supply to the spleen using metal clips. Your surgeon will then place a bag around the spleen and remove it.

**Laparoscopic (keyhole) surgery**

Your surgeon may use keyhole surgery as this is associated with less pain, less scarring and a faster return to normal activities.

Your surgeon will make a small cut in or near your umbilicus (belly button) so they can insert an instrument which inflates the abdominal cavity with gas (carbon dioxide). They will make several small cuts in your abdomen so they can insert tubes (ports) into your abdomen. Your surgeon will place surgical instruments through the ports along with a telescope so they can see inside your abdomen and perform the operation (see figure 2).

In a few people it will not be possible to complete the operation using the laparoscopic technique. The operation will be changed (converted) to an open procedure. At the end of the operation, your surgeon will remove the instruments and close the cuts.

**Open surgery**

The operation is the same but it is carried out through a larger cut in the upper abdomen or under the ribcage.

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The abdominal cavity is inflated with carbon dioxide gas to help with surgery.

A telescope and instruments allow your surgeon to examine the abdomen.

**Figure 2**

The technique for laparoscopic surgery

Your surgeon may decide that the keyhole technique is not appropriate for you and recommend open surgery. They will discuss the reasons with you.

**What should I do about my medication?**

You should let your doctor know about all the medication you are on and follow their advice. This includes herbal remedies and medication to control diabetes and blood pressure. If you are on beta-blockers, you should continue to take them as normal. You may need to stop taking warfarin or clopidogrel before your operation.

**What can I do to help make the operation a success?**

If you smoke, stopping smoking several weeks or more before an operation may reduce your chances of getting complications and will improve your long-term health.

Try to maintain a healthy weight. You have a higher chance of developing complications if you are overweight. Regular exercise should help prepare you for the operation, help you recover and improve your long-term health. Before you start exercising, ask a member of the healthcare team or your GP for advice. You can reduce your risk of infection in a surgical wound.
• In the week before your operation, do not shave or wax the area where a cut is likely to be made.
• Try to have a bath or shower either the day before or on the day of your operation.
• Keep warm around the time of your operation. Let a member of the healthcare team know if you are cold.

What complications can happen?
The healthcare team will try to make your operation as safe as possible. However, complications can happen. Some of these can be serious and can even cause death. Using the laparoscopic technique means it is more difficult for your surgeon to notice complications that may happen during the operation. When you are recovering, you need to be aware of the symptoms that may show that you have a serious complication. You should ask your doctor if there is anything you do not understand.

Any numbers which relate to risk are from studies of people who have had this operation. Your doctor may be able to tell you if the risk of a complication is higher or lower for you.

1 Complications of anaesthesia
Your anaesthetist will be able to discuss with you the possible complications of having an anaesthetic.

2 General complications of any operation
• Pain, which happens with every operation. The healthcare team will try to reduce your pain. They will give you medication to control the pain and it is important that you take it as you are told so you can move about and cough freely. After a laparoscopy, it is common to have some pain in your shoulders because a small amount of gas may be left under the diaphragm. Your body will usually absorb the gas naturally over the next 24 hours, which will ease the symptoms.
• Bleeding during or after surgery. You may need a blood transfusion (risk: 1 in 5) or an operation.

• Infection of the surgical site (wound). It is usually safe to shower after 48 hours. However, you should check with a member of the healthcare team. Let the healthcare team know if you get a temperature, notice pus in your wound, or if your wound becomes red, sore or painful. An infection usually settles with antibiotics but you may need an operation.
• Unsightly scarring of the skin, particularly if the wound becomes infected.
• Developing a hernia in the scar, if you have open surgery, caused by the deep muscle layers failing to heal. This appears as a bulge or rupture called an incisional hernia. If this causes problems, you may need a further operation.
• Blood clot in the leg (deep-vein thrombosis – DVT). This can cause pain, swelling or redness in your leg, or the veins near the surface of your leg to appear larger than normal. The healthcare team will assess your risk. They will encourage you to get out of bed soon after surgery and may give you injections, medication, or special stockings to wear. Tell the healthcare team straightaway if you think you might have a DVT.
• Blood clot in the lung (pulmonary embolus). This happens if a blood clot moves through the bloodstream to your lungs. If you become short of breath, feel pain in your chest or upper back, or if you cough up blood, you may have a pulmonary embolism. You should tell the healthcare team straightaway or, if you are at home, go to your nearest Accident and Emergency department immediately or call an ambulance.

3 Specific complications of this operation
a Laparoscopic complications
• Damage to internal structures such as the bowel, bladder or blood vessels when placing instruments into the abdomen (risk: less than 3 in 1,000). The risk is higher in people who have previously had surgery to the abdomen. If an injury does happen, you may need open surgery, which involves a much bigger cut. About 1 in 3 of these injuries is not obvious until after surgery.
Developing a hernia near one of the cuts used to insert the ports (risk: 2 in 10,000). Your surgeon will try to reduce this risk by using small ports (less than a centimetre in diameter) where possible or, if they need to use larger ports, using deeper stitching techniques to close the cuts.

Surgical emphysema (crackling sensation in the skin due to trapped carbon dioxide gas), which settles quickly and is not serious.

Splenectomy complications

Rise in platelet count. If this happens, there is a higher risk of getting a blood clot in your legs or lungs. You will be given medication to reduce this risk.

Damage to your stomach or bowel. This can cause an abnormal connection (fistula) to develop between your stomach or bowel and your skin, or fluid to leak into your abdominal cavity (peritonitis).

Damage to your pancreas causing pancreatic fluid to leak and collect outside of the pancreas (risk: less than 5 in 100). Treatment may involve draining the fluid, or surgery.

Post-splenectomy sepsis, which is a life-threatening infection caused by bacteria (risk: less than 2 in 100). The risk is higher in children and in the first two years after the operation. You will be given injections and will need to take long-term antibiotics to reduce this risk.

How soon will I recover?

In hospital

After the operation you will be transferred to the recovery area and then to the ward. The healthcare team will tell you if you need to have any stitches removed or dressings changed.

You should be able to go home within a day or two after laparoscopic surgery, and between five and seven days after open surgery. However, your doctor may recommend that you stay a little longer.

You need to be aware of the following symptoms as they may show that you have a serious complication.

- Pain that gets worse over time or is severe when you move, breathe or cough.
- A high temperature or fever.
- Dizziness, feeling faint or short of breath.
- Feeling sick or not having any appetite (and this gets worse after the first one to two days).

If you do not continue to improve over the first few days, or if you have any of these symptoms, let a member of the healthcare team know straightaway. If you are at home, contact your surgeon or GP. In an emergency, go to your nearest Accident and Emergency department or call an ambulance.

Returning to normal activities

To reduce the risk of developing a blood clot, make sure you follow carefully the instructions of the healthcare team if you have been prescribed drugs or have to wear special stockings.

You should be able to return to work after three to four weeks but this may vary depending on the extent of surgery and your type of work.

Your doctor may tell you not to do any manual work at first and you should not do any heavy lifting for a few weeks.

Regular exercise should help you to return to normal activities as soon as possible.

Before you start exercising, you should ask a member of the healthcare team or your GP for advice.

Do not drive until you are confident about controlling your vehicle and always check your insurance policy and with your doctor.

The future

Most people make a good recovery. Without a spleen you are at a higher risk of getting life-threatening infections (risk: less than 2 in 100 over a lifetime). You will be immunised against certain infections and will need to take antibiotics regularly.

If you get a high temperature, sore throat, cough, rash or pain in your abdomen, you may have an infection and you should let your GP know straightaway. You should also let your GP know if you get bitten by an insect or animal. A minor infection can quickly become serious.
If you travel to a place where there is a risk of getting malaria, you should take anti-malaria tablets and use insect repellents to try to avoid getting bitten by mosquitos.

**Summary**

An elective splenectomy is usually recommended for certain problems with your blood and to remove the life-threatening risk of your spleen rupturing. Surgery is usually safe and effective. However, complications can happen. You need to know about them to help you make an informed decision about surgery. Knowing about them will also help to detect and treat any problems early.

**Keep this information leaflet. Use it to help you if you need to talk to a healthcare professional.**

**Acknowledgements**

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