

Split thickness skin graft (SSG)

Information for patients

This leaflet explains more about having a split thickness skin graft (SSG) to help heal a wound on your leg, including the benefits, risks and any alternatives. It also provides information on what to expect when you come to hospital. If you have any further questions, please speak to a doctor or nurse caring for you.

What is a split thickness skin graft (SSG)?

A split thickness skin graft, or SSG, is a thin layer of shaved skin, taken from one area of the body (usually the thigh) and placed onto somewhere else on the body which has lost skin covering (a wound or defect), for example, on your lower leg, to get the wound healed.

Our skin is made of two main layers. The top layer is called the epidermis and the bottom is called the dermis. It is called 'split thickness' because only the epidermis and part of the dermis is shaved off, leaving part of the skin behind. As a result, the part left behind can heal on its own without needing any additional skin covering. This area is called the 'donor site'.

Why should I have an SSG?

Your surgeon has recommended an SSG because they feel it is the fastest and most appropriate way to reconstruct your wound. This will usually be the case if you have lost a large area of skin (and sometimes some of the underlying fat) and it is too big to bring the edges together directly.

Skin grafts do not take their own blood supply with them; they need a healthy wound bed that can grow into them and give them a blood supply. Bare bone or tendon is unable to offer this healthy wound bed and cannot keep a skin graft alive. Therefore, if either of these are at the bottom of your wound you may need a different type of operation (usually called a 'flap') and your surgeon will discuss this with you.

What are the risks?

As with any operation, there are risks involved with having this procedure. The potential benefits of the surgery must be carefully weighed against the possible risks. These should be discussed with your surgeon prior to your surgery, to make sure you understand the potential complications and their consequences. This surgery may be carried out under local, regional or

general anaesthetic and the risks associated with these different types of anaesthetic will be discussed with you separately.

There are risks specific to having a SSG, and those associated with the surgery in general, which are discussed below. In addition, it is important to understand that there will be a period of time after the operation where you will need to take things easy, in order to allow the skin graft to heal.

Risks associated with a split thickness skin graft (SSG):

SSG failure (partial or complete)

Skin grafts do not take their own blood supply with them, they need a healthy wound bed that can grow into them and give them a blood supply. As this happens, the skin graft starts to stick down to its new bed and gradually becomes incorporated into the surrounding skin. This is called the process of skin graft 'take'.

Sometimes this is not possible because the wound bed that the SSG has been placed on is not healthy and, therefore, the graft does not survive. This might be because of several issues both local to the area and systemic (involving the whole body).

Local factors that can affect graft survival include:

- **Infection:** If the wound bed and graft become infected some or all of the graft may not survive. If this is the case you may need antibiotics, prolonged dressings or further surgery.
- **Collection of fluid underneath the graft:** If a collection of fluid lifts the graft off its bed then it is not able to get a new blood supply from it and so can't survive. This collection of fluid can either be blood or seroma (straw-coloured fluid). To help prevent this, the graft is usually made with small openings in it to allow any fluid to drain out. This is why the graft looks as though it has a criss-cross pattern on it (and this also helps a smaller graft cover a larger area). The graft is usually stitched down to the wound bed and a compressive dressing placed over the top to keep it in place. Sometimes this dressing is a vacuum assisted closure dressing (a 'VAC') – please see other VAC leaflet.
- **Movement (shear):** If the graft moves around too much on its new wound bed, the graft is not able to stick in place and get a new blood supply. To stop the graft moving around, you will have secure dressings in place as discussed above. We usually have a look at the graft after 5 days, at which point we know whether the graft has been successful.
- **Inappropriate wound bed:** Sometimes if the wound bed is not ready, the graft may not be able to survive. In this case, you may need a further operation or different type of operation.

Systemic factors that can affect graft survival include:

- **Smoking:** Smoking affects all types of wound healing and the survival of your skin graft is no exception. Smoking makes the very tiny blood vessels in your body less efficient at transporting blood to and from an area and so it may mean that your skin graft may not survive.
- **Poor nutrition:** Wound healing, including your skin graft, may be affected by lack of vitamins and nutrients. If this is the case, we may get a dietitian to see you, to help improve the situation.
- **Peripheral vascular disease (poor blood supply to the leg):** If you have peripheral vascular disease we may need to improve the blood supply to your leg first before

considering a SSG. If this is the case we may involve other teams, usually the vascular surgeons, to help restore good blood flow to the leg so that the graft is able to heal.

- **Diabetes:** If you have poorly controlled diabetes this may affect your ability to heal and so we will try and optimise your control before considering a skin graft.

Donor site morbidity

The area where we take the SSG from is called the donor site. This is a rectangular area of skin left behind, usually on the thigh. This can feel like you have fallen onto gravel and scraped off the top layer of your skin. It can, therefore, be quite sore soon after you have had your operation. To help with this we usually put some local anaesthetic into the area to numb it and we will give you regular oral (by mouth) pain killers as this wears off.

If there are no problems, the donor site takes about two weeks to heal. During this time we try to leave the dressing in place from your operation. This means you will not be able to shower this part of your leg. We leave the dressing on for this long so that the new top layer of skin can form over this area. This is called re-epithelialisation. This new skin is quite fragile and so we do not want to keep disrupting it with lots of dressing changes.

Once it is healed, we will ask you to moisturise and massage the area to help the scar settle. You will be left with a permanent scar here. It will usually be red and slightly raised at first, then will go purple and then will fade to become paler over 12 to 18 months. During this time you will be given advice about how to moisturise and massage your scars to ensure you get the best possible outcome.

Occasionally donor site scars can be problematic in that they may become thicker, itchy or painful. You may need to have additional treatment or surgery to help correct this.

Contour deformity and appearance

If you have lost tissue other than just skin, it is unusual for the skin graft to match the exact outline of your leg completely - usually, there will be an indentation. If this is the case, sometimes this can be improved with a much smaller operation once it is well healed, usually at least 6 months after your first operation.

Because the skin graft is usually designed in a criss-cross pattern to allow drainage holes for any fluid, this pattern can remain on your leg. Although this improves with time, the area will usually always look different to the rest of your leg, and will not grow hair in the same way.

Skin grafted skin is not as supple as normal skin and usually it can feel tight. Sometimes it can restrict movement if it is too close to a joint surface. If this does happen, further surgery may be needed to correct this.

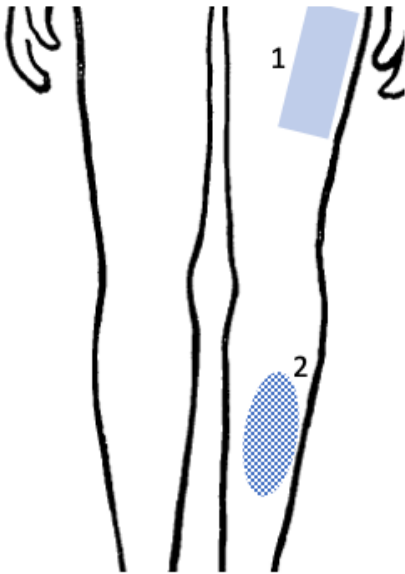
Risks associated with surgery:

Bleeding

Heavy bleeding is unusual but possible. It usually happens immediately or soon after surgery. It may result in the development of a haematoma (a painful swelling due to the collection of blood). A small haematoma underneath the graft may be manageable with dressings, however, larger haematomas may mean you may need to be taken back to theatre, under a general anaesthetic, to stop the bleeding. To reduce the risk of bleeding, you may be asked to stop any medications or supplements that may act to thin your blood before your surgery.

Scars

There will be scars from your surgery, and an example of possible scars is shown below. You will have a permanent scar where we have taken the skin from (the donor site) usually on your thigh (1), and you will have a scar around the skin graft where the wound used to be (2).



As discussed above, scars will usually be red and slightly raised at first, they then will go purple and then will fade to become paler over 12 to 18 months. During this time you will be given advice about how to moisturise and massage your scars to ensure you get the best possible outcome. Occasionally scars can be problematic in that they may become wider, thicker, red, itchy or painful. You may need to have additional treatment or surgery to help correct this.

Infection

Infection is always possible, although we do everything in sterile conditions inside the operating theatre. To help try and prevent this you will be given one dose of intravenous antibiotics during your operation and may be given some further doses afterwards. If you develop an infection you may need antibiotics and, occasionally, further surgery. Smoking and poorly controlled diabetes will increase your risk of developing an infection.

Swelling and pain

There will be some swelling of your leg and it may be tender for some months or even years after the surgery, but this pain should be controlled by tablet pain killers after the first day or two. Gently elevating the leg on one or two pillows at rest will help to reduce the swelling and pain.

Altered sensation or numbness

The skin that we have moved will always feel numb compared to the skin around it, but may improve slightly over time around the edges.

Wound healing problems

Sometimes wounds take longer than normal to heal, or the edges come apart. This can prolong recovery and make scars worse. Smokers are more likely to have wound healing problems.

Damage to deeper structures

This is very rare with a skin graft, but the surgery can damage deeper structures, including nerves and blood vessels in the leg. The machine used to shave off the skin can occasionally go too deep and if this is the case you may have a slightly different scar than expected. This rarely causes any permanent damage.

Blood clots

Blood clots can form in the leg (deep vein thrombosis – DVT) due to you not being able to move around as much as normal. These cause pain and swelling and need to be treated with blood thinning medication. Rarely, parts of these clots can break off and go to the lungs (pulmonary embolus – PE). This can cause difficulties in breathing and can cause death. The risk of this is higher if you have been in a big accident leading to the admission, smoke, are overweight or are taking the oral contraceptive pill.

Are there any alternatives?

There are several alternatives to this procedure which may or may not be suitable for you depending upon your reason for needing the procedure in the first place. Your surgeon will discuss these options with you prior to your surgery:

- 1) Do nothing. If a wound on your lower leg is unable to heal, doing nothing will usually result in severe infection and failure of any underlying bony injury to heal, which may lead to amputating the leg.
- 2) A skin flap to the area. If the wound on your leg involves more than just skin and has exposed bone or tendon at the bottom of it you may need a different sort of procedure, usually this would involve a 'flap'. A flap is piece of skin and fat or muscle that is moved from one area of your body and put into the wound or defect in order to reconstruct it. It is different to a skin graft in that it takes its own blood supply with it and so does not rely on the wound bed to give it a new blood supply, but it tends to be a larger operation.

How can I prepare for my SSG?

If your SSG surgery is being planned electively, it is important to stop smoking, get to a normal weight if you are over or underweight, optimise your nutritional status and any long-term health problems like diabetes, heart disease or peripheral vascular disease.

The procedure is usually performed under general anaesthesia, and if this is the case, you will be told to fast for 6 hours before the operation. This means that you must not eat anything for 6 hours before your operation. You may drink water only during this time, but must stop 2 hours before the operation. For these 2 hours you must not eat or drink anything. Smaller areas can be performed under local anaesthetic (injections to both areas).

You will be seen and examined by the anaesthetist and your surgeon before the operation. The surgeon will also place some markings on your legs which will be crucial for the operation. It is important not to rub these marks off.

Giving your consent (permission)

We want to involve you fully in all decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the

treatment, any alternative procedures have been made clear to you, and you understand what it involves, including possible risks and complications.

If you would like more information about our consent process, please speak to a member of staff caring for you.

What happens during a SSG?

The wound that needs a skin graft, on your lower leg for example, will be prepared for the skin graft to be put there. This involves cleaning the wound bed and removing any obvious infection or unhealthy tissue.

The skin graft (shave of skin) is taken, usually from your thigh, using an electric machine (called a dermatome). Usually local anaesthetic will be put into this area to help with any pain or discomfort after the operation. Where the skin is taken from is called the 'donor site'.

The skin graft is then passed through a machine which 'meshes' it. This gives it a criss-cross appearance and creates holes for any blood or fluid to drain out from, as well as allowing it to stretch over a bigger area, if required.

The skin graft is then placed onto the wound, trimmed to fit it, and secured in place either with stitches, skin glue or staples.

Both the donor site and the wound will then be dressed.

The operation time varies depending on the size of the area we are grafting but normally would take less than an hour.

Will I feel any pain?

Initially after your operation your leg may feel tight and swollen. This will improve gradually during the next couple of weeks. We will give you regular pain relief after the operation and you will also have some pain relief that you can ask the nurses for, if the regular pain relief is not enough.

What happens after a SSG?

Following your surgery, if you have had a general anaesthetic, you will wake up in recovery where a nurse will be looking after you. You will be able to eat and drink as soon as you feel able. Your surgical team will see you in the recovery and once they and your nurses are happy, you will be transferred to your normal ward.

We will usually look at the skin graft at around day 5 after your operation to see whether it has 'taken'. You may need to stay in hospital for these 5 days while we wait to see if your graft has worked. Depending on your need for the operation and your home situation sometimes you may be allowed to go home sooner and come back to our plastic dressing clinic (PDC) for us to look at the graft. You will be reviewed by your surgical team every day during your hospital stay and, once they are happy, you will be allowed to go home. You will also be seen by our physiotherapists.

Your donor site dressing will stay on, ideally for two weeks. Sometimes the dressing can become wet from any fluid leaking and so the nurses will reinforce this dressing for you.

Once the dressing has been removed, some parts of the donor site might take longer to heal completely and you may need further smaller dressings for some time.

While you are in hospital, nurses will regularly check your observations (heart rate, blood pressure, temperature, oxygen levels, urine output) to make sure you are recovering well. They will also give you an injection into your tummy or thigh every day whilst you are an inpatient with a medication to thin your blood, which helps to prevent blood clots forming in the leg (DVT) or lung (PE).

What do I need to do after I go home?

You will need to take it easy at home until everything has healed. When you are at rest or asleep, you should elevate your leg on one or two pillows. The physiotherapy team will instruct you regarding weight bearing through the affected leg, exercises, and activities at home depending on the reason for your operation. You will not be able to exercise normally for several months. You will also not be able to drive until everything has healed and is pain-free enough not to distract you and so that you can do an emergency stop.

It is important to look out for any signs of infection around the skin graft or where we took the skin graft from. These include: increasing pain, redness, swelling, or leaking from around the wounds, or more general signs, such as having a fever or feeling generally unwell or nauseous. If you have any of these symptoms you must contact your GP or a member of the surgical team.

Will I have a follow-up appointment?

You will be given an appointment to come to our Plastics Dressing Clinic for a review of your wounds a week after you leave hospital. You will also be given an appointment to come back to your Consultant Outpatient Clinic for review usually 2 weeks after your surgery, for wound, skin graft and, if necessary, bone healing checks, and then as required. We will organise these appointments for you and you will either be given the date and time of them on your discharge summary from hospital or you will be informed via text or letter once you are at home.

If you have any problems with your wounds or have any concerns you will be given an information leaflet with the contact numbers on of different members of our team including our dressing clinic nurses and the on-call plastic surgical team.

Useful sources of information

The British Association of Plastic and Reconstructive Surgery (BAPRAS) provides detailed information regarding lower limb injuries. Find BAPRAS lower limb patient information here: www.bapras.org.uk/public/patient-information/surgery-guides/open-fractures-of-the-lower-limb

Sharing your information

King's College Hospital have teamed up with Guy's and St Thomas' Hospitals in a partnership known as King's Health Partners Academic Health Sciences Centre. We are working together to give our patients the best possible care, so you might find we invite you for appointments at Guy's or St Thomas'. To make sure everyone you meet always has the most up-to-date information about your health, we may share information about you between the hospitals.

Contact us

If you have any questions or concerns about your lower limb flap, please contact our Senior Lower Limb Reconstruction Nurse Specialist, Krissie Stiles, call the hospital switchboard on **020 3299 9000**

and ask for Wi-Fi phone **38567** or email k.stiles@nhs.net
Krissie is available Monday and Tuesday, 8am to 8pm and Wednesday 8am to 4pm.
At other times, please contact the Senior Orthopaedic Trauma Coordinators (see below).

If you have any concerns about your bone healing, please contact our Senior Orthopaedic Trauma Coordinators, Dawn James and Emma Harris on: **020 3299 5197**

Care provided by students

We provide clinical training where our students get practical experience by treating patients. Please tell your doctor or nurse if you do not want students to be involved in your care. Your treatment will not be affected by your decision.

PALS

The Patient Advice and Liaison Service (PALS) is a service that offers support, information and assistance to patients, relatives and visitors. They can also provide help and advice if you have a concern or complaint that staff have not been able to resolve for you. The PALS office is located on the ground floor of the Hambleton Wing, near the main entrance on Bessemer Road - staff will be happy to direct you.

PALS at King's College Hospital, Denmark Hill, London SE5 9RS

Tel: **020 3299 3601**

Email: kch-tr.palsdh@nhs.net

You can also contact us by using our online form at www.kch.nhs.uk/contact/pals

If you would like the information in this leaflet in a different language or format, please contact PALS on 020 3299 1844.