What is a sacral anterior root stimulator?

This is an electronic implant that allows you to control your bladder and possibly your bowels. In men, it may also help erections. It involves an operation at the middle of the spine to divide the sensory nerves that supply the bladder (S2, S3 & S4). Although this deprives the bladder of any sensation which would have caused over-activity, it also improves bladder volume and elasticity and virtually eliminates the risk in the vast majority of patients of the serious consequences of autonomic dysreflexia completely.

The implant consists of an external control box and a pacemaker-type receiver-stimulator that is surgically placed under the skin of the abdomen.

How does the implant work?

The implant sends electrical signals through electrodes to the nerves that lead to the bladder and bowel. The user controls the implant with the external control box. This is about the size of a personal stereo/CD player.

You will need to stimulate the implant at regular intervals through the day to empty your bladder. This requires a certain amount of hand control and if you have a high spinal cord lesion you may need help with this. When the implant is stimulated it is important that there is a receptacle for your urine to drain into. You can do this by sitting on a toilet or men may choose to wear a condom.
What are the advantages of a sacral anterior root stimulator?

You may be experiencing uncontrolled/troublesome bladder activity, which might be causing you to be dysreflexic or might be causing repeated urinary tract infections, reflux (back flow) of urine to the kidneys, or some degree of kidney damage as a result of the bladder over-activity. A sacral anterior root stimulator might allow you to become independent of catheters and condoms, and can reduce the number of urinary tract infections and the risk of kidney damage.

- The stimulator gives you the advantage of emptying your bladder when you want to empty it.
- It also gives a good chance of improving your bowel management, by shortening the time of bowel care to less than half an hour in most instances. Although it does not actually empty the bowel by stimulation, by bringing the stool lower into the rectum, it does make manual evacuation easier.

For men:
- There is a 50-60% chance that you will have a full erection (for as long as it is wanted) when the stimulator is used on a specific programme for erection.

What are the disadvantages or risks of the operation?

As with all operations there are risks involved. Your doctor will discuss with you the specific risks of this operation and general risks that may occur with any operation.

Specific risks with this operation are:
- There may be temporary damage to the nerves resulting in the stimulator not working for several months. During this time the bladder would have to be managed with an indwelling or intermittent catheter.
- Bladder capacity may take several weeks to increase.
- The implant can become infected and underlying wires may break and require further surgery to re-position or replace these. If the implant or wound becomes infected you may need antibiotics.
- There is a risk of the implant not working at all. If it does not work there is a risk of urinary retention and therefore another form of bladder management would have to be used - for example with an indwelling catheter.

For men:
- Men who have reflex erections will lose this.
- You may not be completely dry between the times that you stimulate the implant. A very small number of men may need to wear a condom or a pad.
- There is a 40-50% chance that you will not have a full erection when the stimulator is used on a specific programme for erection.
Who can have this operation?

These are the main criteria for this implant:

1. You need to have finished growing (be over 18 years old).
2. You will need to have a complete supra sacral spinal cord lesion. If you have an incomplete lesion you may experience pain when the implant is stimulated.
3. You need to be neurologically stable. This usually means that this surgery would not be considered soon after your spinal cord lesion, and not before at least one or two years after the injury.
4. You need to have reflex bladder contractions. This will be assessed during video-urodynamic studies of your bladder.

In addition, the following points need to be considered:

For women:
- You will have to transfer onto the toilet 4-5 times a day to empty your bladder. It is therefore important to consider how this will impact on your lifestyle.

For men:
- Men who have reflex erections will lose this.
- You may not be completely dry between the times that you stimulate the implant. A very small number of men may need to wear a condom or a pad.

What will happen before the operation?

You will need to have video-urodynamics to assess your suitability for the implant. This can be done as an outpatient. If you are then considered suitable for the implant you will be placed on a waiting list.

You will be admitted to hospital the day before the operation. Routine blood samples will be taken. The doctor will explain the operation to you again, and you will be given the opportunity to ask any questions about the operation. You will be asked to sign a consent form.

On the night before your operation, you will be asked to eat nothing after midnight. You may drink clear fluids until four hours before the operation, after which you will be asked not to drink at all.

The operation

You will have a general anaesthetic. The operation takes 6-8 hours and involves placing electrodes on the 2nd, 3rd, and 4th sacral nerve roots through an incision at the base of the spine. To stop reflex bladder activity, the sensory nerves from the bladder must be cut (this is often done through a second incision). The receiver is placed under the skin, in the upper left side of the abdomen and the wires are tunnelled round the chest wall to meet the electrodes at the base of the spine.

The 2nd, 3rd, and 4th sensory nerves supply sensation to the bladder and the anal canal.
Sacral Anterior Root Stimulator (SARS) and Dorsal Rhizotomy (4 of 5)

(back passage). Even though you may not have felt any bladder or bowel sensation before the operation, the nerves are still alive. Cutting these nerves interrupts the reflex action of the bladder and bowel, and substantially reduces, if not completely eliminates, the risk of autonomic dysreflexia (of bladder and bowel origin) in the future. It will also allow the bladder muscle to relax completely and only respond to contraction when the implant is stimulated.

The operation involves several incisions: one in your back (between T12 and L2), one between the buttocks, one on your side, and one in the upper part of your abdomen. You may need a blood transfusion.

What will happen after the operation?

You will need to remain on bed rest for about 5 days to allow you to recover from the operation. A catheter will be placed in your bladder to drain it and an infusion (‘drip’) in your arm to give you fluids. On the 4th or 5th day after the operation, the catheter will be removed. Your bladder will be filled with fluid and the implant will be stimulated. The first attempt might not succeed. Sometimes the nerves, due to being handled, can take several months to recover. If this occurs your bladder will be managed with an indwelling catheter or by self- intermittent catheters during this time.

It is important that the operation site is not strained in any way, so you will be advised against self-transferring and any other manual lifting for six weeks after the surgery. You will be assessed when using a hoist or other transfer equipment. Your community occupational therapist and/or district nurse will be asked to supply you with any equipment that you will need at home. You may need help with your bowel care. This will be assessed and, if necessary, a district nurse will visit you at home. You are likely to be discharged from hospital approximately one week after the surgery. We will advise you to stay off work for at least six weeks and to avoid contact sports and excessive upper body movement.

Stimulation may cause spasm of your legs. This is quite normal and should not cause concern.

If there is still a wound when you go home, the dressing will need to be changed. We will arrange for a district nurse to do this for you.

Long term follow-up

You will need to attend regular appointments at the Spinal Centre for as long as you are a patient here. The Spinal Centre will help you with any technical problems you may have. It may be necessary to repeat video-urodynamics regularly to check the implant is working efficiently.

Frequently asked questions

1. Will I be able to do without continence appliances?

The majority of people who have this surgery do not need to wear continence appliances.
However, if you are not completely dry between the times that you stimulate you may need to wear a condom (men) or a pad.

2. Will it be painful when I stimulate the implant?

The operation is only done on people with a complete spinal cord injury, so you should not experience any pain when using the implant. Some patients may experience increased spasm each time they stimulate the implant.

3. When I stimulate my bladder will my bowels also be stimulated?

No. The control box allows you to select different programmes. The programme for your bladder is separate from the programme for your bowels.

4. Will the implant enable a man to have erections?

Nearly 60% of the time the implant causes erection for as long as the system is activated. The operation will make men lose reflex erections and reflex ejaculation. However, medications or injections can be given to help with this.

5. Will I still get autonomic dysreflexia?

You may still experience this caused by sources other than the bladder or bowel. It is very likely that the procedure will greatly reduce this or completely abolish it.

6. Can the operation be reversed?

It is not possible to reverse this operation because nerves have been cut. The implant can be taken out if necessary. If this happens then another form of bladder management would have to be used.

7. How often does the implant have to be replaced?

The implant needs to be replaced approximately every seven years.

Useful telephone numbers

Spinal consultant’s secretary: ……………………………
Surgeon’s secretary: ………………………………
Ward: …………………………………
Spinal outpatient nurses: 01722 429291 or 01722 429130.

We hope this leaflet will have answered some of your questions. If you need more information please do not hesitate to contact the above people.