Sling implantation

Sling implantation is the standard surgical treatment for stress urinary incontinence in women. Slings provide support to the pelvic floor muscles and help the urethra to better resist pressure from a full bladder. Slings are placed under the urethra to support it. There are various types, depending on:

- Their material. Slings can be synthetic or made of human or animal tissue
- Their shape. Slings can vary in length and width
- The way they attach to tissue

Which type of sling is recommended for you depends on your individual situation and needs. It also depends on the availability of different types of slings in your hospital and your surgeon’s experience with them.

When should I consider a sling?

Sling implantation is the most commonly recommended option for the treatment of SUI. Slings improve SUI in 85 to 90% of cases. If the surgery is successful, the effect is generally long-lasting. Your doctor can also recommend this surgery if you have mixed urinary incontinence. Because the surgery aims to treat only SUI symptoms, it may be less effective.
How are slings implanted?
For the procedure you usually receive local or spinal anaesthesia, but in some cases you may be recommended general anaesthesia. First the doctor inserts a catheter to make sure that your bladder is completely empty during surgery.

The doctor then makes an incision in the front of the vaginal wall to insert the sling. The two ends of the sling are put in position on both sides of the urethra, shaping the sling like a hammock. Finally, the ends of the sling are attached to tissue. In retropubic slings, the ends are attached just above the pubic bone. In transobturator slings the ends are attached to tissue around the groin (Fig. 1a and 1b).

![Fig. 1a: A retropubic female sling.](image1.png)

![Fig. 1b: A transobturator female sling.](image2.png)
**How do I prepare for the procedure?**
Before the surgery the doctor will ask for a urine sample to make sure you do not have a urinary tract infection. If you have an infection, your doctor will prescribe antibiotics before, during, and after the operation.

Your doctor will advise you in detail about how to prepare for the procedure. If you need general anaesthesia, you must not eat, drink, or smoke for 6 hours before the surgery. If you are taking any prescribed medication, discuss it with your doctor. You may need to stop taking it several days before surgery. Your doctor will advise you on when you can start taking it again.

**How long will it take me to get back to my daily activities?**
The doctor will generally remove the catheter within 24 hours after surgery and monitor your recovery. Usually you can leave the hospital the day after the procedure. If you have problems urinating or there is much post void residual urine in the bladder, you may have to stay longer. The recommended length of hospital stay varies in different countries.

After any surgery, your body needs time to fully recover. It can take up to a month for the wound to completely heal. During this time you may experience pain in the pelvic area, or feel pain when you urinate. You may also have vaginal discharge. Your doctor can prescribe medication to deal with these symptoms.

Recommendations for 4-6 weeks after the surgery:

- Drink 1-2 litres every day, especially water
- Do not lift anything heavier than 5 kilograms
- Do not do any heavy exercise
- Take showers instead of baths
- Avoid thermal baths, or going to the sauna
- Adapt your diet to prevent constipation
- Avoid vaginal penetration

You need to go to your doctor or go back to the hospital right away if you:

- Develop a fever
- Are unable to urinate
- Have heavy blood loss or pain
- Notice the wound starts to bleed or leak transparent fluid, or it hurts

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### Advantages
- High chance of curing stress urinary incontinence
- Long-term solution
- Minimally-invasive procedure
- Fast recovery

### Disadvantages
- Risk of injury to or perforation of the bladder
- Risk of injury to or perforation of urethra
- Very low risk of injury to the bowel or blood vessels in the pelvic area
- Risk of temporary urinary retention after surgery
- Risk of urinary tract infection
- Risk of having pain during sex
- Risk of sling obstruction
- Very low risk of erosion of the sling into the urethra or the bladder
Burch Colposuspension

This surgery is a treatment for stress urinary incontinence in women. The aim is to reposition the bladder neck so that it can better resist the pressure from a full bladder. Your doctor can also recommend this surgery if you suffer from mixed urinary incontinence. Because the surgery is designed to treat only SUI symptoms, it may be less effective in these cases.

When should I consider colposuspension?

Burch colposuspension is an alternative treatment to sling implantation if you have mild to moderate urinary incontinence. Because slings are the most common treatment option for SUI, colposuspension is generally only recommended if they are not the best treatment option for you.

How is Burch colposuspension performed?

For Burch colposuspension you will receive general anaesthesia. First the surgeon inserts a catheter into your bladder, to make sure it is completely empty. Then, the top of your vagina is attached to the ligament behind your pubic bone with supporting stitches. This will lift your bladder neck. (Fig. 2).

Burch colposuspension can be performed by open surgery or laparoscopic surgery. For open surgery the surgeon makes an incision in your lower abdomen to access the pelvic area directly. For laparoscopic surgery, the surgeon inserts small plastic tubes into your abdomen. Through these tubes the surgeon can insert the instruments needed to perform the surgery. One of the small tubes is used to insert a camera which allows the surgeon to see a high-quality image of the area on a video monitor (Fig. 3).

Fig. 2: In Burch colposuspension, supporting stitches lift the bladder neck.
Laparoscopic and open surgery are equally effective to cure SUI in women. In general, hospital stay is shorter with laparoscopic surgery.

**Fig. 3: For laparoscopic surgery the surgeon inserts the surgical instruments through small incisions in the abdomen.**

**How do I prepare for the procedure?**
Before the surgery the doctor will ask for a urine sample to make sure you do not have a urinary tract infection. If you have an infection, your doctor will prescribe antibiotics before, during, and after the operation.

Your doctor will advise you in detail about how to prepare for the procedure. You must not eat, drink, or smoke for 6 hours before surgery to prepare for the anaesthesia. If you are taking any prescribed medication, discuss it with your doctor. You may need to stop taking it several days before surgery. Your doctor will advise you on when to start using it again.

**How long will it take me to get back to my daily activities?**
The doctor will generally remove the catheter immediately after the surgery and monitor your recovery. Usually you can leave the hospital a few days after the procedure. If you have problems urinating or there is much residual urine in the bladder, you may have to stay longer. The recommended length of hospital stay varies in different countries.

Complete recovery from Burch colposuspension may take up to 6 weeks. During this time you could experience occasional pain in the pelvic area, or pain
or a burning sensation when you urinate. Discuss with your doctor if you can get medication to deal with these symptoms.

Recommendations for 4-6 weeks after the surgery:

- Drink 1-2 litres every day, especially water
- Do not lift anything heavier than 5 kilograms
- Do not do any heavy exercise
- Take showers instead of baths
- Avoid thermal baths, or going to the sauna
- Adapt your diet to prevent constipation
- Avoid vaginal penetration

You need to go to your doctor or go back to the hospital right away if you:

- Develop a fever
- Are unable to urinate on your own
- Have heavy blood loss or pain
- Notice the wound starts to bleed or leak transparent fluid, or it hurts

Advantages
- High chance of curing SUI by repositioning the bladder neck
- Long-lasting effect

Disadvantages
- Risk of injury to the bladder or the urethra during surgery
- Very low risk of injury to the bowel or blood vessels in the pelvic area
- Risk of temporary urinary retention
- Risk of having pain during sex
Artificial compression devices (balloon insertion)

Artificial compression devices, also known as balloons, are a second-line treatment for moderate to severe stress urinary incontinence (SUI). They compress the urethra just below the bladder neck so that it can better resist the pressure of a full bladder. The goal of the balloons is to reduce urine leakage during activities such as sneezing, coughing, laughing, or running.

The artificial compression device consists of a balloon which can hold fluid, a small titanium port, and a tube that connects the port to the balloon (Fig. 4). The port allows the doctor to adjust the amount of fluid in the balloons. Two balloons are inserted on either side of the urethra during a minimally-invasive procedure.

When should I consider a balloon insertion?
Balloon insertion is recommended after a previous surgical treatment to cure or improve SUI has failed. Your doctor may also recommend it in case of specific conditions for which other treatment options are less effective.
How are balloons inserted?
For the procedure you usually receive general anaesthesia, but in some cases you may be recommended spinal anaesthesia. First the doctor inserts a catheter to make sure that your bladder is completely empty during the surgery.

The doctor then makes an incision in the labia. Using x-ray for guidance, the doctor places the first balloon on one side of the urethra, right under the bladder neck. This is then repeated with the second balloon on the other side of the urethra.

Finally, the doctor positions the titanium ports in the labia and connects them to the balloons. This is done so that the volume of the balloons can easily be adjusted after surgery.

How do I prepare for the procedure?
Before the surgery the doctor will ask for a urine sample to make sure you do not have a urinary tract infection. If you have an infection, your doctor will prescribe antibiotics before, during, and after the operation.

Your doctor will advise you in detail about how to prepare for the procedure. You must not eat, drink, or smoke for 6 hours before surgery to prepare for the anaesthesia. If you are taking any prescribed medication, discuss it with your doctor. You may need to stop taking it several days before surgery. Your doctor will advise you on when you can start taking it again.

How long will it take me to get back to my daily activities?
The doctor will generally remove the catheter immediately after the surgery and monitor your recovery. Usually you can leave the hospital a few days after the procedure. If you have problems urinating or there is much post void residual urine in the bladder, you may have to stay longer. The recommended length of hospital stay varies in different countries.

After any surgery, your body needs time to fully recover. It can take up to 6 weeks for the wound to heal completely. During this time you may experience pain in the pelvic area, or feel pain when you urinate. Your doctor can prescribe medication to deal with these symptoms.

Recommendations for 4-6 weeks after the surgery:

- Drink 1-2 litres every day, especially water
- Do not lift anything heavier than 5 kilograms
- Do not do any heavy exercise
- Take showers instead of baths
- Avoid thermal baths, or going to the sauna
- Adapt your diet to prevent constipation
- Avoid vaginal penetration

You need to go to your doctor or go back to the hospital right away if you:

- Develop a fever
- Are unable to urinate on your own
- Have heavy blood loss or pain

### Advantages
- High chance of curing stress urinary incontinence
- The volume of the balloons can be adjusted
- Does not have a negative effect on possible future surgical treatment

### Disadvantages
- Risk of injury to the vagina, the urethra or the bladder during surgery
- Very low risk of injury to the bowel or blood vessels in the pelvic area
- Risk of temporary urinary retention after surgery
- Risk of erosion of the device leading to infection of the bladder, vagina, or urethra
- Risk of needing another surgery in case the device is not effective
Artificial Urinary Sphincter implantation

Artificial urinary sphincter implantation, or AUS, is a second-line treatment for moderate to severe stress urinary incontinence (SUI). With the help of a hand-controlled pump, the AUS allows you to control your bladder by compressing and releasing a cuff around the urethra (Fig. 5). The goal of the AUS is to reduce urine leakage during activities such as sneezing, coughing, laughing, or running.

The AUS consists of an inflatable cuff which is placed around the urethra, a reservoir to hold urine, and a pump to control the cuff.

When should I consider AUS implantation?

Usually AUS is indicated in complex cases, after a previous surgical treatment to cure or improve SUI has failed. Your doctor may recommend it when other treatment options have a low chance of being successful.

The doctor will ask you to do a urodynamic test to make sure there are no contraindications for getting an AUS. You have to be able to manually control the pump. Before the surgery is scheduled, the doctor or nurse will sit down with you to discuss how the device works and to make sure you feel comfortable using it.

How is the AUS implanted?

For the procedure you usually receive general anaesthesia, but in some cases you may be recommended spinal anaesthesia. First the doctor inserts a catheter to make sure that your bladder is completely empty during the procedure.
The doctor makes an incision in the lower abdomen, to place the cuff around the urethra. Then the doctor positions the reservoir. Finally the pump is placed in the labia and connected to the other two elements of the device (Fig. 5). The cuff is left open until the doctor activates it a few weeks later.

How do I prepare for the procedure?
Before the surgery the doctor will ask for a urine sample to make sure you do not have a urinary tract infection. If you have an infection, your doctor will prescribe antibiotics before, during, and after the operation.

Your doctor will advise you in detail about how to prepare for the procedure. You must not eat, drink, or smoke for 6 hours before surgery to prepare for the anaesthesia. If you are taking any prescribed medication, discuss it with your doctor. You may need to stop taking it several days before surgery. Your doctor will advise you on when you can start taking it again.

How long will it take me to get back to my daily activities?
The doctor will generally remove the catheter the day after the surgery and monitor your recovery. You may have to take antibiotics to prevent an infection. If you are able to urinate without any problems and there is not much residual urine in the bladder, you will be discharged from the hospital a few days later. The length of hospital stay can vary in different countries.

After you leave the hospital, your body still needs time to fully recover from surgery. Because of this, the AUS will not be activated until your lower urinary tract has completely healed. This means that in the weeks after the procedure you will continue to have urine leakage. During this time you may also experience pain in the pelvic area, or feel pain when you urinate. Your doctor can prescribe medication to deal with these symptoms.

The doctor will schedule an appointment to activate the device 4-6 weeks after surgery.

During the recovery period your doctor may recommend to:
• Drink 1-2 litres every day, especially water
• Not lift anything heavier than 5 kilograms
• Not do any heavy exercise
• Take showers instead of baths
• Avoid thermal baths, or going to the sauna
• Prevent constipation by adapting your diet
• Avoid vaginal penetration

You need to go to your doctor or go back to the hospital right away if you:
• Develop a fever
• Are unable to urinate on your own
• Have heavy blood loss or pain
• Have blood in the urine
• Notice the wounds start to bleed or leak transparent fluid, or hurt

Advantages
• Good option in case previous surgical treatment has failed
• High chance of curing stress urinary incontinence
• High chance of returning to a normal schedule of urination, even if you suffered from severe incontinence

Disadvantages
• Risk of injury to the vagina, the urethra or the bladder during surgery
• Very low risk of injury to the bowel or blood vessels in the pelvic area
• Risk of infection of the device
• Risk of erosion of the AUS in the urethra or the bladder neck
• Risk of mechanical failure of the device
• Requires the ability to operate the device and to manually control the pump
• You will remain incontinent until the device is activated 4-6 weeks after surgery
Injections with bulking agents

If you suffer from SUI, your doctor may recommend treatment with bulking agents. These are injected into your urethral wall so that the urethra is compressed and can better resist the pressure of a full bladder. The bulking agent is injected as a liquid that then hardens into a spongy material to strengthen the urethral wall. Bulking agents can consist of synthetic materials or bovine collagen. The effect of the procedure will wear off with time.

When should I consider a bulking agent injection?
Injection with bulking agents is recommended if you are unfit for other treatments or you prefer to postpone a more invasive surgery.

How are bulking agents injected?
For the procedure you usually receive local anaesthesia. First the doctor inserts a catheter to make sure that your bladder is completely empty during the procedure.

The doctor then uses an endoscope to guide a needle into the wall of the urethra. The doctor injects the bulking agents on both sides of the urethra (Fig. 6).

How do I prepare for the procedure?
Before the procedure, the doctor will ask for a urine sample to make sure you do not have a urinary tract infection. If you have an infection, your doctor will prescribe antibiotics.

Fig. 6: Bulking agents are injected into the urethral wall.
How long will it take me to get back to my daily activities?
The doctor will generally remove the catheter shortly after the procedure. If you are able to urinate without any problems and there is not much residual urine in the bladder, you will be discharged from the clinic.

For 3-4 weeks your doctor may recommend to:

- Drink 1-2 litres every day, especially water
- Not lift anything heavier than 5 kilograms
- Not do any heavy exercise
- Take showers instead of baths
- Avoid thermal baths, or going to the sauna
- Prevent constipation by adapting your diet
- Avoid sexual activity with vaginal penetration for 1 month

You need to go to your doctor or go back to the hospital right away if you:

- Develop a fever
- Are unable to urinate on your own
- Have heavy blood loss or pain

### Advantages

- Minimally-invasive procedure
- Usually does not require general anaesthesia
- Often performed in outpatient setting
- Does not have a negative effect on possible future surgical treatment

### Disadvantages

- Temporary effect
- Risk of infection of the urethral wall
- Risk of temporary urinary retention

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This information was updated in November 2014.

This leaflet is part of EAU Patient Information on Urinary Incontinence. It contains general information about diagnosis and assessment of the condition and available treatment options. If you have any specific questions about your individual medical situation you should consult your doctor or other professional healthcare provider. No leaflet can replace a personal conversation with your doctor.

This information was produced by the European Association of Urology (EAU) in collaboration with the EAU Section of Female and Functional Urology (ESFFU), and the European Association of Urology Nurses (EAUN).

The content of this leaflet is in line with the EAU Guidelines.

You can find this and other information on urological diseases at our website: [http://patients.uroweb.org](http://patients.uroweb.org)

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