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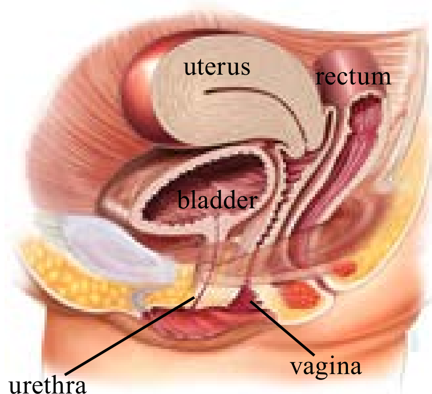
Mid-urethral Sling (MUS) Procedures for Stress Incontinence

A Guide for Women

1. What are mid-urethral slings?
2. How are the operations done?
3. How do they work?
4. Do I need an anesthetic for the operation?
5. When will I be able to go home after the operation?
6. When can I return to my normal routine?
7. What are the chances of success of the operation?
8. What complications can occur?
9. My bladder isn't too bad at the moment. Should I have an operation now to prevent it from getting worse in the future?
10. I haven't finished my family yet. Can I still have a mid-urethral sling?
11. How will the operation affect my sex life?
12. Is there anything else I can do instead of an operation?

What are mid-urethral slings?
Mid-urethral sling (also known as tape) procedures are operations designed to help women with stress incontinence. Stress incontinence is the leakage of urine with everyday activities such as coughing, sneezing, or exercise. It is a very common and embarrassing problem affecting up to 1 in 3 women. Stress incontinence may be cured or improved with pelvic floor exercises and lifestyle modifications, but if these strategies fail, then surgery may be recommended. The most frequently offered type of operation is a mid-urethral sling procedure, a simple day case procedure that has been performed for more than 3 million women worldwide.

Figure 1: Normal Anatomy



The operation involves placing a sling of polypropylene mesh (suture material that is woven together – about 1 cm wide) between the middle portion of the urethra and the skin of the vagina. The urethra is the pipe through which the bladder empties. Normally the muscle and ligaments which support the urethra close firmly when straining or exercising to prevent leakage. Damage or weakening of these structures by childbirth and/or the aging process can result in this mechanism failing, leading to urine leakage. Placing a sling underneath the urethra improves the support and reduces or stops leaking.

Mesh sling procedures have been done safely for many years, however, in view of the recent media coverage of vaginal meshes, we have provided answers to frequently asked questions about meshes on our website (see *www.yourpelvicfloor.org/mesh-mid-urethral-slings/*).

How are the operations done?
There are three main routes for placing the sling: the retropubic route, the transobturator route, and the "single incision" or "mini-sling.". In some women with severe stress incontinence the retropubic route appears to be more successful. Mini-slings are less invasive than the other methods but are not quite as effective in controlling stress incontinence in the longer term or in women with severe incontinence. The surgical route will depend on your doctor and the common practice in your part of the world.

Retropubic Route
In the retropubic approach, the sling is placed through a small cut made in the vagina over the mid-point of the urethra. Through this the two ends of the sling are passed from the vagina, passing either side of the urethra, to exit through two small cuts made just above the pubic bone in the hairline, about 4-6 cm apart. The surgeon will then use a camera (cystoscope) to check that the sling is correctly positioned and not sitting within the bladder. The sling is then adjusted so that it sits loosely underneath the urethra and the vaginal cut is stitched to cover the sling over. The ends of the sling are cut off and they too are covered over.

The most common retropubic operation to be carried out is the TVT (Tension-free Vaginal Tape). This is also the operation that has been done for the longest time, and research suggests that if it is initially successful in controlling stress incontinence then it is still likely to be working up to at least 17 years later. The other retropubic procedures are likely to have similar long-term success rates.

Figure 2: Retropubic Sling

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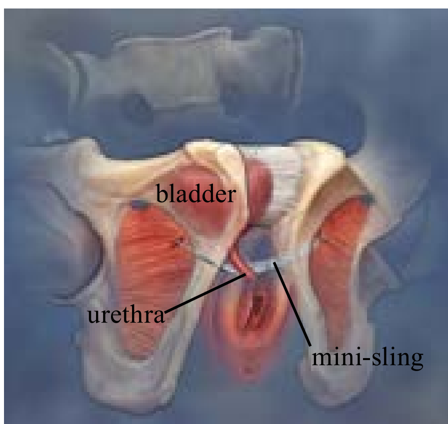
Transobturator Route
In the transobturator approach, a small incision is made in the vagina at the same place as for the retropubic operation. The ends of the sling are passed through two small incisions made in the groin. Each end of the sling passes through the obturator foramen, which is a gap between the bones of the pelvis. The ends are cut off once the sling is confirmed to be in the correct position and the skin closed over them.

Figure 3: Transobturator Sling

Mini-sling
The mini-sling procedure is similar to the initial part of the retropubic approach, except that the ends of the sling do not come out onto the skin and are anchored in position.

Figure 4: Mini-sling



How do they work?
The sling (or tape) prevents leakage by supporting the urethra and mimicking the ligaments that have been weakened by having babies and the aging process. Once the sling is in position, tissue grows through the holes in the weave and so anchors the sling in position. This may take 3 to 4 weeks.

Do I need an anesthetic for the operation?
Although it is possible to do the operation with just local anesthetic, most surgeons would supplement this with a strong sedative or full general anesthesia. Occasionally, the operation is done using a spinal or an epidural anesthetic.

When will I be able to go home after the operation?
Most surgeons will allow patients to go home after a mid-urethral sling operation once they are emptying their bladder efficiently and after any pain has been adequately controlled. Normally this time will vary from a few hours to a couple of days, depending on the facilities available.

When can I return to my normal routine?
You should be able to drive and be fit enough for usual daily activities within a week of surgery. You are advised to avoid heavy lifting and sport for 6 weeks to allow the wounds to heal and the sling to be firmly held in place.

What are the chances of success of the operation?
Research tells us that, in the short term, this operation is as successful as other more invasive procedures used for controlling stress incontinence, but with a quicker recovery and less chance of needing surgery for prolapse in the first two years after the surgery. Between 80-90% of women are happy with their operation and feel that their incontinence is either cured or much better. However, there are a small number of women for whom the operation does not seem to work. The operation is less likely to be a success if you have had previous surgery to your bladder (such as a repair operation).

What complications can occur?
There is no completely "risk free" operation for stress incontinence. The likelihood of any of the following complications occurring is 1-10 per 100 patients.
Complications include:

- *Urinary tract infections*. These are common after any procedure and should respond to antibiotics. Symptoms of a urinary tract infection include burning, stinging, the need to pass urine frequently and in some cases bloody, cloudy, or offensive smelling urine. If you notice these symptoms contact your doctor.
- *Bleeding*. Bleeding sufficient to require a blood transfusion is very rare. Sometime bleeding can happen where the tape from a retropubic operation passes behind the pelvic bones. This is normally self-limiting and only very rarely needs an operation to fix.
- *Difficulty passing urine (voiding difficulty)*. Voiding difficulty may occur in 1-5% of patients, often because of swelling around the urethra or discomfort and will usually settle quickly (within a week). During this time your doctor may recommend a fine tube or catheter be used to drain the bladder. If your urine stream remains very slow or you cannot empty the bladder well even after the swelling has settled, your care provider will discuss other possibilities, such as cutting or stretching the sling, with you.
- *Sling exposure*. Very occasionally the sling can appear in the wall of the vagina a few weeks, months, or years after an operation. Symptoms may include vaginal bleeding, vaginal discharge, or pain with intercourse for the patient or her partner. In such cases, you should consult your surgeon who will be able to advise you further. Management would involve either recovering the tape or removing the section of tape that is exposed. The risk of this happening is 2-4%.
- *Bladder or urethral perforation*. Bladder perforation occurs most often during a retropubic operation (1-5%), while the urethra is at most risk of damage during a transobturator procedure (1% or less). Your surgeon will check for damage during the operation by looking inside the bladder and urethra using a special telescope (cystoscope). Removing and correctly locating the needle to which the sling is attached should resolve the situation. The bladder is normally then drained by a catheter for 24 hours to allow the hole in the bladder to heal itself. Damage to the urethra is more diffi-

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cult to deal with and should be discussed with your surgeon. Bladder perforation, as long as it is recognized, does not affect the success of the operation.

- *Urgency and urge incontinence*. Women who have bad stress incontinence often experience urgency and urge incontinence (leakage of urine associated with the sensation of urgency). About 50% of women notice an improvement in urgency symptoms, but for about 5% the symptoms may worsen following a mid-urethral sling procedure.
- *Pain*. Long-term pain following sling surgery is unusual. Studies suggest that after the retropubic operation about 1% will develop vaginal or groin pain. Similar pain in the vagina or at the site of the cuts where the tape is put in can occur in as many as 10% of women after a transobturator approach. In most cases pain is short lived and does not occur for more than 1 to 2 weeks. Rarely pain may not settle, and removal of the sling is required.

My bladder isn't too bad at the moment. Should I have an operation now to prevent it from getting worse in the future?
It is difficult to predict what will happen to your bladder in the future. Doing regular pelvic floor exercises improves stress incontinence in up to 75% of women and may mean surgery is never required. You should have the operation only if you feel the stress incontinence is affecting the quality of your life now, not to prevent it from deteriorating in the future.

I haven't finished my family yet. Can I still have a mid-urethral sling?
Many surgeons would want to avoid surgery until a woman's family is complete because future pregnancy may compromise the results of the initial surgery.

How will the operation affect my sex life?
You are advised to wait for 4 weeks after the operation before having sexual intercourse. In the long term there is no evidence that the operation will impact your sex life.

Is there anything else I can do instead of an operation?

- *Pelvic floor exercises (PFE)*. Pelvic floor exercises can be a very effective way of improving symptoms of stress urinary incontinence. Up to 75% of women show an improvement in leakage reduction after PFE training. The benefits of pelvic floor exercises are maximized if practice is carried out regularly. Maximum benefit usually occurs after 3 to 6 months of regular exercising. You may be referred to a physical therapist (physiotherapist) to supervise this. If you also have a problem with urge urinary incontinence your doctor may also advise bladder retraining exercises.
- *Continence devices*. Continence devices are available which fit in the vagina and help control leakage. These can be inserted prior to exercise or worn continuously. Some women find inserting a large tampon prior to exercise may prevent or reduce leakage. These types of devices are most suitable for women with more minor degrees or urinary incontinence or who are waiting definitive surgical treatment.
- *Lifestyle changes*. If you are overweight, reducing weight can result in an improvement in incontinence symptoms. Maintaining good general health, quitting smoking, and having good control of medical conditions such as asthma can also be helpful.

For more information, visit *www.YourPelvicFloor.org*.

The information contained in this brochure is intended to be used for educational purposes only. It is not intended to be used for the diagnosis or treatment of any specific medical condition, which should only be done by a qualified physician or other health care professional.

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