Mid-urethral Sling for the Treatment of Stress Urinary Incontinence in Women

What is stress urinary incontinence?

Stress urinary incontinence is the involuntary leakage of urine that happens with physical exertion, such as: coughing, laughing, sneezing, or lifting. It is a common problem and affects about 25% of Canadian women.[1]

Non-surgical and surgical options exist to manage stress urinary incontinence. The primary goal of treatment is to improve a patient's quality of life. In some cases, your gynecologist or urologist may offer the option of a surgical treatment. The most common procedure for stress incontinence is the mid-urethral sling. More than 3 million women have had this procedure worldwide. Mid-urethral slings have been used in Canada since 1999.

What is a mid-urethral sling procedure?

It is a minimally invasive surgery that involves placement of a narrow piece of polypropylene mesh through a small vaginal incision to support the urethra (the tube that the bladder empties from). The sling is a strip of permanent woven suture material approximately 1 cm wide.[2]

The sling prevents leakage by providing dynamic urethral support. When the sling is in position, a woman's own tissues grow into the weave of the mesh and help to anchor it into place. This takes 4-6 weeks from the time it is positioned.

Mid-urethral sling procedures have shorter operating time, a faster return to normal activities, and similar success compared to non-mesh surgeries for stress incontinence, such as autologous pubovaginal sling or Burch colposuspension.[3,4]

What non-surgical treatments can be used for stress incontinence?

Before considering a surgery, all women should have tried most, if not all the following conservative treatments:[5]

- Lifestyle changes
  - Smoking cessation
  - Weight loss
  - Adjusting timing of fluid intake
- Pelvic floor exercises
  - Commonly referred to as "Kegels"
  - Some devices, websites, and phone applications are available to provide guidance
- Pelvic floor physiotherapy
  - Consider consulting a dedicated pelvic floor physiotherapist to optimize the benefits
- Self-fitted devices
  - Disposable (such as Poise Impressa®, etc.)
  - Reusable (such as Contiform® or Uresta®)
- Pessaries
  - Devices that can be fitted by a doctor/nurse/physio. These can be worn occasionally or continuously

What are other surgical options?

Autologous fascial sling
A strip of your own tissue is taken, usually from the abdomen or leg, and placed under the urethra. The success is similar to mid-urethral sling (80-90%).[6]

Retropubic Burch colposuspension
The bladder neck is suspended with sutures either with an abdominal incision or small keyhole (laparoscopy) incisions. The success is approximately 65-77%.[6]

Injections of bulking agent
A synthetic substance is injected into the walls of the urethra using a small camera. Although not as effective (~55-60%) or as durable as other surgical treatments, it is useful as an alternative in certain circumstances.[7]

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Are there different types of mesh slings?

There are two main categories of mid-urethral sling available: retropubic and transobturator slings. Each category has its own brands of sling.

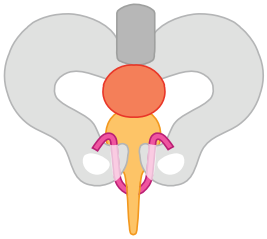
Retropubic mid-urethral slings

These have a small incision in the vagina and two small incisions above the pubic bone. Retropubic slings have the highest cure rate of any incontinence procedure, with 80-90% of women describing cure at 1 year.[8] A small group of women have been followed up to 17 years with evidence of good long-term benefit.[2]

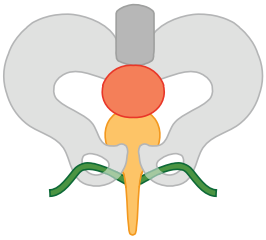
Transobturator mid-urethral slings

These have a small incision in the vagina and two small incisions in the groin. Transobturator slings have similar short-term cure rates to retropubic slings. They have inferior long-term durability, with 11% of women requiring repeat incontinence surgery in the long-term (over 5 years).8 There are lower rates of abnormal voiding for women who have transobturator slings but a higher risk of groin pain.

Retropubic Mid-urethral sling



Transobturator Mid-urethral sling



How is the surgery performed?

Mid-urethral sling procedures can be performed with general anesthetic, regional anesthetic (frozen from the waist down), or with sedation and local anesthetic. Three small incisions are made: one in the vagina and two others near the pubic bone (for retropubic slings) or in the groin (for transobturator slings). The sling is positioned using needles (trocars) and a camera is used to look in the bladder and urethra to make sure the sling is in a proper position. The tension on the sling is adjusted in a standardized way, the excess mesh is trimmed, and the incisions are closed. The procedure lasts 20-40 minutes on average. You will usually be discharged home the same day.

Health Canada warning and expert recommendations

In 2010, Health Canada issued a warning regarding complications associated with the use of synthetic vaginal mesh for the treatment of prolapse and urinary incontinence.[9]

Synthetic mesh mid-urethral slings remain a recognized safe and effective surgery for the treatment of stress urinary incontinence according to recent recommendations from the American and Canadian Urological and Gynecological Associations.[10-12]

What are the complications of mid-urethral slings?

Overall, the risk is low, but complications are a possibility with any surgical procedure. Risks associated with mid-urethral slings include:[8]

- Bleeding
- Infection
- Injury to the bladder, urethra, major blood vessels, or bowel
- Anesthetic risk
- Medical complications (heart, lungs, blood clots)
- Difficulty urinating (mostly temporary, rarely persistent)
- New or worsening urinary urgency
- Recurrent urinary tract infections
- Mesh exposure (mesh visible in vagina)
- Mesh erosion (mesh visible in the urethra or bladder)
- Failure of the procedure (persistent stress urinary incontinence)
- Chronic pain or pain with sex for patient or partner

Approximately 3% of women will require reoperation for mesh-related complications within 10 years of surgery[13-15] and complications may not be completely reversible.

Can the mesh be removed?

In some cases of complications, your doctor may suggest partial or complete removal of the mid-urethral sling. These may be more complex surgeries than placement of the sling. Unfortunately, excision of the mesh does not guarantee the complete resolution of the side effects experienced. Removing the sling may also cause urine leakage to reappear or worsen.

What can I expect after surgery?

Approximately 10% of women having mid-urethral slings will have difficulty emptying the bladder shortly after the surgery. You may need to be discharged home with a catheter (tube) to drain the bladder, or you may be taught to empty the bladder by self-catheterization. This is usually temporary, and most women will be able to empty the bladder well within a week when the local swelling from surgery has reduced.

The urine flow may be weaker the first days or even weeks postoperatively. It is advisable to avoid straining and to take your time to empty your bladder. If difficulty urinating worsens or persists, you should contact your doctor.

It is recommended that you limit your physical activities and avoid lifting more than 5 kg for approximately 4 weeks. It is helpful to prevent constipation and avoid straining to have a bowel movement.

During the first month, baths and swimming pools should be avoided. It is recommended that you avoid intercourse and tampons for at least 6 weeks to allow healing. During this time, some vaginal discharge or bleeding may occur and is normal. The sutures are absorbable and do not need to be removed.

It is important to seek medical help in case of fever or red, hot, and/or raised scar, visible blood in the urine, sudden onset of leg swelling, shortness of breath, or any other concern. Talk to your doctor about the recommended time off work. Normally, a follow-up appointment will be scheduled with your surgeon a few weeks after surgery.

REFERENCES: (1) Herschorn S, et al. *BJU Int* 2008;101:52-8. **(2)** Nilsson CG, et al. *IUJ* 2013;24:1265-9. **(3)** Holdo B, et al. *IUJ* 2017;28:1739-46. **(4)** Fusco F, et al. *Eur Urol* 2017;72:567-91. **(5)** Dufor S, et al. *JOGC* 2020;42:510-22. **(6)** Imamura M, et al. *BMJ* 2019;365:1842. **(7)** Hoe V, et al. *Neurourol Urodyn* 2021;40:1349-88. **(8)** Ford AA, et al. *Cochrane Database Syst Rev* 2017;(7):CD006375. **(9)** https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada/safety-reviews.html **(10)** Welk B, et al. (2019) https://www.cua.org/themes/ web/assets/files/cua_mesh_statement_2019.pdf. **(11)** AUGS-SUFU Joint Position Statement. *Female Pelvic Med Reconstr Surg* 2021;27:707-10. **(12)** Clancy A. *JOGC* 2019;41 :1389-91. **(13)** Jonsson Funk M, et al. *AJOG* 2013;208:73e1-7. **(14)** Welk B, et al. *JAMA Surg* 2015;150:1167-75. **(15)** Gurol-Urganci I, et al. *JAMA* 2018;320:1659-69.

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