

Solyx Minisling Surgery for Stress Urinary Incontinence: Dhulikhel Hospital Initiative

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INTRODUCTION

Solyx mini-sling surgery is a single-incision procedure that is used to treat stress urinary incontinence (SUI) in women. SUI is a common medical condition characterized by the involuntary leakage of urine with activity such as laughing, coughing, and sneezing. It affects 35% of adult women worldwide.^{1,2}

The pathogenesis of SUI is generally due to a mechanical abnormality or weakness in the urethra or pelvic floor support.³ Initial management of SUI includes conservative treatment such as pelvic floor muscle training, electrical stimulation, and/or pharmacotherapy.⁴ However, these conservative methods have been shown to be less effective.⁵

ABSTRACT

Solyx mini-sling surgery is a single-incision procedure that is used to treat stress urinary incontinence (SUI) in women. SUI is a common medical condition characterized by the involuntary leakage of urine with activity such as laughing, coughing, and sneezing. It affects 35% of adult women worldwide. The Solyx sling is a minimally invasive procedure that can be performed through a single vaginal incision. It is a safe and effective treatment for SUI, with a high success rate. The mini-sling is inserted through a small, single incision in the vagina. This makes the procedure less invasive than traditional sling surgery, which requires a larger incision in the abdomen or groin. The Solyx mini sling is also adjustable, which means that the surgeon can make adjustments to the tension of the sling after it is inserted. This helps to ensure that the sling is properly positioned and that the patient experiences optimal results. We have performed Solyx minisling surgery in 182 women and we found it very effective. 96% of women had no leakage of urine while coughing, sneezing after one week of surgery. We have performed this surgery in rural areas of Nepal where there is no facility of cystoscopy.

KEY WORDS

Effective, Less invasive, Rural, Single incision, Solyx mini sling, Stress urinary incontinence (SUI)

Many types of surgery have been performed to treat women with SUI. These include bladder neck suspension operations and anterior vaginal wall repair operations.^{6,7} Some have also made attempts to use autologous fascia slings as an alternative to mesh slings to treat SUI with pelvic organ prolapse.⁸

We started screening for women with stress urinary incontinence, we found that almost 1 in 4 women who came to our clinic had stress urinary incontinence. We started treating them as per our protocol. We looked for urinary tract infection by doing urine microscopy and urine culture. We ruled out pelvic organ prolapse, overactive bladder and other neurologic causes for urinary incontinence.

Till date we have performed single incision solyx minisling surgery in 182 women. Our results have been very satisfying with 96% of women being dry while coughing and sneezing on first week after surgery. We have performed this surgery in rural areas of Nepal where there is no facility of cystoscopy. After performing retropubic sling we require to perform cystoscopy to see for bladder perforation, whereas with solyx minisling surgery we don't need to do cystoscopy.

SURGICAL PROCEDURE

The patient is placed in lithotomy position, and asepsis is maintained by cleaning the patient with 10% povidone-iodine. Draping of the operative area was performed. The urinary bladder was evacuated using a single-use silicone catheter under aseptic precautions.

The paraurethral space is identified about 1.5 centimeters below the urethral opening (Fig. 1). Allis forceps is used to hold the anterior vaginal wall, and another Allis forceps is placed about 1.5 centimeters below the first Allis forceps.



Figure 1. Identification of paraurethral space



Figure 2. Hydro dissection paraurethral space

Hydro dissection is performed using plain normal saline or diluted adrenaline 1:500 ml dilution as shown in figure 2. This helps to maintain good surgical plane and also blood loss is minimum.

A single incision is made in the anterior vaginal mucosa. An incision is made in the paraurethral space (Fig. 3). Anterior vaginal wall flaps are held with mosquito forceps and separated with no 10 scalpel as shown in figure 4.

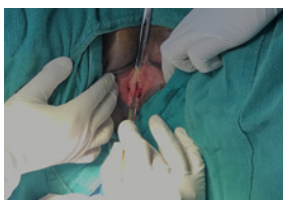


Figure 3. A single incision



Figure 4. Separation of the vaginal flaps at the paraurethral space

Surgical Peanut sponge is used to separate the urethra from the anterior vaginal wall. Dissection is made towards the obturator canal. The plane is identified, the urethra and the bladder are placed away from the site of sling insertion with the help of anatomical forceps (Fig. 5 and 6).

The Solyx minisling is then placed in the delivery device as shown in the figure 7. The Solyx minisling is a polypropylene



Figure 5. Dissection towards obturator canal



Figure 6. Site of sling insertion.

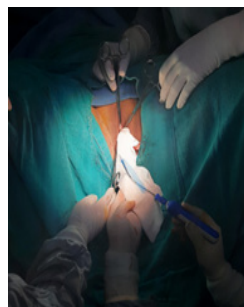


Figure 7. Placement of Solyx minisling in the delivery device

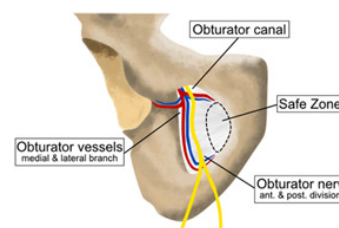


Figure 8. Anatomical description of site of insertion

mesh with the following specifications: Mesh thickness: 0.66 mm, Pore size: 1182 μm, Fiber size (diameter): 0.15 mm, Weight: 100 g/m². We use the blue minisling. As it gives us an advantage to see the site of placement even when there is bleeding.

Solyx minisling which is placed in the delivery device is guided towards the obturator canal depicted by anatomical description as shown in figure 8. It is placed in both the sides in the obturator canal as shown in figure 9 and 10.

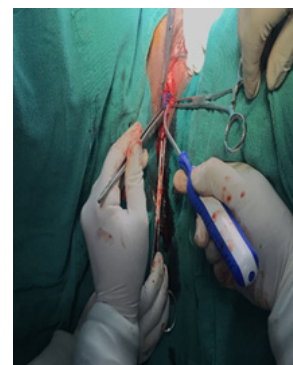
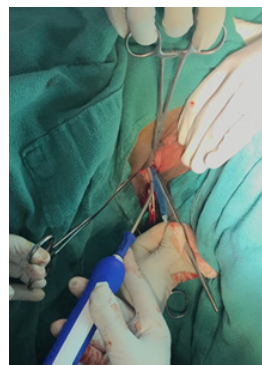


Figure 9 and 10. Guiding of Solyx minisling towards the both sides of the obturator canal

After the sling is inserted, it should be placed in the midpoint as shown in the picture. It should not be tight. It should be checked by holding it with the forceps (Fig. 11 and 12).

We check for the tension to confirm that it is not tight to cause urinary retention. After maintaining the hemostasis, we suture the flaps of the anterior vaginal wall as shown in figure 13.

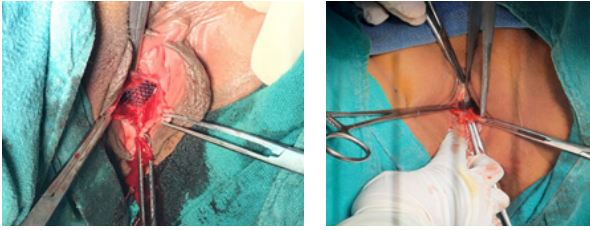


Figure 11 and 12. Checking for the tension of Solyx minisling post insertion



Figure 13. Suturing the flaps of the anterior vaginal wall **Figure 14.** Post minisling insertion, Foleys catheter insertion showing clear urine

The Foley catheter is inserted post procedure and clear urine is seen draining as shown in the figure 14. It is important to check the color of the urine at the end of the procedure to ensure that no bladder injury has occurred. Bladder injury should be suspected if the urine is reddish or blood-stained.

POST-OPERATIVE CARE

The patients drink clear liquid after 2 hours of completion of surgery, solid diet is started after 4 hours after completion of surgery. Patients is put on analgesic like Paracetamol and ketorolac The catheter is removed after 24 hours of completion of surgery After patients voids, Ultrasound (USG) is performed to measure Post voided residual urine Post voided residual urine should be less than 50ml. Patients is discharged on the next day.

CONCLUSION

The mini-sling is inserted through a small, single incision in the vagina. This makes the procedure less invasive than traditional sling surgery, which requires a larger incision in the abdomen or groin. The Solyx sling is also adjustable, which means that the surgeon can make adjustments to the tension of the sling after it is inserted. This helps to ensure that the sling is properly positioned and that the patient experiences optimal results. The Solyx sling has been shown to be effective in treating SUI. In clinical trials, the Solyx sling had a cure rate of up to 95%. The procedure is also relatively safe, with a low risk of complications. We have very good results with 96% of cure rate. This is a safe procedure, which can also be performed in rural areas where there are no facility of cystoscopy.

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