**DOI:** 10.34057/PPj.2025.44.02.2024-7-4
Pelviperineology 2025;44(2):50-53

# Multi material thread lifting and platelet rich plasma for urethral support a new minimally invasive procedure for the treatment of stress urinary incontinence: Preliminary report

Pablo Gonzalez ISAZA[1], Ariel LUKSENBURG[2], Paulo PALMA[3]

[1]Department of Obstetrics and Gynecology, Urogynecology Unit, Hospital Universitario San Jorge Pereira Colombia Soranus Center for Aesthetic and Regenerative Urogynecology, Pereira, Colombia
[2]Clinic of Obstetrics and Gynecology, University de La Republica, Montevideo, Uruguay
[3]Clinic of Urology, Universidade Estadual de Campinas, UNICAMP, Campinas, Brazil

**Citation:** Isaza PG, Luksenburg A, Palma P. Multi material thread lifting and platelet rich plasma for urethral support a new minimally invasive procedure for the treatment of stress urinary incontinence: preliminary report. Pelviperineology. 2025;44(2):50-53

## ABSTRACT

Stress urinary incontinence (SUI) is one of the symptoms of pelvic floor dysfunction mainly due to the loss of urethral support that can alter the quality of life of women. Alternative methods for the approach of this condition are arising as minimally invasive and effective options for our patients. To evaluate the long-term effect of Multi material thread lifting and platelet rich plasma for urethrovaginal suspension as a minimally invasive alternative treatment for types II and III SUI in a group of patients. Twelve patients (age 53.38±5.1, range 45-65) with an urodynamic diagnosis of Type II-III SUI, basedf on valsalva leak point pressure, were subsequently enrolled into the study. Patients received one treatment of multi material threadlifting for urethral support along with platelet rich plasma injections. SUI was evaluated using the international consultation on incontinence questionnaire-short form (ICIQ-SF) before, at 6 months and 12 months after treatment. Multi material threadlifting for urethrovaginal suspension with platelet rich plasma injections treatment was associated with a significant improvement in ICIQ-SF scores. Improvements maintained up to the 12 months of follow-up, without the need for any further treatments. Our results suggest that multi material threadlifting for urethral support along with platelet rich plasma injections is an efficient minimally invasive and safe novel treatment strategy in patients with SUI. Further investigation to confirm the long-term effect that has been presented herewith is still warranted.

**Keywords:** Pelvic floor; sling; urinary stress incontinence

**Address for Correspondence:** Pablo Gonzalez Isaza, Department of Obstetrics and Gynecology, Urogynecology Unit, Hospital Universitario San Jorge Pereira Colombia Soranus Center for Aesthetic and Regenerative Urogynecology, Pereira, Colombia
**E-mail:** Pagonza@hotmail.com **ORCID ID:** orcid.org/0000-0001-7798-5141
**Received:** 21 April 2025 **Accepted:** 08 May 2025 **Publication Date:** 18 August 2025

Copyright© 2025 The Author. Published by Galenos Publishing House on behalf of International Society for Pelviperineology.
This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.

## INTRODUCTION

Stress urinary incontinence (SUI) is an important clinical problem that affects millions of women worldwide. Urine leakage occurs secondary to the increase in intra-abdominal pressure due to stress along with an anatomical defect.[1]

Management of SUI may be conservative or surgical. Despite the choice they have different cure rates and complications.

Surgical treatments in general are more expensive than the conservative ones.[1-3]

We present here a new minimally invasive treatment for SUI using a combination of platelet-rich-plasma (PRP) injections in the anterior vaginal wall, and the placement of polydioxanone (PDO) threads in the suburethral, space, reinforcing the urethropelvic ligaments (Figure 1).

## MATERIALS AND METHODS

Twelve patients (age 53.38±5.1, range 45-65) with an urodynamic diagnosis of Type II-III SUI, basedf on Valsalva leak point pressure, were subsequently enrolled into the study. Patients received one treatment of multi material threadlifting for urethral support along with platelet rich plasma injections.

The summary of the procedure, described previously (4) was made in 2 steps:

### Step 1: Injections of PRP in the Anterior Vaginal Wall

Blood (8 mL) are drawn using 4 mL tubes with 3.8% sodium citrate (GyCO, Deltalab.Spain). Centrifugation is then performed for 8 minutes at 1800 rpm. The separated plasma is drawn using 1 mm syringes. For each 1 mm syringe, 0.9 mL of the plasma is then mixed with 0.1 mL of calcium chloride (GyCO, Deltalab, Spain). The 1 mm syringes are connected to 30G × ½ (13 mm) needles. To facilitate the transvaginal injections of the PRP in the anterior vaginal wall the authors have developed a novel fenestrated speculum (Figure 2).

The rationale behind this fenestrated speculum is only to protect the urethra form injuries, but also provide stabilization for the insertion of the threads.

Platelet enriched autologous plasma is injected in the anterior vaginal wall stranding proximally to the uterus and moving towards the urethral meatus.

This is an important detail for bleeding may occurs mainly at the vaginal introitus. Bevel into the vaginal mucosa at an angle of 45 degrees. Approximately 0.2 mL of PRP is placed with each injection.

An average of 10 injections of PRP per side are used.

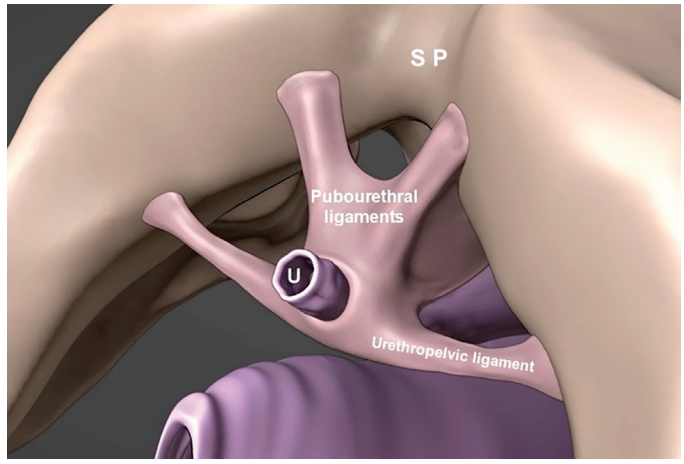



**Figure 1.** The urethropelvic ligaments are reinforced with polydoxane threads

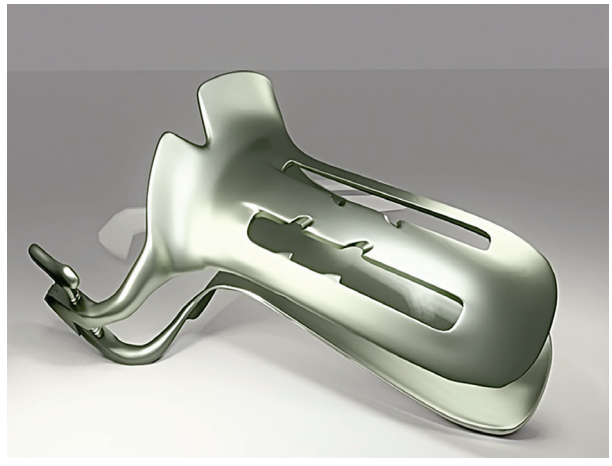


**Figure 2.** The fenestrated speculum has 2 lateral and longitudinal parallel fenestrations 7 mm wide and 65 mm long

### Step 2: PDO Threads Placement

The mean time for the reabsorption of PDO threads is 6 months. The PDO thread is 45 mm long, 0.15 mm (4-0) thickness, and has a cork screw configuration mounted on a needle 25G × 30 mm (GyCO International, Shanxian Runte Medical International, Ltd., China).

The procedure is begun by performing 2 punctures lateral and inferior to the urethal meatus (Figure 3). A Foley catheter with a metallic guide inside is used to move the urethral upwards, avoiding urethral and bladder perforations. Besides the tips of the canula are blunt, making the procedure even safer (Figure 4). Once the urethra and bladder neck are moved upwards, the threads are introduced in the previous made punctures, first in a "X" format and next is an "A" shape creating a backboard support to the urethra (Figure 5).

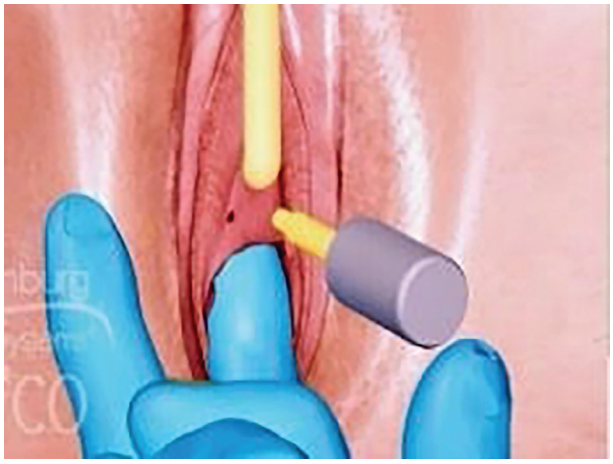


**Figure 3.** The procedure is begun by performing 2 punctures lateral and inferior to the urethral meatus

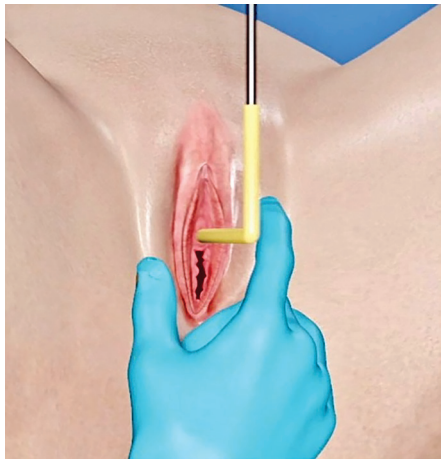


**Figure 4.** The Foley catheter with a metallic guide inside is used to move the urethral upwards

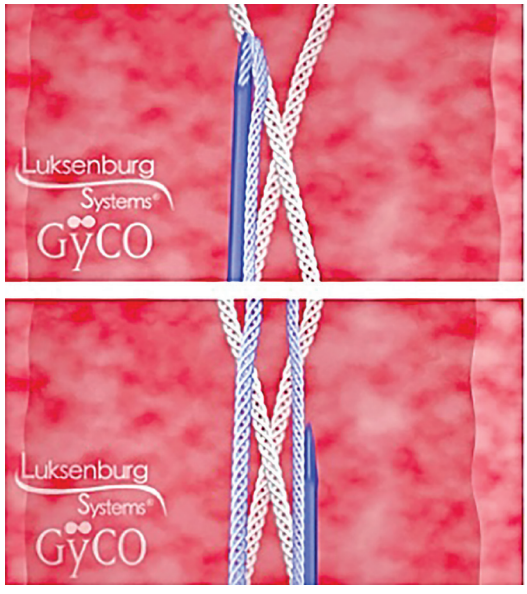



**Figure 5.** Notice that the suburethral threads are place first in an X shape and then in an A shape reinforcing the urethropelvic ligament

## RESULTS

Multi material threadlifting for urethral support with platelet rich plasma injections treatment was associated with a significant improvement in ICIQ-SF scores. Improvements maintained up to the 12 months of follow-up (Graphic 1).

## DISCUSSION

The weakening of the urethral supporting elements vaginal wall are 2 of the main causes of the urethral hypermobility and stress urinary incontinence.[1-6]

This minimally invasive technique presented here results in strengthening of the supporting elements of the urethra preventing the hypermobility.

The association of PRP injections in the vaginal wall along with the insertion of PDO threads in the suburethral space, creates a type of collagen mattress increasing the urethral support, so that under stress the urethral hypermobility is avoided.

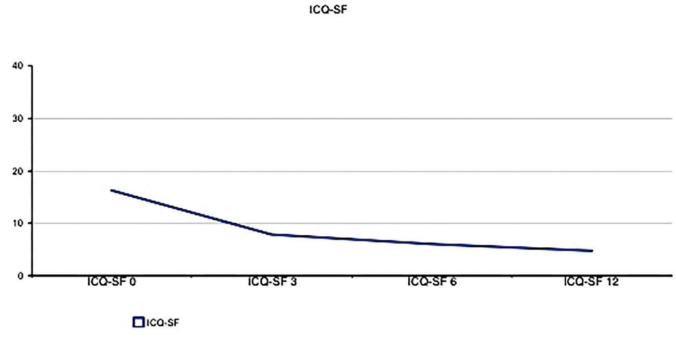
As a response to the PRP injections we noticed an increase in the blood flow, vascular permeability.

These findings allow for fibroblast and myofibroblasts activation that will lead to neocollagen production, that means better support to the urethra.

As already demonstrated, PRP has a modulating effect on the inflammatory process, avoiding undue fibrosis.[6,7]

The PDO threads implanted induce a mild foreing body inflammatory reaction around the them, leading to the desired reinforcement of the urethropelvic ligament.

The histologic findings following the PDO threads implants was characterized by the creation of a 3-dimensional collagen fibers, which resulted in the formation of a mesh-like structure around them, and that persisted after the reabsorption of the threads.




**Graphic 1.** Sgnificant improvement in ICIQ-SF was noted, corresponding to 75% of cure rate.

All patients improved and the results were sustained for 12 months. No urinary retention, *de novo* urgency or any type of complication were reported

*ICIQ-SF: International consultation on incontinence questionnaire-short form*

### Study Limitations

One of the limitations of our study is the small number of patients. As any new procedure, randomized prospective studies are needed.

## CONCLUSION

Based on our findings we can conclude that this minimally in office procedure is safe and effective.

At the moment a comparative prospective randomized study comparing this procedure with TOT sling is under way, so we can better understand the role of this new procedure in the urogynecological armamentarium.

## FOOTNOTES

### Contributions

Concept: P.G.I., A.L., Design: P.G.I., A.L., P.P., Data Collection or Processing: P.G.I., A.L., Analysis or Interpretation: P.G.I., A.L., P.P., Literature Search: P.G.I., A.L., P.P., Writing: P.G.I., A.L.

## DISCLOSURES

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

## REFERENCES

1. Petros PE, Ulmsten UI. An integral theory of female urinary incontinence. Experimental and clinical considerations. Acta Obstet Gynecol Scand Suppl. 1990; 153: 7-31.
2. Lukacz ES, Santiago-Lastra Y, Albo ME, Brubaker L. Urinary Incontinence in women: a review. JAMA. 2017; 318: 1592-604.
3. Balk EM, Rofeberg VN, Adam GP, et al. Pharmacologic and nonpharmacologic treatments for urinary incontinence in women: a systematic review and network meta-analysis of clinical outcomes. Ann Intern Med. 2019; 170: 465-79.
4. Viereck V, Bader W, Lobodasch K, et al. Guideline-based strategies in the surgical treatment of female urinary incontinence: the new gold standard is almost the same as the old one. Geburtshilfe Frauenheilkd. 2016; 76: 865-8.
5. Oliveira LM, Dias MM, Martins SB, et al. Surgical treatment for stress urinary incontinence in women: a systematic review and meta-analysis. Rev Bras Ginecol Obstet. 2018; 40: 477-90.
6. Dhurat R, Sukesh M. Principles and methods of preparation of platelet-rich plasma: a review and author's perspective. J Cutan Aesthet Surg. 2014; 7: 189-97.
7. Middleton KK, Barro V, Muller B, Terada S, Fu FH. Evaluation of the effects of platelet-rich plasma (PRP) therapy involved in the healing of sports-related soft tissue injuries. Iowa Orthop J. 2012; 32: 150-63.