

# FEMALE DORSAL ONLAY WITH BUCCALMUCOSA GRAFT URETHROPLASTY (DO-BMGU) TECHNIQUE



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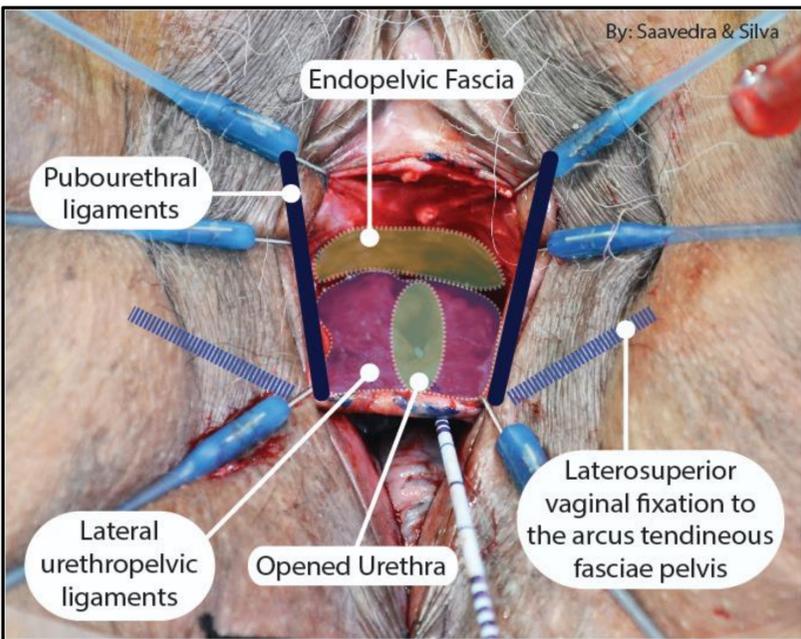
## Hypothesis / aims of study

Female Bladder outlet obstruction (FBOO) affects 2.7% to 8% of women with lower urinary tract symptoms (LUTS), caused by intrinsic (e.g., urethral stricture), extrinsic (e.g., incontinence surgery), and positional (e.g., pelvic organ prolapse) factors.

Female urethral stricture (FUS) accounts for 4-13% of FBOO cases, typically presenting around age 50. Diagnosis involves urethral calibration, cystoscopy, voiding cystography, uroflowmetry, and urodynamics. FUS symptoms include weak stream, poor voiding sensation, recurrent UTIs, pain, incontinence, retention, and elevated postvoid residuals. Advanced FUS can lead to irreversible bladder damage.

Urethral dilatation (UD) shows limited long-term success (43-49%). Female urethroplasty, particularly dorsal onlay with buccal mucosa graft urethroplasty (DO-BMGU), has higher success rates (88-95%).

This study aims to characterize demographic, clinical, and perioperative variables and analyze safety and medium-term outcomes of DO-BMGU urethroplasty procedures performed by our group.



## Study design, materials and methods

This observational case series study prospectively recruited all female urethral stricture (FUS) cases diagnosed between 2016 and 2023 who underwent dorsal onlay with buccal mucosa graft urethroplasty (DO-BMGU) at a Chilean tertiary care center.

Demographic data, comorbidities, baseline urinary symptom scores, and quality of life (IPSS-AUA) were recorded. A minimum 3-month postoperative follow-up was required, resulting in 23 out of 25 cases being included.

A multimodal diagnostic approach was used, including cystourethroscopy, urethrocystography, urethral calibration, uroflowmetry/PVR, and urodynamics. Patients with urinary retention had a peak flow (Qmax) of 1 ml/sec assigned for calculations.

The standardized DO-BMGU technique involved a suprimeatal inverted U-shaped approach, dorsal urethrotomy, and a 4x2 cm buccal mucosal graft fixed with absorbable stitches. Intra- and perioperative outcomes included length and urethral segments involved, operative time, estimated bleeding, hospitalization days, catheterization days, and Clavien-Dindo complications.

Postoperative outcomes were monitored through spontaneous symptom reporting and uroflowmetry/PVR for the first 3 months. After 3 months, patients completed IPSS-AUA questionnaires and underwent uroflowmetry/PVR, repeated at suspected recurrence or 12 months. Informed consent was obtained according to local protocols.

**TABLE 1. Patient's characteristics**

OVERALL CHARACTERISTICS	DATA (N 23)
Mean Age, yr (range; SD)	58.4 (40-77; 11.21)
Comorbidity, N (%)	18 (78)
Aetiology, N (%)	
Idiopathic	11 (48)
Gynecological surgery	7 (30)
Colorrectal surgery	2 (9)
Radiation Therapy*	2 (9)
Urological surgery	1 (4)
Previous SUI surgery, N (%)	1 (4)
Urinary Retention, N (%)**	14 (61)

\*Either external beam radiotherapy (EBRT) or brachytherapy (BT). \*\*Urinary retention at any preoperative moment (single catheterization, suprapubic catheter, clean intermittent catheterization)

## Results and interpretation

This study included 23 patients (mean age: 58.4 years) who underwent dorsal onlay with buccal mucosa graft urethroplasty (DO-BMGU) for female urethral stricture (FUS). The etiology was idiopathic in 47.8% of cases and post-gynecological surgery in 30%.

Preoperative urinary retention occurred in 61% of patients. Key surgical metrics included a median operative time of 150 minutes, median blood loss of 80 ml, and a mean stricture length of 2.6 cm. The proximal and mid-urethra were involved in 30% of cases, with the mid-urethra affected in 18 out of 23 patients. The median hospital stay was 2 days, and the urethral catheter was removed after a median of 15 days. Complications occurred in 4 patients, all of which were Clavien-Dindo grade II or lower. The median follow-up was 15 months, with a stricture recurrence rate of 9% and a 4% rate of de novo stress urinary incontinence.

Preoperative median IPSS-AUA was 29, decreasing to 8.5 postoperatively, indicating a 20-point improvement. Quality of life scores improved from a median of 6 (terrible) to 1.5 (mostly satisfied), showing a 4-point improvement.

**TABLE 2. Perioperative and postoperative outcomes**

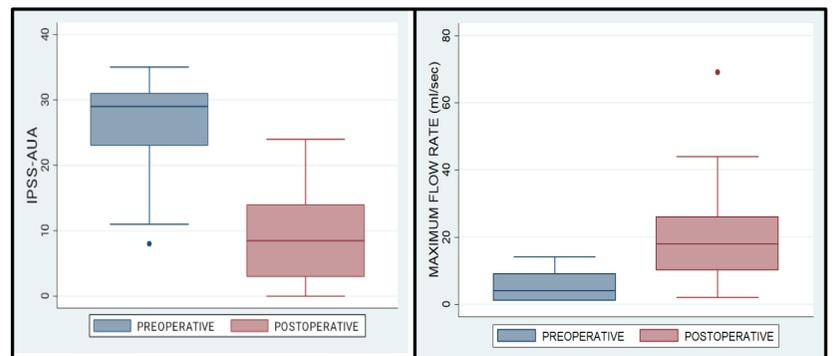
INTRA AND POSTOPERATIVE CHARACTERISTICS	N=23
Median Operative Time, min (IQR*)	150 (120-205**)
Median Blood Loss, ml (IQR*)	80 (50-100**)
Mean Stricture Length, cm (SD; range)	2.64 (0.81 ; 1.5-4.5)
Stricture Location, N (%)	
Proximal urethra	2 (9)
Mid urethra	5 (22)
Distal urethra	0 (0)
Proximal + Mid urethra	7 (30)
Mid + Distal urethra	6 (26)
All segments involved	3 (13)
Median Length of Stay, days (IQR*)	2 (1-2)
Median Urethral Catheter Duration, days (IQR*)	15 (14-21)
Overall Complication, N (%)***	4 (17)
Clavien-Dindo > II, N (%)	0 (0)
De novo Stress Urinary Incontinence, N (%)	1 (4)
Median Follow-up, months (range)	15.1 (3-93)
Urethral Stricture Recurrence, N (%)	2 (9)

\*Interquartile range (Q1-Q3). \*\*A case of simultaneous augmentation cystoplasty was included in surgical time and blood loss. \*\*\*Any Clavien-Dindo Grade

**TABLE 3. Main changes after urethroplasty**

CHARACTERISTICS	PRE			POST			p-value*
	OPERATIVE	OPERATIVE	VARIATION	OPERATIVE	OPERATIVE	VARIATION	
Median IPSS-AUA, (range)	29 (8-35)	8.5 (0-24)	-20 (-29-6)	8.5 (0-24)	8.5 (0-24)	-20 (-29-6)	0.0000
Median Quality of Life, (range)	6 (4-6)	1.5 (0-6)	-4 (-6-0)	1.5 (0-6)	1.5 (0-6)	-4 (-6-0)	0.0001
Median Voided Volume, mL (range)	143 (0-319)	250 (15-683)	162 (-217-486)	250 (15-683)	250 (15-683)	162 (-217-486)	0.0127
Median Qmax, mL/sec (range)	4 (1-14)	18 (2-69)	15 (-5-60)	18 (2-69)	18 (2-69)	15 (-5-60)	0.0023
Median PVR, mL (range)	348 (60-600)	30 (0-280)	-273 (-500-10)	30 (0-280)	30 (0-280)	-273 (-500-10)	0.0001

\*Wilcoxon signed-rank test for paired data.



## Conclusions

This case series demonstrates that DO-BMGU has high success rates and low complication rates, comparable to other techniques. The preservation of urethral support structures likely maintains continence. Our findings support the reproducibility of this technique in Latin America.

## References

