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#654: Early Outcomes of Drug-Coated Balloon (Optilume™) vs Mechanical Dilation in Females with Urethral Stricture: A Comparative Case Series

Authors: Omar AlJasmi, Omar Almidani, Ammar Al Homsi, Seema Sheth
Urology Department, Integrated Surgical Institute, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates

Introduction

Female urethral stricture is a rare and underdiagnosed cause of lower urinary tract symptoms, with no established standard of care [1]. We present what is, to our knowledge, the first known case series evaluating early outcomes of Optilume™ drug-coated balloon dilation in females with urethral stricture, alongside a group treated with mechanical dilation.

Study Design, Methods and Materials

We treated six women with urethral strictures at our institution: three underwent dilation using the Optilume™ drug-coated balloon, and three were treated with standard mechanical dilation (using Cook's or Sound dilators). Data collected included demographics, comorbidities, pre- and postoperative symptoms, uroflow parameters (Qmax and PVR), operative time, and complications. For the Optilume™ group, a paired statistical analysis was performed comparing demographic characteristics and operative time. Short-term outcomes were assessed. Data were analyzed using the Statistical Package for the Social Sciences (SPSS).

Results

Both groups had similar baseline demographics and comorbidities, although preoperative symptoms were more frequent in the Optilume™ group. By one month of follow-up, patients treated with Optilume™ showed notable improvements in urinary function. The mean maximum flow rate (Qmax) in the Optilume™ group increased from 5.3 mL/s preoperatively to 17.8 mL/s at 1 month (a mean improvement of 12.5 mL/s). Similarly, the mean post-void residual (PVR) decreased from 201.3 mL to 61.3 mL (a mean reduction of 140 mL). Symptom resolution at one month was comparable between the Optilume™ and mechanical dilation groups. However, one of the three Optilume™ patients (33.3%) experienced a treatment failure 6 weeks postoperatively with a peak flow of 6.5 and had to resume clean intermittent catheterization (CIC).

Table 1: Baseline Demographics and Preoperative Symptoms

Variable		Mechanical Dilation (n=3)	Optilume™ DCB (n=3)
Age (years), mean ± SD		55.00 ± 5.29	40.67 ± 24.54
Ethnicity: UAE Nationals		1 (33%)	2 (67%)
Ethnicity: Non-UAE Nationals		2 (67%)	1 (33%)
Presence of Comorbidities		1 (33%)	1 (33%)
Specify		Diabetes Mellitus (DM)	Diabetes Mellitus (DM
Pre-operative symptoms (subjective)	Weak Stream	1 (33%)	3 (100%)
	Frequency	0 (0%)	1 (33%)
	Urinary Retention (any)	0 (0%)	2 (67%)
	Retention req. catheter/CIC	0 (0%)	1 (33%)

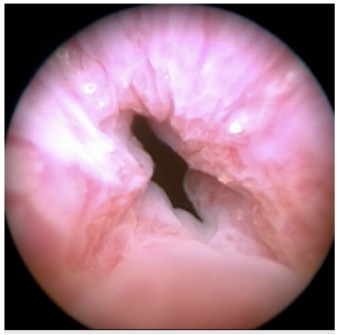
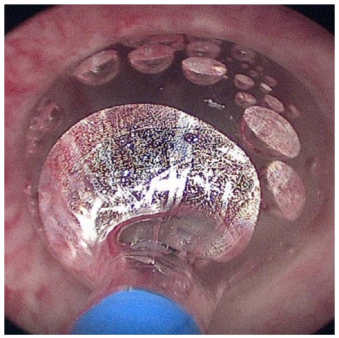


Table 2: Procedural and Postoperative Outcomes

Variable	Mechanical Dilation (n=3)	Optilume™ DCB (n=3)
Operative time (min), mean ± SD	8.00 ± 6.24	17.67 ± 5.13
Foley catheter placed post-op	0 (0%)	3 (100%)
Post-op Urinary Retention	1 (33%)	1 (33%)
Failure of Optilume™ (return to CIC)	-	1 (33%)



Abbreviations: DCB = drug-coated balloon; Qmax = maximum flow rate; PVR = post-void residual volume; CIC = clean intermittent catheterization; N/A = not applicable.

Conclusions

Our early experience suggests that Optilume™ is a feasible and safe approach with promising early functional outcomes in female urethral stricture disease. Although the Optilume™ group had a higher symptom burden at baseline and a longer operative time, those patients achieved substantial improvements in both Qmax and PVR. Given the rarity of female urethral stricture disease, these initial results warrant larger prospective studies to further define the role of drug-coated balloon therapy in this condition.

References:

1. Keegan KA, Nanigian DK, Stone AR. Female urethral stricture disease. Curr Urol Rep. 2008;9(5):419–423.
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3. VanDyke ME, et al. Optilume drug-coated balloon for anterior urethral stricture: 2-year results of the ROBUST III trial. BJUI Compass. 2024;5(3):366–373. DOI: 10.1002/bco2.312