

Inflatable Penile Prosthesis and ‘Mini Male Urethral Sling’ Placement for the Treatment of Erectile Dysfunction and Climacturia

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ABSTRACT:

Introduction: A ‘mini male sling’ (MMS) is a urethral sling designed to treat climacturia, urinary incontinence at the time of ejaculation. The MMS is composed of either human cadaveric pericardium or macroporous monofilament polypropylene mesh and is sutured to the ventral bilateral corpora cavernosa proximal to the corporotomies for inflatable penile prosthesis (IPP) placement at the level of the bulbar urethra. For men who experience erectile dysfunction and climacturia post prostatectomy, we hypothesized that placement of an IPP and a MMS would result in significant improvement in patient-reported climacturia and mild stress urinary incontinence as measured by pad use.

Method: A retrospective review was performed for all consecutive patients (n=14) who underwent IPP and MMS placement by a single surgeon between 2016-2017. Patient-reported climacturia and number of pads used daily for mild stress urinary incontinence were assessed pre-operatively and at each post-operative visit starting at 2 post-operative weeks for mild stress urinary incontinence and starting at 3 post-operative months for climacturia. Pre-operative to post-operative patient reported climacturia and pad use were compared for each patient using McNemar’s test with a statistical significance threshold of p<0.05.

Result: Fourteen men underwent both IPP and MMS placement (11 concomitant IPP/MSS, 3 sequential IPP/MSS). Mean patient age was 71 (SD 7.29) years, mean patient BMI was 26.23 (SD 3.27), mean IPP cylinder size was 19.8 (SD 2.2) cm, and mean MMS surface area was 14.0 (SD 1.78) cm². 10 of the MMS were composed of macroporous monofilament polypropylene mesh; 4 were composed of human cadaveric pericardium. Mean post-operative follow-up was 2.29 (SD 1.90) months. Of the 9 patients who reported using 1 pad/day for mild stress urinary incontinence pre-operatively, 6 reported use of 0 pads/day by 2 post-operative weeks (McNemar significance probability=0.03). Of the 7 patients for reached the 3 month post-operative patient-reported climacturia assessment, all reported resolution of the climacturia (McNemar significance probability=0.02).

Conclusion: For men who experienced erectile dysfunction as well as climacturia and mild stress urinary incontinence, placement of an IPP and a MMS significantly improved mild stress urinary incontinence as measured by pad use by 2 post-operative weeks and patient-reported climacturia by 3 post-operative months.

INTRODUCTION:

Climacturia, or the leakage of urine at the time of ejaculation, has been estimated to happen in as many as 93% of men post prostatectomy.¹ This form of incontinence may be a persistent problem for some men and can occur in the absence of stress incontinence.² The degree of bother is variable with one study finding 48% of men reported significant bother from their climacturia.³

For men with concurrent erectile dysfunction after prostatectomy, climacturia may be treated at the time of inflatable penile prosthesis (IPP) placement with a specialized urethral sling coined the ‘mini male sling’ (MMS). The MMS is composed of either human cadaveric pericardium or macroporous monofilament polypropylene mesh and is sutured to the ventral bilateral corpora cavernosa proximal to the corporotomies for inflatable penile prosthesis (IPP) placement at the level of the bulbar urethra. This type of urethral sling was developed by Dr Robert Andrienne with a pilot study demonstrating subjective improvement in climacturia in 93% of patients as recently presented at the Sexual Medicine Society of North America Fall 2017 meeting.⁴

The objective of this study is to evaluate if placement of an IPP and a MMS in men who experience erectile dysfunction and climacturia would result in significant improvement in patient-reported climacturia and mild stress urinary incontinence as measured by pad use.

METHODS :

A retrospective review was performed for all consecutive patients (n=14) who underwent IPP and MMS placement by a single surgeon between 2016-2017. Patient demographic information, including age and BMI was collected. Surgical data including IPP cylinder size, sling material and MMS surface area was collected. Mild stress urinary incontinence was assessed pre-operatively and at each post-operative visit starting at 2 post-operative weeks and was measured by pad use. Patient-reported climacturia was assessed pre-operatively and at each post-operative visit starting at 3 post-operative months. Pre-operative to post-operative patient reported climacturia and pad use were compared for each patient using McNemar’s test with a statistical significance threshold of p<0.05.

RESULTS:

Fourteen men met inclusion criteria having undergone both IPP and MMS placement. Mean patient age was 71 (SD 7.29, range 56-78) years. Mean patient BMI was 26.23 (SD 3.27). All men had previously undergone a robotic assisted radical prostatectomy. None of the patients were diabetic. Ten (71%) patients had a history of hypertension.

Of the 14 patients in the study, 11 had MMS placed at the time of their IPP placement and three had subsequent MMS placement after previously undergoing an IPP placement. Mean IPP cylinder size was 19.8 (SD 2.2) cm, and mean MMS surface area was 14.0 (SD 1.78) cm². Ten of the MMS were composed of macroporous monofilament polypropylene mesh and four were composed of human cadaveric pericardium.

Mean post-operative follow-up was 2.29 (SD 1.90) months. Of the nine patients who reported using one pad per day pre-operatively for mild stress urinary incontinence, six reported use of zero pads per day by two post-operative weeks (McNemar significance probability=0.03). Of the seven patients who reached the 3 month post-operative visit, all reported resolution of their climacturia (McNemar significance probability=0.02). There were no post-operative complications.

AGE	BMI	TYPE OF GRAFT	WIDTH OF GRAFT	LENGTH OF GRAFT
56	unknown	Virtue polypropylene mesh	3.55cm	5cm
57	24.8	Tutoplast	2.5cm	5cm
65	unknown	Virtue polypropylene mesh	2.5cm	5cm
68	25.2	Tutoplast	2.5cm	5.5cm
69	21.3	Virtue polypropylene mesh	3cm	5.5cm
73	27.4	Virtue polypropylene mesh	2.5cm	5.5cm
73	26.5	Virtue polypropylene mesh	2.5cm	5cm
73	29.2	Virtue polypropylene mesh	3cm	5.5cm
74	25.4	Virtue polypropylene mesh	2.5cm	5.5cm
75	unknown	Virtue polypropylene mesh	unknown	unknown
77	31.1	Virtue polypropylene mesh	2.5cm	5.5cm
78	22.2	Tutoplast	2.5cm	5cm
78	24.2	Tutoplast	2.5cm	5.5cm
78	31.2	Virtue polypropylene mesh	2.5cm	5cm

Figure 1. Patient Demographics with Type and Size of Graft

PRE-OP PADS	POST-OP PADS	POST-OP CLIMACTURIA	INTRA-OP COMPLICATIONS	POST-OP COMPLICATIONS
Yes	No	No	No	No
No	No	No	No	No
No	No	No	No	No
No	No	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	Yes	No	No	No
Yes	No	Not sexually active yet	No	No
Yes	No	Not sexually active yet	No	No
Yes	No	Not sexually active yet	No	No
Yes	No	Not sexually active yet	No	No
No	No	Not sexually active yet	No	No
Yes	No	Not sexually active yet	No	No
No	No	Not sexually active yet	No	No

CONCLUSIONS:

For men who experienced erectile dysfunction as well as climacturia and mild stress urinary incontinence, placement of an IPP and a MMS significantly improved mild stress urinary incontinence as measured by pad use by 2 post-operative weeks and patient-reported climacturia by 3 post-operative months.

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