

## MALE SLINGS: A COMPARATIVE STUDY OF TWO TECHNIQUES

### Hypothesis / aims of study

Post-prostatectomy incontinence (PPI) can be a devastating side effect after radical prostatectomy. Sphincteric incompetence secondary to nerve injury appears to be the most common factor contributing to the development of PPI [1, 2]. Prior studies have attempted to determine contributing factors to incontinence severity such as urodynamic characteristics and type of prostatic surgery [3]. External urethral sphincter support while limiting pelvic floor descent during effort and/or compression of the urethra are proposed mechanisms of male perineal sling function. The aim of this retrospective cohort study is to determine if one type of sling is superior in achieving cure or improvement in symptoms. Secondly, this review attempts to identify pre-operative factors contributing to success and/or failure of male slings.

### Study design, materials and methods

A retrospective chart review was performed from 2000-2010 of all male having undergone either bone anchored male sling (BAMS) or transobturator male sling (TOMS). Follow-up time was calculated from time of surgery to last follow-up visit, and patients were excluded for follow-up < 1.5 months. Data examined included demographics, urodynamic parameters, and pad usage, presence of detrusor overactivity (DO), and history of previous urethral insult (i.e. urethral strictures, brachytherapy, external beam radiation therapy, etc.). We defined treatment failure as subjectively reported usage of  $\geq 4$  pads/day post-sling or by < 50% improvement. Suspected pre-operative risk factors for treatment failure were analyzed. Evaluation was performed utilizing Student t test, Wilcoxon matched-pairs test, Fisher's Exact test, and logistical regression where appropriate. A p-value < 0.05 was considered statistically significant.

### Results

Fifty-nine of 64 patients with a mean age of 69.4 years  $\pm$  9.3 were analyzed. Five patients were excluded for follow-up < 1.5 months. Forty-one patients received BAMS and 18 received TOMS with median follow up of 9.0 months (1.5 - 96.0) and 7.0 months (1.5 - 14.0) respectively ( $p=0.1$ ).

**Table I. Pre-operative Characteristics for Male Slings**

Total patients (n=59)	BAMS (n=41)	TOMS (n=18)	p-Value
Pads/day (Median & IQR)	4.0 (2.0 - 5.0)	3.0 (2.0 - 5.3)	ns
LPP (Mean & SD)	70.3 $\pm$ 45.8	83.8 $\pm$ 34.5	ns
<b>MUP (Mean &amp; SD)</b>	<b>53.6 <math>\pm</math>40.2</b>	<b>86.7 <math>\pm</math>30.2</b>	<b>0.0067</b>
FL (Mean & SD)	3.1 $\pm$ 1.4	3.5 $\pm$ 1.0	ns
DO	13 (31.7%)	3 (16.7%)	ns
UI	23 (56.1%)	7 (38.9%)	ns

(LPP)= Abdominal Leak Point-pressure, (MUP)= Maximal Urethral Pressure, (FL)= Functional Profile Length, (DO)= Detrusor Overactivity, (UI)= Urethral Insult, (SD)= Standard Deviation, (IQR)= Interquartile Range

Change in pad usage pre-operative to post-operatively was significantly decreased in the TOMS group (3 to 1.5,  $p<0.004$ ) compared to BAMS group (4 to 3.5,  $p=0.3$ ). A 46.3% failure rate (19/41) was observed for BAMS and 16.7% (3/18) for TOMS ( $p=0.03$ ).

Analysis of pre-operative risk factors demonstrated LPP, MUP, and UI to be significant for treatment failure in both groups (Table II).

**Table II. Pre-operative Risk Factors for Failed Sling Procedures**

Risk Factor	p-value
<b>LPP</b>	<b>0.0032</b>
FL	ns
<b>MUP</b>	<b>0.0246</b>
DO	ns
<b>UI</b>	<b>0.0118</b>

(LPP)= Abdominal Leak Point-pressure, (FL)= Functional Profile Length, (MUP)= Maximal Urethral Pressure, (DO)= Detrusor Overactivity, (UI)= Urethral Insult

### Interpretation of results

Pre-operative MUP is determined to be higher in TOMS patients (Table I). Additionally, it is observed that the difference between pre-operative and post-operative use of pads/day in the TOMS group is significantly different. Significantly more patients who underwent BAMS failed versus TOMS. Finally, analysis of pre-operative risk factors suggest a strong correlation between increased pad usage per day, low MUP, low LPP, and presence of UI with failure of either type of sling.

### Concluding message

Our cohort demonstrates PPI patients undergoing TOMS placement have a lower failure rate when compared to BAMS placement. However, this may be secondary to improved patient selection. Additionally, patients with pre-operative risk factors such as increased pad usage, low MUP, low LPP, and presence of UI may not be appropriate candidates for male sling.

### References

1. Hairston, J., Ghoniem, G. The male perineal sling enhances the distal sphincteric mechanism: fluorodynamic study. In: Proceedings at the International Continence Society Meeting, August 2002 Abstract 172.
2. Narayan, P., Konety, B., Aslam, K., Aboseif, S., Blumenfeld, W., Tanagho, E. (1995). Neuroanatomy of the external urethral sphincter: implications for urinary continence preservation during radical prostate surgery, J. Urology. 153(2), 337-341.
3. Winters, JC., Appell, RA., Rackley, RR. (1998). Urodynamic findings in postprostatectomy incontinence, Neurourol Urodynam. 17, 493-498.

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<b><i>Is this a clinical trial?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Cleveland Clinc Florida Institutional Review Board</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>No</b>