Incidence and predictors of bladder outlet obstruction in women with chronic urinary symptoms and history of urethral sling surgery

James Ross, Lidia Avvakoumova, Alaya Yassein, Magdalene Payne, Conrad Maciejewski, Humberto Vigil, Duane Hickling

Division of Urology, Department of Surgery, University of Ottawa, Ontario, Canada

#24138

INTRODUCTION

- Urethral sling surgery is an effective and safe treatment for female SUI
- Post-operative de novo urinary symptoms may be common, however, are mostly self-limited
- If concern for obstruction, most will undergo urgent sling loosening/lysis
- If chronic symptoms/delayed presentation the work-up and management is less well-defined
- **Primary Objective:** To determine the prevalence and clinical predictors of obstruction in patients referred with chronic urinary symptoms and a history of sling surgery
- **Secondary Objectives:**
  1) To determine the incidence/outcomes of sling revision in this patient group
  2) To assess the need for re-operation for recurrent incontinence post-revision

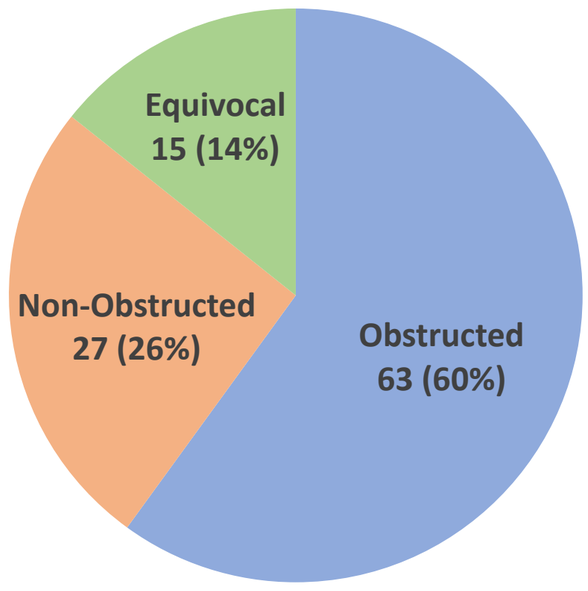
METHODS

- **Study Design:** Retrospective chart review on all patients referred from January 2014 to June 2021 with urinary symptoms >6 months in duration and a history of urethral sling surgery
- **Exclusion Criteria (>/=1 of):** 1) <18 yo, 2) Male, 3) <6 months of symptoms, 4) documented symptoms prior to sling, 5) incomplete records, 6) neurogenic bladder dysfunction, 7) other incontinence procedure (i.e. urethral bulking)
- **Evaluation:** All patients underwent history, physical exam, and urodynamics (+/- fluoroscopy)
  - Patients categorized based on urodynamic findings into:
  1) Obstructed, 2) Non-Obstructed, 3) Equivocal
  - Definition of obstruction (>/=1 of):
    - Sustained **PDet>20cmH2O** with **Qmax<12mL/s** (Blaivas Criteria)
    - Fluoroscopic obstruction (**proximal urethral dilation with acute narrowing**)
- **Statistical Analysis:** Logistic regression used to identify clinical predictors of obstruction
  - Sensitivity Analyses:
  1) Including only mid-urethral sling patients to assess impact of trans-obturator vs retropubic
  2) Including 'Equivocal' patients
- **Follow-Up:** The need for sling revision recorded
  - Post-revision storage/voiding symptoms classified as:
  1) Cured, 2) Improved, 3) No-Improvement, 4) Worse
  - Post-revision SUI recorded as:
  1) None, 2) Mild (<2ppd), 3) Moderate (2 -5ppd), 4) Severe (>5ppd)

RESULTS

- 105 patients met inclusion criteria
- Median time from sling surgery 5.0 years (IQR 8.0)
- 93.3% (98/105) underwent synthetic MUS and 6.7% (7/105) underwent PVS with autologous fascia
- Reported Symptoms:
  - Pure Storage 25.7% (27/105)
  - Pure Voiding 10.5% (11/105)
  - Mixed 63.8% (67/105)

Figure 1. Urodynamic results for female with chronic urinary symptoms post-sling.



Obstructed 60.0% (63/105) – 56 by pressure flow and 7 by fluoroscopy

Unobstructed 25.7% (27/105) – DO in 19, DU in 6, and normal UDS in 2

Clinical Predictors for Urodynamic Obstruction

Table 1. Logistic regression analysis for clinical predictors of urodynamic obstruction.

Predictor	Odds Ratio (95% CI)	p-value
Time since surgery (incr. by 1 year)	0.96 (0.86, 1.07)	0.45
LUTS		
Mixed Symptoms	Reference	
Storage Symptoms	0.37 (0.088, 1.56)	0.18
Voiding Symptoms	1.48 (0.14, 16.18)	0.47
Tight Sub-Urethral Band	6.84 (1.30, 36.11)	0.024
Increased PVR by 50mL	1.35 (1.06, 1.72)	0.016

Table 2. Sensitivity analysis including patients in 'Equivocal' group.

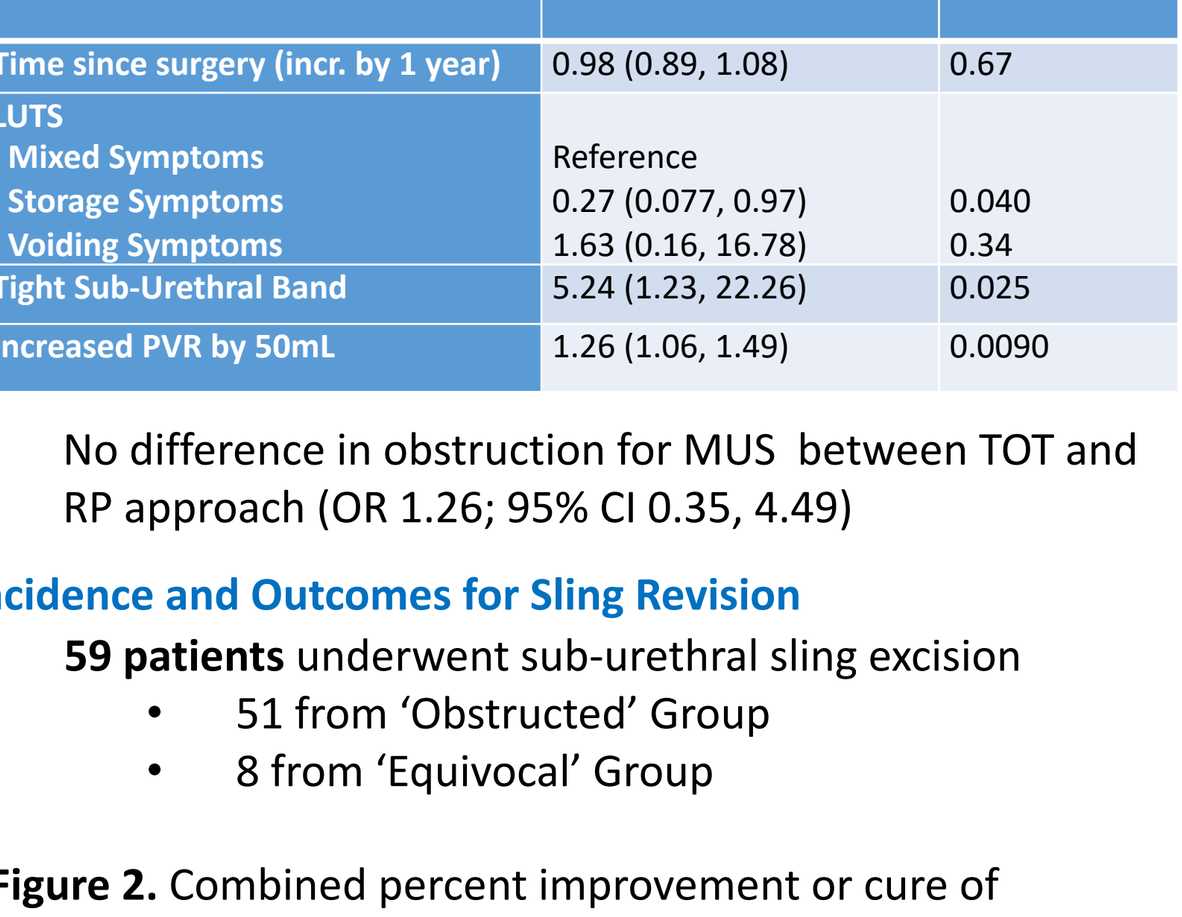
Predictor	Odds Ratio (95% CI)	p-value
Time since surgery (incr. by 1 year)	0.98 (0.89, 1.08)	0.67
LUTS		
Mixed Symptoms	Reference	
Storage Symptoms	0.27 (0.077, 0.97)	0.040
Voiding Symptoms	1.63 (0.16, 16.78)	0.34
Tight Sub-Urethral Band	5.24 (1.23, 22.26)	0.025
Increased PVR by 50mL	1.26 (1.06, 1.49)	0.0090

- No difference in obstruction for MUS between TOT and RP approach (OR 1.26; 95% CI 0.35, 4.49)

Incidence and Outcomes for Sling Revision

- **59 patients** underwent sub-urethral sling excision
  - 51 from 'Obstructed' Group
  - 8 from 'Equivocal' Group

Figure 2. Combined percent improvement or cure of storage vs voiding symptoms post-sling revision.



- 39.0% (23/59) had recurrence of SUI (50% was mild - <2ppd)
- 15.3% (9/59) underwent redo incontinence surgery
- Median follow-up 18 months (IQR 20)

CONCLUSIONS

- Obstruction is common and should be considered in patients with chronic urinary symptoms and history of urethral sling surgery.
- Clinical predictors exist to help identify obstruction, however, urodynamics may still be indicated
- Recurrent incontinence and redo surgery is common following sling revision