

Voiding Dysfunction After Prolapse Surgery: Uterosacral Ligament Suspension Versus Sacrospinous Ligament Suspension

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BACKGROUND

- Pelvic organ prolapse (POP) occurs when the pelvic organs drop from their normal position due to weakening of the pelvic floor muscles and ligaments.
- Two common surgical approaches for POP repair include:
 - sacrospinous ligament suspension (SSS)
 - uterosacral ligament suspension (USS)
- Voiding dysfunction is defined as failing the post operative voiding trial (VT) after prolapse repair.

AIMS

- To determine if there is a difference in post-surgical voiding dysfunction between USS and SSS.

HYPOTHESIS

- Voiding dysfunction rates are higher in patients who undergo SSS as compared to USS.

METHODS

- Retrospective cohort chart review study
- Inclusion Criteria: patients who underwent USS or SSS at Brigham and Women's Hospital (and affiliates) between 1/1/2015 and 2/14/2025
- VT results were compared for the following variables:
 - Demographic information
 - Pre-op prolapse and incontinence
 - Pre-op bladder emptying issues
 - Pre-op anti-incontinence medication use
 - Type of vaginal vault suspension (USS vs SSS)
 - Operative characteristics (surgery length, other procedures, scopolamine/opioid use)
- Statistical models used:
 - T test for continuous variables
 - Chi squared for categorical variables
 - Logistic regression controlling for significant variables to test the effect of POP surgery type on voiding dysfunction/voiding trial result.
- P-value of <0.05 considered statistically significant.
- Power calculation resulted in a sample size of at least 177 patients in each group.

Although SSS patients tended to have greater voiding dysfunction, there was no statistically significant difference after prolapse surgery between USS and SSS.

RESULTS

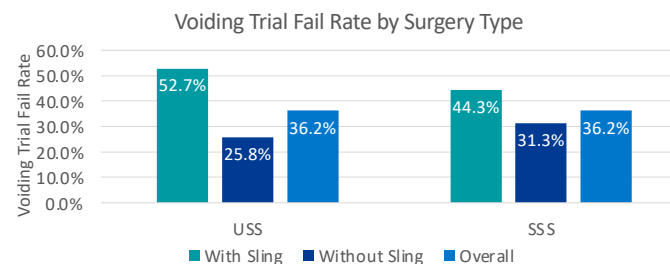
- 763 patients were analyzed, 577 with USS, and 186 with SSS
- There was no significant difference between voiding dysfunction for USS and SSS (36.2% vs 36.2%, $p = 0.385$).
- When excluding patients who underwent concomitant sling placement, patients undergoing USS had a VT fail rate of 26% compared to 31% for SSS. However, this difference was not statistically significant ($p = 0.3$).
- Patients who failed the VT more often had preoperative SUI (22.1% vs. 14.8%), which is commonly treated with sling placement—a known risk factor for VT failure.
- MUI was slightly more common among patients who passed the VT (35.8% vs. 33.3%), contributing to an overall significant difference in preoperative UI between groups ($p = 0.028$).
- Patients who failed VT were more likely to have undergone a concomitant sling placement (54% vs 29.7%, $p < 0.001$).
- Preop anticholinergic use was associated with greater voiding dysfunction ($p = .049$).
- Patients were more likely to have a concomitant hysterectomy for SSS and A/P repair for SSS. ($p = 0.001$).

Table 1. Multivariable Logistic Regression Model estimating the effect of POP surgery type (USS or SSS) on VT result controlling for sociodemographic and clinical factors.

Variable	Adjusted OR	P-value
Surgery Group (USS vs SSS)	3.04	0.385
Age	1.01	0.727
Race: Black	0.95	0.943
Race: Asian	0.82	0.875
Race: Hispanic	1.74	0.323
Alcohol: Yes	0.82	0.604
Prolapse stage: III-IV	0.70	0.356
Preop UI: Yes	1.10	0.803
Other Procedure: Vaginal Hysterectomy	2.68	0.440
Length of Surgery	1.00	0.307

CONCLUSIONS

- While there are trends in voiding dysfunction between USS and SSS, these results were not statistically significant.
- Once controlling for clinical and sociodemographic factors, no variables were found to be significant through regression analysis.
- The key driver for a failed VT and postoperative voiding dysfunction was the presence of concomitant sling surgery.
- A study with a larger sample size of isolated USS and SSS (without a sling) may be needed to identify whether a difference in voiding dysfunction exists between the 2 surgeries.



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