Success of Autologous Pubovaginal Sling after Failed Synthetic Mid Urethral Sling

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Abbreviations and Acronyms

APVS = autologous pubovaginal sling

AUA-SI = American Urological Association Symptom Index

M-ISI = Michigan Incontinence Symptom Index

MUS = synthetic mid urethral sling

SUI = stress urinary incontinence

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Purpose: There is no consensus on the management of persistent or recurrent stress incontinence after a failed synthetic mid urethral sling. After a mesh complication or sling failure many women and surgeons prefer to avoid a repeat mesh procedure and choose an autologous pubovaginal sling. However, little empirical work has been performed to assess the efficacy.

Materials and Methods: We performed a retrospective review of 66 women who underwent autologous pubovaginal sling with rectus fascia after 1 or more failed synthetic mid urethral sling from 2007 to 2012.

Results: Mesh removal was performed before autologous pubovaginal sling in 21 patients (31.8%) while 6 (9.1%) had mesh removed simultaneously with autologous pubovaginal sling. Indications for the autologous pubovaginal sling were pure stress urinary incontinence in 16 patients (24.2%) and mixed incontinence in 50 (75.8%), 8 of whom were deemed complex with a prior urethral diverticulum or urethrovaginal fistula/urethral mesh erosion. At a mean of 14.5 months after autologous pubovaginal sling 46 (69.7%) patients reported cure of stress urinary incontinence. Of these patients 25 (37.9%) had complete cure with no stress or urgency incontinence, 17 had cure of stress urinary incontinence but had persistent urgency incontinence, and 4 had cure of stress urinary incontinence but experienced do novo urgency incontinence. Requiring a mesh excision did not predict worse outcomes compared to cases in which mesh was not removed (p=0.13). Patients with pure stress urinary incontinence were significantly more likely to be cured of all incontinence (62.5%) than those women with preoperative mixed incontinence (30.0%) (p=0.006).

Conclusions: Even after a failed synthetic mid urethral sling, autologous pubovaginal sling is effective and cured stress urinary incontinence in 69.7% of cases.

Key Words: autografts; suburethral slings; surgical mesh; urinary incontinence, stress

Approximately 40% of women may be affected by stress urinary incontinence in their lifetime.[1] Currently the most common surgical option for women with SUI is the synthetic mid urethral sling.[2] However, recurrent or persistent SUI occurs after MUS in up to 12% to 20% of cases.[3–5] MUS also occasionally requires removal or division due to complications such as obstruction, mesh exposure or vaginal pain.[6,7] There is currently no consensus on the management of recurrent or persistent SUI in

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patients with a failed synthetic mid urethral sling.[8]

Autologous pubovaginal slings may correct SUI via a different mechanism than synthetic MUS by placing the sling at the bladder neck and have success rates up to 92%.[9] However, as with all incontinence procedures the success rate is highly dependent on the definition of cure, with much lower continence rates of 66% noted with rigid criteria.[10] APVS is typically not first line treatment for uncomplicated SUI as it is more invasive than MUS, but it is our choice when MUS has failed since theoretically placing a sling more proximally and correcting intrinsic sphincter deficiency should cure the residual incontinence. However, few published data exist on APVS outcomes in this clinical scenario.[11,12] In this study we review the success rate of APVS after failed synthetic mid urethral sling and identify predictors of success to help clarify the role of APVS in these complex cases.

METHODS

This is a retrospective review of patients who had undergone APVS after a failed synthetic mid urethral sling at our institution from 2007 to 2012. All patients with available followup data including validated surveys (M-ISI)[13] and the AUA-SI were included in the analysis.

All women underwent multichannel fluoroscopic urodynamic studies using a Laborie Aquarius™ unit before APVS surgery. Studies were performed with an 8Fr air charged urodynamics catheter and rectal pressures were recorded. Valsalva and cough maneuvers were performed at 200 cc of filling and at maximum capacity according to ICS (International Continence Society) best urodynamic practice. All urodynamic definitions complied with the standardized terminology of the ICS.[14]

Preoperative diagnosis was defined as pure SUI if the patient had SUI on clinical history and urodynamics without any reported symptoms of urgency urinary incontinence or any detrusor overactivity on urodynamics. Patients were diagnosed with mixed incontinence if they reported any urgency incontinence on history.

The surgical procedure has been previously described.[15] An 8 × 1.5 cm sling is harvested via a Pfannenstiel incision with the ends of the sling secured with a Vicryl® suture. The sling is passed through the endopelvic fascia using a long passer (McGuire ligature passer or Crawford clamp), with the surgeon's finger as a guide, and the sling is positioned at the bladder neck. The sling is then tensioned to support the proximal urethra without hypersuspension.

As a general practice, if a patient presented only with recurrent or persistent SUI and no complications from MUS mesh, it was left in place. In the absence of a specific indication we did not explore for previously placed mesh. For patients who presented with evidence of bladder outlet obstruction, the sling was simply divided in the midline. However, if there was vaginal exposure/erosion or pelvic pain, as much of the vaginal component was removed as possible. The timing of mesh removal during APVS or before was based on physician and patient preference.

The M-ISI was recently validated, and the threshold for SUI is 3 or greater and 5 or greater for the urgency urinary incontinence subdomain.[13]

Our primary outcome was complete cure of all incontinence. This was defined as patient, physician and M-ISI reports of no stress or urgency incontinence in the absence of requiring any additional incontinence procedures. Secondary outcomes were cure of stress incontinence, defined as patient, physician and M-ISI reported cure of SUI, and significantly improved SUI, defined as a 50% improvement in SUI based on decrease in M-ISI stress scores of 50%. Failures were defined as any case that did not have a 50% improvement in SUI. Only the most recently completed followup survey was used in the analysis and this point was considered the last followup.

Bivariate logistic regression was used to assess the relationships between sling failure and each predictor. Preoperative diagnosis, number of prior procedures, prior retropubic sling, prior obturator sling and prior bone anchored sling, all of which had p values of 0.3 or less, were included in the multivariable logistic regression to identify factors associated with APVS failure. Backward model building procedures were used to determine the most parsimonious model for sling failure outcome. All analyses were performed using SAS® statistical software (version 9.3) and all testing was 2-sided. The probability of a type I error was set at 0.05.

RESULTS

A total of 66 women chose an APVS after a failed synthetic mid urethral sling at our institution and met the study inclusion criteria. Sixteen patients were excluded from analysis who did not complete validated surveys and 1 patient was excluded who had a ProteGen™ sling (as it is not a standard polypropylene sling). Mean patient age was 56.2 years and mean followup was 436 days (median 211, range 21 to 1,935). Of the 66 patients 19 (28.8%) had a prior retropubic synthetic sling, 26 (39.4%) had a prior transobturator sling, 3 (4.5%) had a prior bone anchored sling, 7 (10.6%) had a prior unspecified mid urethral sling and 6 (9.1%) had a prior mini sling (see supplementary table, http://jurology.com/).

The majority of patients (51, 77.2%) had undergone 1 incontinence procedure before APVS while 8 (12.2%) had 2, 6 (9.1%) had 3 and 1 (1.5%) patient had undergone 4 procedures. Many patients required mesh removal, including 21 (31.8%) who required mesh removal before APVS and 6 (9.1%) who had mesh removed simultaneously with APVS. All patients with retention or urethral erosions had the sling removed in a staged fashion. The primary indication for mesh removal in the 27 patients was vaginal exposure in 6 (22.2%), pain in 8 (29.6%), urinary retention in 6 (22.2%) and urethral erosion