Autologous Transobturator Urethral Sling Placement for Female Stress Urinary Incontinence

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Purpose: We describe and evaluate a transobturator approach to urethral sling placement using autologous rectus fascia for the management of female stress urinary incontinence.

Materials and Methods: We performed a feasibility study of 10 cases of autologous transobturator mid urethral sling placement for stress urinary incontinence. The procedure includes an anterior vaginal dissection performed in the standard fashion for a mid urethral sling and harvest of a strip of rectus fascia. A trocar is passed through each obturator foramen and the fascial stay sutures are retracted through the skin incisions. The sling is appropriately tensioned and the stay sutures are tied. Patient outcomes were measured by a 24-hour pad weight test and ICIQ-FLUTS score.

Results: Median patient age was 57 years (IQR 48, 69.5) and median body mass index was 30.3 kg/m^2 (IQR 25.2, 32.4). Median followup was 4 months (range 3 to 5). All patients demonstrated a reduction in leakage with 80% being completely dry (0 gm on 24-hour pad test and not wearing pads). Overall there was significant improvement in postoperative vs preoperative 24-hour pad weight (p=0.02). Likewise, all subscores of the ICIQ-FLUTS were significantly improved after surgery, including frequency (p=0.006), voiding (p=0.04) and incontinence (p=0.002). Of the 9 eligible cases 6 (67%) were performed on an outpatient basis. One patient performed intermittent self-catheterization for 24 hours after sling placement. No patients experienced severe (Clavien III-V) postoperative complications or required urethrolysis.

Conclusions: Autologous transobturator urethral sling placement appears to be technically feasible with excellent short-term outcomes. Longer followup and larger series are needed for validation.

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

Abbreviations and Acronyms

ATO = autologous transobturator

FDA = Food and Drug Administration

ICIQ-FLUTS = International Consultation on Incontinence Questionnaire-Female Lower Urinary Tract Symptoms

QoL = quality of life

SUI = stress urinary incontinence

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Female stress urinary incontinence is a highly prevalent problem with a large impact on quality of life, especially in terms of mental health issues.[1,2] Many surgical options exist such as retropubic urethral suspension procedures (eg Marshall-Marchetti-Krantz[3] or Burch[4]), urethral bulking agents[5] or urethral sling placement.[6–8] However, with the introduction of synthetic sling materials, the use of urethral sling procedures has increased comparatively with time.[9] In fact, urethral sling placement was recently reported as the most common procedure for female SUI among urologists undergoing board recertification.[10]

Since it was originally reported in 1907,[11] a variety of modifications to

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urethral sling placement have been described regarding the surgical approach (ie retropubic vs transobturator) as well as the sling material used (eg rectus fascia, fascia lata, synthetic materials, cadaveric, hybrid autologous/synthetic etc).[6–8,12] Notably, with each adaptation the surgical risks and benefits are altered.[13] For instance, compared with an autologous pubovaginal sling, reports have shown the use of synthetic material is associated with an increased risk of urethral erosion and vaginal extrusion,[14] although there are shorter operative and recovery times.[15] Likewise, a transobturator approach is associated with decreased rates of postoperative voiding dysfunction/urinary retention compared to the retropubic approach for synthetic urethral sling placement.[13,16]

While the 2011 FDA warning was directed at mesh use in pelvic organ prolapse surgery,[17] the use of synthetic urethral slings has also been subject to dramatically increased scrutiny by patients, surgeons and the legal community.[18] Indeed a recent study surveying patient knowledge of the topic showed television ads (ie litigation advertisement) to be the most common source of information and there was a considerable aversion among respondents to any mesh placement.[19] Furthermore, Rice et al evaluated patient complaints and complication rates related to mesh use at a tertiary referral center (including mesh kits for prolapse, sacrocolpopexy or urethral sling) before and after the FDA warning, and found increased patient complaints despite stable complication rates after the warning.[20] In their series the most common mesh procedure the patients had undergone was a mid urethral sling (62%).

Therefore, we developed a novel technique for urethral sling placement that would avoid the controversies, complications and cost unique to synthetic sling placement while maintaining the benefit of a transobturator surgical approach. We present a pilot study evaluating ATO mid urethral sling placement for the management of female SUI.

MATERIALS AND METHODS

After institutional review board approval we evaluated the outcomes of 10 patients who underwent ATO mid urethral sling placement for female SUI. All patients were evaluated preoperatively with a thorough history and physical, urinalysis and urine culture, post-void residual measured by ultrasound, ICIQ-FLUTS score and 24-hour pad weight testing. After a discussion of management options for SUI all patients wished to proceed with a transobturator approach to autologous mid urethral sling placement to avoid the use of synthetic mesh materials and minimize the potential risks associated with autologous pubovaginal sling placement.

Surgical Technique and Followup

After induction of general anesthesia and the administration of perioperative antibiotics, the patient is placed in the dorsolithotomy position. A sterile Foley catheter is placed and the bladder is completely drained. Injectable normal saline is used for hydrodissection of the anterior vaginal wall and a midline incision is made. A combination of blunt and sharp dissection is used, and dissection is carried out to the obturator foramen bilaterally. The distance between the obturator foramen is measured, using the medial aspect of the ischiopubic ramus as a landmark, and the rectus sling is cut to this length. Next, attention is turned to the abdomen and a 4 to 5 cm transverse abdominal incision is made just cephalad of the pubis. Dissection is carried out through the subcutaneous tissues to expose the anterior rectus fascia. An approximately 6 to 7 cm $\times$ 1 to 1.5 cm strip of rectus fascia (variation based on previous measurement) is marked out and 2 stay sutures are placed at the lateral aspect of the intended fascial sling bilaterally. The sling is harvested using a combination of blunt and electrocautery dissection (fig. 1). Hemostasis is obtained and the anterior rectus fascia is re-approximated.

We then proceed to the remainder of the pelvic portion of the procedure. A small skin incision is made in the medial thigh bilaterally, at the level of the clitoris, and dissection carried to the obturator foramen. The subcutaneous fat overlying the obturator foramen is cleared with several spreads of Mayo scissors. A trocar (helical or C-shaped) is passed twice through each obturator foramen (outside-in or inside-out, depending on surgeon preference) and the stay sutures are retracted through the

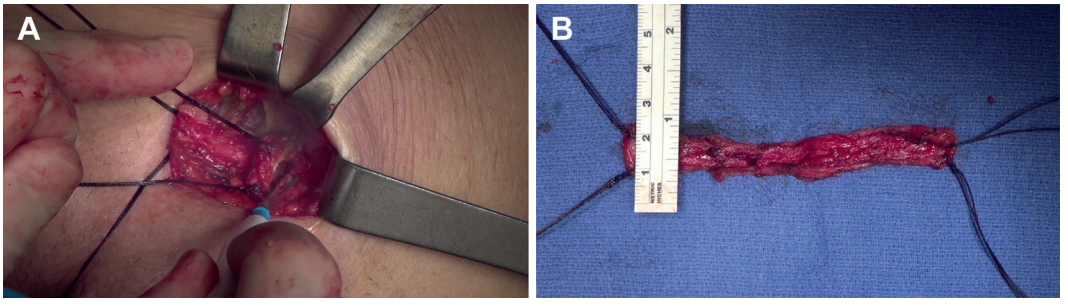

Figure 1. Harvesting rectus fascial sling. *A*, 2 stay sutures are used at lateral aspect of sling for support. *B*, completed fascial sling, 8 $\times$ 1 cm.