

BACKGROUND

Since its introduction, the placement of midurethral slings for women with stress urinary incontinence has become the gold standard for surgical management. Complications are rare and the procedure has very high success rates [1-2]. One uncommon, and difficult to predict complication is sling erosion into the urethra. The exact cause of urethral erosions is unknown, and therefore impossible to predict [3]. The purpose of this study was to determine the frequency of urethral erosion among patients undergoing Midurethral sling (MUS) revision, review presenting symptoms, diagnostics and surgical management.

METHODS

A retrospective chart review was performed on patients undergoing sling revision with a diagnosis of urethral erosion between July 2005 and March 2018. Institutional Review Board approval was obtained. Only patients with a previous MUS and also found to have mesh within the lumen of the urethra were included. Patients not having had a prior MUS and or not having mesh within the lumen of the urethra were excluded. Demographic data, preoperative symptoms and mesh removal surgery were reviewed and analyzed. When possible medical and operative records of the original surgery were also reviewed.

RESULTS

71 patients underwent a surgery for midurethral sling related complications during the study period and eight (11.3%) were found to have sling erosion. Demographic and pertinent variables are found in Table 1. Interestingly, most patients, seven (87.5%), had a prior hysterectomy and the one patient without a hysterectomy had a previous uterine artery embolization. The median (range) time from original MUS placement to surgery for the sling erosion was 42 (12 to 168) months, however, most patients reported developing Lower Urinary Tract Symptoms (LUTS) either immediately after or near the time of MUS placement. Demographic data of the patients was reviewed and no significant patterns were identified. Three patients were diabetic, one patient was a past smoker and no current smokers. No patient used hormone therapy. Table 2 includes the most common preoperative complaints, which included urinary urgency (75%), stress and urgency incontinence (50%), and voiding difficulty (50%).

The degree of erosion: (n=8)

- Two (25%) had complete occlusion of the urethral lumen between the middle third and proximal third.
- Two (25%) had mesh covering the lower half to third of the dorsal (floor) urethra.
- Three (37.5%) had mesh covering one side of the urethra.
- One patient (12.5%) the sling was found in the ventral (roof) of the urethra with complete transection through inferior half.

Surgical Technique: (n=8)

- In three (37.5%) patients the sling was removed by incising the urethra and excision the sling followed by urethral reconstruction.
- Three (37.5%) cases were completed by cystoscopic transection of the sling followed by excising the sling from the sides transvaginally.
- Finally, two (25%) were cystoscopy assisted transurethral excision with Metzenbaum scissors.

In six (75%) patients, during the initial surgery, complete removal of the mesh from the lumen of the urethra was accomplished and confirmed on follow-up cystoscopy. One patient required two additional surgeries (transurethral resection with cystoscopy), and this patient was found to have 2 different types of sling within the urethra. Another patient appeared to have complete removal at time of surgery but this has not yet been confirmed postoperatively at the time of this presentation.

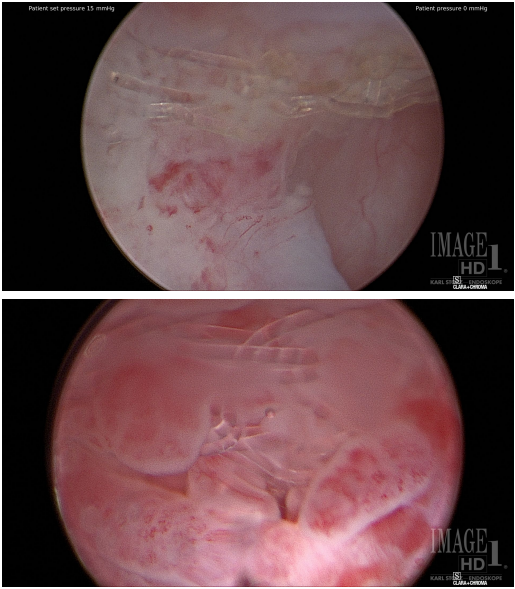
Table 1. Demographics and pertinent variables

Age, years (Mean ± SD)	57.1 ± 11.3
BMI kg/m <sup>2</sup> (Mean ± SD)	28.7 ± 3.3
Parity (Median, range)	2 (1-3)
Previous Reconstruction	5 (62.5%)
POP Q Point Ba (Mean ± SD)	-2.3 ± 1.3
Microhematuria	4 (50%)
Recurrent Urinary Tract Infection	3 (37.5%)

Table 2. Preoperative Symptoms

Voiding Difficulty	4 (50%)
Feeling of Incomplete Emptying	1 (12.5%)
Dyspareunia (male/female)	3 (37.5%)
Urinary Retention	1 (12.5%)
Urinary Urgency	6 (75%)
Urgency Incontinence	4 (50%)
Nocturesis	3 (37.5%)
Enuresis	2 (25%)
Stress Incontinence	4 (50%)
Prolapse Symptoms	3 (37.5%)

Figure 1 & 2. Mesh within urethra



CONCLUSIONS

Amongst our study patient population urethral erosion comprised 11.3% (n=8) of all patients undergoing surgery for midurethral sling complications. Interestingly, in two (25%) of those patients the erosion was not seen on initial cystoscopy, but identified on subsequent evaluation implying that symptoms precede actual erosion. In our patient population, most of the urethral erosions were diagnosed many years following the MUS operation, but LUTS were reported much earlier to the initial MUS operation. This perhaps points towards a dynamic process perhaps initially triggered by either location, depth and/or tension of MUS placement. This dynamic process may be further enhanced by additional urethral manipulation and pelvic floor surgery. In our series, 50% of patients had additional pelvic surgery following the initial MUS operation, and 75% of patients had concomitant pelvic surgery at the time of MUS. Subsequent procedures may have changed force dynamics and tension of the original MUS leading to rolling, folding or distorting the mesh and allowing it to burrow into the urethra. In the cases where the entire sling was found within the lumen of the urethra it is hypothesized that the sling had to transect the urethra at the edge or in a rolled-up fashion since in these cases the dorsal (floor) urethra were found intact and no fistulas were identified. In conclusion, it appears that sling erosion is a dynamic process occurring over time and in patients with LUTS, interval cystoscopy may aid in earlier diagnosis. Patients with early voiding difficulties or worsening LUTS following MUS placement may be at higher risk of erosion and recurrent POP surgery following prior MUS may also predispose patients. Surgery should be tailored to location and amount of mesh within the urethra.

REFERENCES

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