Analysis of British Columbia practice patterns in the management of female stress urinary incontinence with emphasis on mesh use

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ABSTRACT

Introduction: Female stress urinary incontinence (SUI) is common and has a profound impact on quality of life. Suburethral slings are the most common treatment for SUI in this population. These can be placed with synthetic mesh or autologous fascia. Mesh-related complications after midurethral sling procedures are documented in the literature but the risk of complications and reoperation is lower than the use of transvaginal mesh for pelvic organ prolapse repair. In this study, we sought to evaluate local practice patterns of management of female SUI with specific emphasis on mesh use.

Methods: A survey created by an expert panel was disseminated to respective provincial societies.

Results: Sixty-eight percent of respondents offer midurethral slings in their practice but only 60.6% of these respondents would offer surgical removal of the sling if there were complications, such as mesh erosion or pain. The majority (39.4%) of respondents are performing transobturator slings as compared to retropubic midurethral slings (36.3%) and only 8.5% have removed the leg component associated with the transobturator sling in their practice.

KEY MESSAGES

- 68% of respondents offer midurethral slings in their practice but only 60.6% of these respondents would offer surgical removal of the sling if there were complications.
- Only 8.5% have removed the leg component associated with the transobturator sling in their practice.
- Compared to most respondents offering midurethral slings (64.8%), a minority of surgeons offer alternatives.
- Results suggest surgeons should continue to review surgical risks and alternative treatment options as part of the surgical consent process.

Furthermore, compared to most respondents offering midurethral slings (64.8%), only a minority of surgeons offer alternatives: 23.9% of respondents offer periurethral bulking agent injections, 15.5% offer pubovaginal slings, and 12.7% offer retropubic urethropexies.
Conclusions: Our study supports that surgeons should continue to review surgical risks and alternative treatment options as part of the surgical consent process. As such, surgeons should be able to offer a variety of surgical approaches to manage female SUI.

INTRODUCTION

Female stress urinary incontinence (SUI), defined as leakage of urine with activities that increase intraabdominal pressure (i.e., exercising, coughing, or sneezing), is quite prevalent: 61.8% of women over the age of 20 in the United States experience SUI. [1] SUI has a subsequent profound impact on quality of life, including mental and physical well-being. [2,3]

Sub-urethral slings are a common treatment for female SUI and include both midurethral slings (transobstorator tape (TOT), retropubic midurethral sling (R-MUS), mini sling and pubovaginal slings. Generally, midurethral slings are mesh based slings placed at the midurethral location while pubovaginal slings are fascia based slings placed at the bladder neck. Long-term cure rates for both techniques varies from 80-90%. [3] Insertion of sub-urethral slings was the most conducted surgical procedure for female SUI with 7200 sub-urethral slings being performed by approximately 10% of the board-certified urologists in the United States in 2012 alone. [4,5] Other surgical treatments for SUI include the injection of a periurethral bulking agent into the urethral endoscopically and retropubic urethropexies (e.g. Burch colposuspension) which involves surgical elevation of the bladder neck from a suprapubic approach.

In the early 2000s, international guidelines and regulatory agencies had identified mesh erosion and chronic pain as possible complications of mesh procedures for SUI. [3,6–8]Mesh-related complications after midurethral sling procedures are documented in the literature but the risk of complications and reoperation is lower than the use of transvaginal mesh for pelvic organ prolapse repair. [9] Since 2018, some bodies recommended having a high-vigilance restriction period where mesh should not be used except in exceptional circumstances, while other bodies suggested appropriate counselling of the patient during the consenting process.[6,7] Specifically, physicians should inform the patient that 15.6% of women experience pelvic pain at least one year post mesh surgery; that mesh removal rates at 9 years post-surgery are 3.3% and that full removal of the mesh may not be possible. [6,10,11] With the cautious change of international guidelines and regulatory body recommendations, total volumes of sub-urethral slings have plummeted in some regions potentially leaving many women with untreated SUI; for example, in Australia, from 93 to 49 per 100,000 population per year and from 60 to 48 in Europe. [6,12]

Midurethral slings have shorter operating time and faster return to normal activities compared with traditional non-mesh surgeries with similar success rates. [13] As with any surgical

procedure, there is a risk of complications with midurethral slings; however, the overall complication rate is low and is lower than that of alternative non-mesh incontinence surgeries.

Given the evolution of mesh recommendations, we sought to evaluate local practice patterns of management of female SUI with specific emphasis on mesh use.

METHODS

An expert panel created the survey questions. The panel consisted of 1 Urogynecologist and 2 Urologists, both completed fellowships in female urology. The survey included 31 questions including sections on demographics, preferential management of patients with SUI, different surgical approaches to SUI and preferential management of patients with SUI surgical complications (see Appendix). Questions varied from list answers, yes/no responses and open answers (see appendix). The survey was sent via a Qualtrics link to gynecologists, urogynecologists, and urologists across the province of British Columbia through the respective provincial medical societies (including 98 urologists and 263 gynecologists). Data was collected using Qualtrics software, and statistical analysis was completed using Statistical Package for Social Sciences (SPSS) software. The survey was open from Feb 20th to April 7th, 2023, participation was voluntary, and no remuneration was provided. Seventy-one respondents were included in the final statistical analysis.

RESULTS

Demographics

A total of 71 physicians responded to the survey (71/361 who were sent the survey). Of these, 54.9% identified as male and 45.1% identified as female (Table 1). Most respondents were between the ages of 21 and 60. The specialty breakdown was as follows: 34 (47.9%) were gynecologists, 32 (45.1%) were urologists, and 5 (7.0%) were urogynecologists.

General results

When referring patients with SUI for surgery, 74.6% of respondents indicated that they would refer to a urologist, 25.4% would refer to a urogynecologist, and only 5.6% would refer to a gynecologist.

A total of 68 out of 71 respondents indicated that they treated SUI. Seventy-one were included in the final statistical analysis.

Conservative management practices for female sui

Most physicians (98.6%) indicated that they offer conservative treatments, such as avoidance of bladder irritants and constipation, for females with SUI. Additionally, 64.8% of respondents indicated that they offer anti-incontinence devices (e.g., urethral plugs or pessaries), while 95.8% indicated that they offer pelvic floor physiotherapy (PFPT). Further, 9.9% of respondents indicated that they offer other options such as weight loss recommendation to the patient, referral for pubovaginal sling (AFS) and periurethral bulking agent injection, anterior repair if indicated,

and other non-mainstream treatments (vibrating chair, laser, and radiofrequency therapy) (Table 2).

When asked about treating patients with mixed urinary incontinence, 85.7% of respondents indicated that they treat urgency urinary incontinence (UUI) first, before treating stress urinary incontinence (SUI). The remaining 14.3% indicated that they treat SUI first.

Preferences for the work-up of female sui prior to surgery

Nearly half of the respondents (48.5%) indicated that most of their patients undergo cystoscopy before surgery. In contrast, 33.8% of respondents reported 10% or less undergo urodynamics prior to surgery. Only 11.8% perform urodynamics in most of their patients.

Surgical preferences for female sui

Of the respondents, 23.9% offer periurethral bulking agent injections, 64.8% offer midurethral slings, 15.5% offer pubovaginal slings (AFS), and 12.7% offer retropubic urethropexies (Table 2).

In terms of midurethral sling type preferences, 39.4% of respondents reported performing transobturator midurethral slings most frequently, while 36.3% reported performing retropubic midurethral slings most frequently (equal distribution for gynecologists, urogynecologists and urologists). Only one respondent reported performing mini slings most frequently (Table 3).

With only 15.5% of respondents performing pubovaginal slings there were only 11 respondents who commented on site of harvest, whom 90.9% used rectus while 9.1% used fascia lata.

Half of the respondents reported noticing a change in their patients' preferences for type of anti-incontinence surgeries since the publication of mesh warnings from the Health Canada Advisory. The other half did not notice a change. The reasons for not wanting mesh as reported by the respondents included less interest, patient reluctance, anxiety, patient preference for conservative treatment, and decreased uptake of mesh.

Midurethral sling-related complications

Mesh-related complications were reported by 5.6% of respondents as the most common complication. In terms of management of mesh complications 60.6% of respondents reported they would perform surgical removal, while 54.9% of respondents reported prescribing vaginal estrogens, and 25.4% referred patients for pelvic floor physiotherapy (Table 4). Other approaches mentioned by 16.9% of respondents included referring to specialists with mesh-related expertise, partial surgical removal of eroded portions, oversewing or partially excising the vagina for mesh erosion, using pessaries for recurrent stress urinary incontinence (SUI), and referring to urogynecologists or urologists.

Regarding mesh removal practices, most respondents (56.5%) reported performing mesh removal in their practices. Among these physicians, 49.3% offered surgical removal of the vaginal component only, while 11.3% offered removal of the abdominal component only. A

smaller percentage of physicians (8.5%) offered removal of the leg component exclusively; while 9.9% of the respondents offered complete mesh removal (both arms and vaginal component; did not specify leg component in question). In terms of involving orthopedics (for knowledge in leg anatomy) or radiology (for pre-operative or intraoperative identification of the mesh via ultrasound technique) experts in the removal of the leg components, 16.9% of physicians would not involve these specialties, while 83.1% did not provide a response to this question.

Preferences for sui management after previous midurethral sling

When asked about their preferred next surgery after a midurethral sling in patients with refractory SUI, 12 respondents (16.9%) indicated midurethral sling again, 12 indicated pubovaginal slings, 4 indicated retropubic urethropexies, and 8 indicated periurethral bulking agent injections. 17 respondents reported other options such as referring to a urogynecologist or urologist (Table 5).

DISCUSSION

In this study, we surveyed gynecologists, urogynecologists and urologists in the province of British Columbia regarding their practices in managing female SUI. Focus was placed on evaluating physician practices when it came to the use of mesh products and dealing with their complications. Our findings demonstrate that surgeons treating SUI in this population have similar approaches in terms of conservative management. However, surgeons differ in the surgical management of SUI and management of complications associated with mesh.

In their practices, 64.8% of respondents offer midurethral slings. However, among these respondents, only 60.6% would provide surgical removal of the sling in cases of mesh erosion or mesh-related pain. In the NICE guidelines and RANZCOG position statement, the retropubic midurethral sling is preferred over the transobturator sling for possible improved efficacy, less groin pain and better rates of complete mesh removal. [6,14] They note that the transobturator sling is reserved only for those who have had previous abdominal surgery. In the United Kingdom experts have noted that the transobturator slings are easier to remove with the collaboration of an orthopedic surgeon to help with the groin dissection- this has been associated with shorter operative times, lower complication rates and good outcomes (unpublished data, UK). In our study, the majority (although slight) of respondents are performing transobturator slings as compared to retropubic midurethral slings. In Canada, gynecologists, urogynecologists and urologists typically receive little training on groin dissection, which is essential for transobturator sling total removal, compared to their expertise in suprapubic/retropubic dissection. Consequently, they might encounter challenges and feel less comfortable managing this complication. In our respondents only 8.5% have removed the leg component associated with the transobturator sling in their practice. Seventeen percent would not involve orthopedics or radiology to help remove the leg components (83.1% did not respond to this question). Counter

to this, 11.3% of respondents remove abdominal components associated with the retropubic approach.

Rates of sub-urethral sling surgeries in general have decreased since the emergence of possible chronic pain and mesh erosion complications associated with mesh-related procedures [3,6–8]. Mesh-related complications after midurethral sling procedures are documented in the literature but the risk of complications and reoperation is lower than the use of transvaginal mesh for pelvic organ prolapse repair.[6,9,12] Fifty percent of respondents in our survey noted that patients have changed their attitude regarding mesh use for female SUI since the Health Canada Advisory. This is alarming, as midurethral slings have shorter operating time and faster return to normal activities compared with traditional non-mesh surgeries with similar success rates. [13] Furthermore, in our study surgeons quote reasons patients do not want mesh anymore due to reluctance and anxiety associated with mesh products. Yet in our survey, only a minority of surgeons offer alternatives to the midurethral sling. Only 23.9% of respondents offer periurethral bulking agent injections, 15.5% offer pubovaginal slings, and 12.7% offer retropubic urethropexies compared to 64.8% of respondents who offer midurethral slings. Perhaps females with SUI are no longer receiving treatment for their SUI given that overall numbers of sub-urethral slings are down in general and that only 13-24% of surgeons in our survey offer alternative treatments to mesh.

The results of our survey support three proposed changes moving forward. First, surgeons should be able to offer patients access to mesh-containing midurethral sling surgeries and have knowledge in how to deal with their complications or who to refer to if their patients experience complications. Second, patients should continue to be counselled on risks and benefits of all forms of SUI surgeries. Patients should be referred appropriately to surgeons that perform the procedure of the patient's choice. It would be helpful for patient-decisions aids to be developed around this area. Third, more surgeons should be trained in periurethral injections of bulking agents, pubovaginal slings and retropubic urethropexies or centres for SUI surgery excellence should be created across the province so that access to care for females with SUI is not compromised.

This study is limited in that it does not evaluate the opinions of patients themselves and is representative of only one province in Canada. Future studies should evaluate the patient perspective and practice patterns of other regions regarding female SUI management.

CONCLUSIONS

This timely study supports the notion that surgeons should offer various surgical approaches to manage female SUI. Further resources should be used to train current and future surgeons in the various surgical techniques including the retropubic midurethral sling, pubovaginal sling, retropubic urethropexies and periurethral bulking agent injections as well as managing their associated complications or the development of centres for SUI surgery excellence across British Columbia.

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FIGURES AND TABLES

Table 1. Demographics of surveyed population		
Variable	**Frequency**	**Percentage**
Gender		
Female	32	45.1
Male	39	54.9
Age		
21–40	19	26.8
41–50	22	31.0
51–60	21	29.6
61–70	8	11.3
70+	1	11.4
Specialty		
Gynecologist	34	47.9
Urologist	32	45.1
Urogynecologist	5	7.0

Table 2. Type of surgeries performed in female SUI		
Procedure	**Frequency**	**Percentage**
Midurethral slings (TOT, retropubic slings (R-MUS, mini-sling)	46	64.8
Pubovaginal slings	9	12.7
Retropubic urethropexies (Burch colposuspension)	11	15.5
Periurethral bulking agent injections	15	21.1
Other	2	2.8

R-MUS: retropubic midurethral sling; SUI: stress urinary incontinence; TOT: transobstorator tape.

Table 3. Type of midurethral sling procedures performed		
Type of midurethral sling	**Frequency**	**Percent**
Retropubic midurethral sling (R-MUS)	26	36.3
Transobturator	28	39.4
Mini sling	1	1.4

R-MUS: retropubic midurethral sling.

Table 4. Management of mesh complications		
Management strategy	**Frequency**	**Percent**
Vaginal estrogen	39	54.9
Pelvic floor physiotherapy	18	25.4
Surgical Removal	43	60.6
Other	12	16.9

Table 5. Preferred next surgery in females who have had a previous midurethral sling and have refractory SUI		
Next preferred surgery	**Frequency**	**Percent**
Midurethral slings (TOT, retropubic slings [R-MUS], mini-sling)	12	16.9
Pubovaginal slings	12	16.9
Retropubic urethropexies	4	5.6
Periurethral bulking agent injections	8	11.3
Other	17	23.9

R-MUS: retropubic midurethral sling; TOT: transobstorator tape.