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Revisiting current treatment options for stress urinary incontinence and pelvic organ prolapse: a contemporary literature review

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Abstract: Stress urinary incontinence (SUI) and pelvic organ prolapse (POP) affect many women in their lifetime. In this review, we describe and evaluate the latest treatment options for SUI and POP, including the controversy around transvaginal mesh (TVM) use. Growing evidence supports the utilization of pelvic floor muscle training as first-line treatment for both SUI and POP. Vaginal pessaries continue to be an effective and reversible option to manage SUI and POP symptoms. The midurethral sling remains the gold standard for surgical treatment of SUI, although patients and clinicians should acknowledge the potentially serious complications of TVM. Burch urethropexy and pubovaginal sling offer good SUI cure and may be preferred in women wishing to avoid mesh implants; however, their operative morbidities and more challenging surgical approach may limit their use. Site-specific cystocele or rectocele repairs may be indicated for isolated anterior or posterior vaginal compartment prolapse; however, in women with more severe POP, evidence supports using a vaginal native-tissue repair involving apical suspension as the primary surgical technique. Although abdominal and laparoscopic sacrocolpopexies are both effective in treating POP, their failure and mesh complication rates increase with time. There is insufficient evidence to support the widespread use of uterine-preserving surgical POP repairs at present due to the lack of long-term data. Routine TVM use is not recommended in POP surgeries and should only be considered on a case-by-case basis by trained surgeons, primarily in women with multiple risk factors for POP recurrence. In general, clinicians should individualize SUI and POP treatment options for women based on their symptoms, comorbidities, and risk factors for mesh-related complications.

Keywords: stress urinary incontinence, pelvic organ prolapse, midurethral sling, transvaginal mesh, apical suspension, native tissue repair

Introduction and review objectives

Stress urinary incontinence (SUI), the involuntary leakage of urine on physical effort or exertion, and pelvic organ prolapse (POP), the descent of pelvic organs from their normal positions in the pelvis, are common conditions that affect 30–40% of the women in their lifetime.[1,2] Although SUI and POP are non-life-threatening illnesses, they confer a significant health care burden in the aging population and lead to negative impacts on women's quality of life. SUI arises from the decreased support of the pelvic floor and vaginal connective tissue around the bladder neck and urethra,[3] while POP is a result of weakness at various levels of the endopelvic fascia and levator ani muscle complex.[4] Concurrent SUI often

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exists in women with POP due to the similar pathophysiology between these two conditions. Risk factors for SUI and POP include but are not limited to pregnancy and vaginal parity, forceps delivery, age, menopause, prior pelvic reconstructive surgeries, and chronic straining.[5]

In this review, we aim to describe the latest trends in SUI and POP treatment, with a focus on the literature surrounding the efficacy and complications from the past 5 years. Conservative management of SUI and POP most commonly consists of pelvic floor muscle training (PFMT) and vaginal pessaries, whereas surgical treatment of SUI and POP may involve either native-tissue or mesh-based repairs in the abdominal, laparoscopic, or vaginal approach. We also provide an appraisal and update on the ongoing controversies regarding transvaginal mesh (TVM) use in SUI and POP.

Literature search and data synthesis

We conducted a literature search limited to January 1, 2014 to February 25, 2019 for studies of PFMT, vaginal pessaries, and mesh- and native-based surgical repairs for SUI and POP. We included systematic reviews and meta-analyses, RCTs, large prospective cohort studies and retrospective cohort studies in our data synthesis. Case-control studies, case series, and case reports are not included unless they pertained to rarer treatments of SUI and POP, or where more rigorous study designs were not available. Updates to systematic reviews and secondary analyses of RCT data conducted prior to 2014 are included if the updates and data analyses on long-term follow-up were reported within the past 5 years.

Conservative treatments for SUI and POP

PFMT

There has been a growing body of evidence supporting PFMT for SUI and POP treatment in the past 5 years. PFMT is a structured and individualized program of exercises which aims to improve pelvic floor muscle strength, endurance, power, relaxation, or a combination of these parameters.[6] PFMT may be performed with adjunctive therapies such as vaginal cones and electrical muscle stimulation, although limited evidence suggests there is no added benefit with these modalities.[7,8] PFMT builds pelvic floor strength with repeated muscle contractions and enhances conscious muscle pre-contraction prior to anticipated increases in abdominal pressure such as coughing.[9,10] Health care providers may tailor PFMT treatment programs to the degree of bothersome SUI and POP symptoms, the stage and severity of urinary leakage and prolapse, and basic fitness and comfort of each patient.

The most recent Cochrane review update consisting of 31 trials in 1,874 women supports PFMT as the first line therapy for SUI, with women in the PFMT group eight times more likely to report cure compared to inactive or no treatment.[11] PFMT training protocols were individualized and progressive in all included trials, with higher patient-reported cure and greater reduction of leakage episodes if protocols were supervised. The benefit of PFMT on SUI symptoms has also been demonstrated in the immediate postpartum period. A meta-analysis examining PFMT and postpartum UI by patient self-report symptoms and pad testing showed a 56% reduction in UI risk at 12 months postpartum in women receiving PFMT.[12] Currently, the National Institute of Health and Care Excellence recommends a minimum of the 3-month trial of supervised PFMT as first-line treatment for SUI.[13]

PFMT is also effective in preventing and treating POP. A 2014 multicenter, parallel-group RCT of 447 women with stage 1–3 POP demonstrated a significant decrease in the POP symptom score (POP-SS) at 12 months, in women receiving one-to-one physiotherapist-led PFMT compared to those without training.[14] A meta-analysis including 13 RCTs and 2,340 women across 10 countries also reported an improvement in both POP-SS and POP staging on POP-Q measurement in the PFMT group,[15] although overall evidence is limited by the heterogeneity of PFMT regimen and risk of performance bias. While current evidence of PFMT on postpartum POP remains limited, there appears to be an improvement in POP symptoms, but not anatomic stage, within 12 months postpartum in women undergoing regimented PFMT.[12]

Overall, current literature clearly demonstrates a benefit of routine and supervised PFMT on SUI and POP management. Further research on the long-term efficacy and cost effectiveness of PFMT is ongoing.

Vaginal pessaries

A pessary is an intra-vaginal device to support vaginal wall prolapse or to treat urinary incontinence. Pessaries may be used in women wishing to treat SUI and POP conservatively, or in women awaiting surgical correction of SUI and/or POP. Approximately 71–90% women can be successfully fitted with a pessary for either SUI or POP, with symptomatic relief in 70–90% of the women who undergo a successful pessary fitting.[16]

Vaginal devices for SUI treatment often provide additional support to the anterior vaginal wall to slightly elevate and constrict the urethra.[17] These include the ring and dish pessaries with a knob, the anti-incontinence pessary[18], and intra-vaginal inserts. Moderate quality evidence in a 2017 review suggests that vaginal pessaries significantly decrease urinary leakage and bother during physical activities in women with SUI.[19] A single-blind, two-arm RCT in 2017 comparing women wearing the anti-incontinence pessary, vs a sham vaginal ring, showed a significant decrease in pad use in pessary users,[20,23] although the trial is limited by the small number of participants and short duration of follow-up. Further research is needed to confer these findings and examine the long-term benefits of vaginal pessary use in the treatment of SUI.

Vaginal pessaries provide POP symptom improvement in 49–90% of the users.[21,22] New studies on pessary use for POP treatment are scarce due to the established benefit of pessary use. A 2018 prospective cohort study in China on 142 women using ring with support pessaries for symptomatic POP showed a significant improvement in Pelvic Floor Distress index (PFDI-20) and Pelvic Floor Impact Questionnaire (PFIQ-7) scores, along with improved sexual function and overall quality of life.[23] At 24 months, 74.8% patients continued to use the pessary. Known risk factors for pessary discontinuation include a wide vaginal introitus,[23] increased parity, and previous hysterectomy,[21] whereas factors predictive of long-term pessary use include older age, concurrent vaginal estrogen (VE) use, and smaller pessaries.[24] VE is often recommended in conjunction with pessary use for POP treatment in peri- or postmenopausal women to prevent pessary erosions and vaginitis. However, it is currently unclear whether VE in conjunction with pessary use improves treatment outcomes for women with POP.

Surgical treatments for SUI

Surgical management of SUI is often indicated when conservative therapies fail, or if patients are desirous of definitive management while accepting the risks of surgery. Surgery offers a high rate of cure in general, although the short- and long-term success rates for each method varies. We emphasize the three most common surgical methods to treat SUI in this review, including the midurethral sling (MUS), Burch retropubic urethropexy, and autologous pubovaginal sling (PVS). The ongoing controversy regarding TVM complications in SUI repair, along with current

literature surrounding mesh use and surgeon expertise, is also discussed.

Midurethral sling

The MUS is a minimally invasive surgical technique for SUI treatment, with symptom cure rates of 75–94% and objective cure rates of 57–92%.[25] Compared to PFMT, women receiving a primary MUS for SUI report a higher subjective and objective cure at 1 year.[26,27] MUS most commonly involves the passage of a small strip of synthetic mesh through either the retropubic space (tension-free vaginal tape, TVT) or obturator foramen (trans-obturator tape, TOT or TVT-O, via the "inside-out" route). The TVT sites exit at the lower abdomen while TOT sites exit in the groin. Efficacy between the TVT and TOT is similar, as described in a 2009 Cochrane review of 12,113 women, with a slightly lower risk of major visceral and vascular injuries, blood loss and urinary retention in TOTs[28] but a higher risk of groin pain. These findings are again confirmed in the most recent update of the review.[25] Among all surgical approaches to treat SUI, the efficacy and safety profile of MUS have been the most extensively studied to date. TOT appears to be slightly more cost effective than TVT at 5 years post-op, although some evidence suggests a higher re-operation risk with TOT.[29]

Overall, MUS has excellent safety data, and provides satisfactory results for most women in the hands of experienced surgeons.[30] A 2018 multicenter RCT comparing the TVT and Burch retropubic urethropexy showed a 19% higher rate of overall continence in the TVT arm at 2 years.[31] The slight superiority of TVT against retropubic urethropexy and autologous fascia sling was also confirmed in a 2017 updated systematic review on all surgical methods to treat female SUI.[32] A 2013 Nordic, multicenter cohort study of 90 women demonstrated an objective cure over 90% at 17 years post TVT placement, with only one case of asymptomatic mesh extrusion.[33] Concurrent MUS placement may be performed at the time of POP surgeries to treat occult SUI, or as a stepwise treatment after POP repairs such as anterior colporrhaphy, when anterior colporrhaphy alone fails to achieve continence. MUS at the time of vaginal prolapse surgery results in a lower rate of de novo SUI,[34] although the incidence of concurrent MUS procedures with POP surgery in the US has decreased by 16% since the 2011 FDA notification regarding TVM.[35] While previous questions regarding polypropylene's carcinogenic properties were raised, a nationwide Swedish cohort study including over 5 million women clearly demonstrated no association with

increased cancer risk in women undergoing polypropylene MUS surgeries.[36]

Complications of the MUS include bladder and urethral injury, voiding dysfunction, bleeding, infection, pelvic pain, dyspareunia, and mesh extrusion or exposure. In general, the complication rate for MUS appears to be lower than alternative non-mesh-based SUI surgeries.[37] Mesh extrusion or erosion rate is low overall for MUS, occurring in an estimated 2.4% in women receiving TOTs and 2.1% in TVTs.[25] The rate of re-operation and removal for MUS increases with time, with a UK population-based study demonstrating a 1.4% mesh removal rate at 1-year post-MUS placement, and at 9 years, the rate becomes 3.3%.[40] These findings support the conclusions that the MUS is generally efficacious and safe.

However, in recent years, regulatory warnings and media scrutiny on TVM have resulted in substantial doubts in the public regarding MUS safety. The United Kingdom has called for a public inquiry into the TVM,[38,39] and Australia, New Zealand, and Ireland decided to ban or halt TVM products in 2018. In 2019, the United States Federal Drug Agency order manufacturers to stop selling transvaginal prolapse mesh kits. The ongoing controversy around mesh complications has led to an increase in research on mental health outcomes related to MUS placement in recent years. Depression has been associated with symptom amplification and lower continence-related quality of life in women with SUI. A 2016 RCT compared SUI symptoms and sexual function between depressed and non-depressed women receiving a MUS. The authors found that depressed women had a worse baseline urinary and sexual function, but a greater improvement of SUI symptoms at 12 months.[41] Depression also resolved in 83% of the women who received a MUS. However, surgical interventions post-MUS placement for mesh-related complications may adversely affect psychiatric outcomes. A Canadian population-based study utilizing multiple-linked administrative databases examining 57,611 women who underwent a MUS found a 21% higher hazard risk of depression in women who underwent a surgical correction for TVM complication, compared to women who did not; this risk was predominately found in younger women.[42] These emerging data highlight the importance of evaluating psychiatric outcomes in women undergoing MUS, particularly the potential mental health consequences associated with MUS complications.

Further studies are required to demonstrate the long-term safety and efficacy of single-incision slings (mini-slings).

Specifically, the TVT-Secur was found to be inferior to traditional MUS in treating SUI, and was withdrawn from the market.[43] Mini-slings are therefore not recommended for SUI treatment based on current evidence.

In general, MUSs are still considered the gold standard surgical treatment for female SUI. It is important to acknowledge that some patients do suffer serious complications which may not be easily corrected. However, most women experience subjective and objective improvement in SUI after treatment by an experienced surgeon. The use of MUSs is supported by numerous societies including the American Urology Association, Canadian Urology Association, Society for Urodynamics, Female Pelvic Medicine and Urogenital Reconstruction, International Urogynecological Association, and Society of Obstetricians and Gynecologists Canada.

Burch urethropexy

The Burch retropubic urethropexy, consisting of bilateral urethrovaginal fixation to Cooper's ligament via the abdominal approach, was first described in 1961. The Burch procedure was long regarded as the gold standard for SUI treatment prior to the emergence of MUS. Women undergoing the Burch urethropexy report an overall continence rate at 85–90% at 1 year and 70% at 5 years.[44] The Burch procedure has been shown to be superior to the Marshall-Marchetti-Krantz procedure and bladder needle suspensions in both continence rate and adverse events.[44,45]

Few new studies on Burch urethropexy have emerged in the past 5 years, although several meta-analyses and evidence summary of previous trials are available. The 2017 Cochrane review consisting of 55 trials in 5,417 women on open retropubic Burch urethropexy demonstrated its continued efficacy in treating SUI, especially in the long term. Specifically, the Burch urethropexy is equally effective as traditional PVSs within 1 year of treatment, although the efficacy appears to decrease with time.[44] As an alternative to open surgery, the procedure can also be performed laparoscopically by trained surgeons. At 24 months post-op, laparoscopic Burch urethropexy is shown to be equally effective as an open Burch procedure in a 2018 Cochrane review of 22 RCTs, with two paravaginal sutures providing better objective cure than one suture.[46] However, women undergoing laparoscopic Burch suspensions had a significantly longer operating time and hospital stay. Although Burch urethropexy is traditionally performed with open sacrocolpopexies (SCP) to treat SUI, recent evidence suggests that it may

be inferior to the MUS in continence rates at both 1 and 2-year post sacrocolpopexy (SCP).[31,47] This is possibly due to a lack of surgeon expertise in Burch urethropexy performance worldwide, compared to surgeon comfort in performing the MUS.[48]

Pubovaginal Sling (PVS)

Traditional autologous PVSs consist of harvesting autologous fascia from the anterior abdominal wall (rectus fascia sling) or the thigh (tensor fascia lata sling). Due to their longer operative time, higher blood loss and postoperative morbidities including seroma formation and long-term voiding dysfunction, PVSs are often reserved for women with recurrent SUI, severe SUI, a fixed urethra on examination, or previous complications with the MUS.[49,50] PVSs may also be preferable in the setting of the urethral fistula or diverticulum repair due to their slightly more obstructive nature and concomitant urethral reinforcement with autologous fascia.

With the recent concerns around the synthetic TVM, traditional PVSs have re-emerged as a viable alternative to MUS in light of the potentially serious risks associated with TVM.[51] The main advantage of PVSs is the lack of erosion risk due to inflammation and foreign body action associated with synthetic mesh material. However, the re-adoption of PVSs has been limited by the technical difficulty and surgeon expertise, and potential higher operative morbidities.

Currently, the quality of evidence on the PVS appears more variable due to heterogeneous populations, shorter duration of follow-up, and smaller sample sizes.[52] A multicenter RCT in the UK demonstrated a success rate of 49–90% for autologous fascia slings at 10-year follow-up.[53] The latest updated systematic review and meta-analysis comparing PVSs with colpourethro-suspensions and MUS demonstrated similar success rates and postoperative voiding symptoms between PVS and MUS, with a trend toward lower re-operation in patients with MUS.[32] The recent Cochrane review outlined the limitations of determining PVS-specific outcomes, which are smaller sample sizes, single center experiences, data inconsistency, and wide confidence intervals with each outcome.[52] PVSs appear to have comparable efficacy with Burch urethropexies, but long-term comparison between these two SUI repairs is lacking at present.[52]

In summary, the PVS appears to be an effective SUI treatment, which may be appealing to women who wish to avoid mesh implantation. However, the higher associated surgical morbidity, prolonged hospital stay, and restricted surgeon expertise may serve as barriers to the widespread use of PVSs in treating SUI. Larger and higher quality studies are needed to further elucidate the long-term outcomes associated with PVSs.

Other surgical treatments of SUI

Urethral bulking is often reserved for women who are unable to tolerate or wish to defer surgical management of SUI. A 2017 meta-analysis of 14 trials in 2004 women receiving various types of bulking agents including silicone particles, ethylene vinyl alcohol, carbon spheres, and autologous fat demonstrated no superiority of any bulking agent against placebo saline injection, although silicone particles combined with PFMT may be beneficial at 3 months.[54] One included trial demonstrated a non-significant improvement in patient satisfaction after periurethral injection. Currently, an RCT comparing the efficacy of urethral bulking vs TVT on UI treatment in post-vulvectomy patients is in progress.[55]

Artificial urethral sphincter (AUS) may be indicated in women with refractory incontinence and severe intrinsic sphincter deficiency (ISD),[56] and a 2018 case series of 74 women demonstrated the feasibility of laparoscopic AUS placement.[57] However, due to the high risk of vaginal erosion and urinary tract infection associated with AUS placement in women, the AUS is not recommended as a first-line surgical treatment for SUI in female patients. On the other hand, bladder neck incision (BNI) has demonstrated success in cases of SUI secondary to primary bladder neck obstruction in women, although a small number of women report recurrent SUI and vesicovaginal fistula formation post BNI.[58]

Data remain insufficient to recommend the routine use of vaginal laser for SUI treatment at present.

Surgical treatments for POP

Women with symptomatic POP often benefit from surgical treatment in the setting of severe prolapse, failure of conservative therapy, or when definitive management is desired. It is estimated that by age 80, 30% of the women with POP will have undergone at least one reconstructive surgery.[59] The choice of a primary POP repair is affected by many patients and surgical factors, including age, POP stage, medical comorbidities such as obesity, and desire for future sexual activity.[1] The most common surgical approaches for POP treatment will be reviewed here, including both native-tissue and mesh-based repairs. An evaluation of treatment efficacy, trends, controversies, and

opportunities for further research for each repair method is also outlined.

Native tissue POP repairs

In the setting of severe or recurrent POP, isolated repair of the anterior or posterior vaginal compartment alone appears to have a high failure rate. In women with multiple medical comorbidities who do not desire future sexual activity, an obliterative procedure such as the Lefort colpocleisis offers a high cure rate, improved body image, and low rates of regret.[60] However, for women wishing to remain sexually active, a reconstructive procedure is recommended. A site-specific repair such as vaginal cystocele (anterior) or rectocele (posterior) repair is minimally invasive and offers a short recovery time in women with isolated anterior or posterior compartment POP. Kelly bladder neck plications for treatment of latent or concurrent SUI are not effective at the time of anterior repair, and are therefore no longer recommended.[61]

The vaginal apex plays a crucial role in maintaining pelvic floor integrity. Vaginal apical suspension may, therefore, be the most important step in preventing and treating vaginal vault prolapse, and to prevent recurrent POP. As such, the number of native tissue vaginal apical suspensions for POP treatment has steadily increased over the past 20 years.[62] Over 85% of the women who received a primary POP repair involving the vaginal apex underwent a vaginal native tissue repair between 2003 and 2014, as captured by multiple-linked health administrative databases in Ontario, Canada.[63]

Methods of native-tissue vaginal apical POP repairs include the sacrospinous ligament suspension (SSLS), uterosacral ligament plication (USLP), iliococcygeus vaginal vault suspension and McCall culdoplasty. These procedures most commonly involve a hysterectomy, although the correction of uterine prolapse through cardinal ligament suspension, also referred to as the Manchester-Fothergill operation, offers excellent anatomical and subjective cure as described in recent cohort studies.[64,65] A 2017 meta-analysis comparing sacrospinous hysteropexies involving uterine suspension with sutures, vs vaginal vault suspension at the time of vaginal hysterectomy, showed no difference in re-operation between the two approaches at 12–60 months.[66]

Prolapse awareness and recurrent prolapse may be more common in vaginal native-tissue repairs compared to mesh-based SCP, and the risk of repeat POP was 2.28 times higher in vaginal native tissue repairs based on a 2016 Cochrane review.[67] However, these findings are increasingly challenged by more recent larger and rigorously conducted population-based cohort studies. A 2018 Canadian population-based study of 49,339 women undergoing primary apical POP repairs demonstrated no difference in re-operation risk between vaginal native tissue apical repairs and SCP, at an average of 7.14 years of follow-up.[63] Two other large cohort studies utilizing the Scottish[68] and American[69] hospital discharge datasets also showed no difference of re-operation rates or adverse events between native-tissue and mesh-based apical repairs of any method. At present, evidence favors offering women a native-tissue POP repair via the vaginal approach involving apical suspension as the first line surgical treatment in women with symptomatic POP.[68]

There does not appear to be a difference in efficacy between various methods of native-tissue apical repairs, although the evidence quality is limited by study imprecision, inconsistency, and inadequate methodological reporting.[67] Results at the 5-year follow-up of the OPTIMAL RCT published in 2018 comparing rates of surgical failure and POP-SSs between the SSLS and USLP demonstrated an improvement in POP symptoms in both groups, with no difference between the SSLS and USLP. Surgical failure is high for both procedures at 5 years, at 61.5% for USLP and 70.3% for SSLS.[70] Patients' quality of life sexual function and body image significantly improved post-op for both SSLS and USLP, with no significant difference between the two approaches.[71] The rate of dyspareunia is around 10% at 2 years postoperatively for patients undergoing native tissue vaginal apical suspensions. Overall, native tissue vaginal apical suspensions are effective procedures to treat POP, but failure rates do increase with time. However, the rate of re-operation and quality of life does not seem to differ between various methods of vaginal apical repair, or when compared with SCP.

Mesh-based POP repairs

For isolated anterior or posterior compartment POP, the incidence of TVM or graft placement has decreased since the 2011 FDA warning. Compared to native tissue site-specific repairs, there is no benefit in augmenting cystocele or rectocele repairs with mesh or biologic graft for improvement in POP symptoms, quality of life or reduction of adverse events, based on results from two parallel pragmatic multi-center RCTs published in 2016.[72] Twelve percent of women allocated to receive TVM experienced mesh extrusion within 2 years of initial

operation. The odds of re-operation in women receiving trocar-guided or self-tailored TVM vaginal mesh for POP is 2.4 times higher than those receiving native-tissue site-specific POP repairs, as reported in a 2017 Canadian guideline on TVM use.[73] In addition, patients who require surgical treatment for TVM related complications, at least 20% of the women require one or more additional operations.[74,75] Due to the potential risk of significant adverse events related to TVM POP repairs, the Society of Obstetricians and Gynecologists Canada has recommended TVM POP repairs be limited to tertiary centers with high volumes, and specifically considered for women with levator avulsion, severe, or recurrent prolapse, or risk factors for chronic abdominal straining such as chronic constipation.[73]

The SCP has long been regarded as the gold standard for treatment of POP. First described in 1957, the SCP corrects apical prolapse by anchoring the vaginal wall via polypropylene mesh to the anterior longitudinal sacral ligament at the S2-4 level, thus re-establishing a horizontal vaginal axis.[76] SCP can be performed via an open abdominal approach (ASCP), laparoscopically (LSCP) or robotically (RSCP). Success rate of ASCP at 3 years is 78–100%, with an overall mesh extrusion rate of 3.4%.[76] LSCP and RSCP confer a similar short-term cure rate as the ASCP, and their efficacy against vaginal native tissue vault repairs is currently under investigation.[77] Secondary analysis of the Prosthetic Pelvic Floor Repair trial in 2018 shows that laparoscopic SCP is also an effective option for primary anterior compartment prolapse repair, and offers a better preservation of sexual function and lower risk of mesh complication compared to TVM.[78]

Although SCP mesh is placed abdominally and represents a different route of placement from TVM, the recent scrutiny and media attention on TVM have negatively impacted women's perception about SCP mesh. Only 2.7% of the women in Ontario, Canada received abdominal mesh-based POP repairs between 2003 and 2014. Although moderate quality evidence supports improved anatomical outcomes at 6–60 months of follow-up in ASCP compared to vaginal native tissue repairs, there appears to be no difference in re-operation over time between these two approaches.[79] Patient-centered outcomes including dyspareunia, quality of life and body image did not differ between ASCP and vaginal native tissue repairs, while the rate of mesh extrusion was significantly higher in ASCP. By 7-year post-op, failure rate of the ASCP is estimated at 22–48%, and there is a 10.5% risk of mesh erosion.[80]

Uterine-preserving mesh-based POP surgeries have gained attention over the past few years due to the lower theoretical risk of mesh exposure, blood loss, and surgical cost. A 2019 meta-analysis of 94 studies comparing all routes of hysteropexy against hysterectomy, including the use of TVM, shows a decrease in mesh exposure, operative time, blood loss, and surgical cost without a difference in POP recurrence.[81] Specifically, the odds of urinary retention are 95% lower in women undergoing laparoscopic hysteropexy compared to vaginal or open hysteropexy approaches. The included studies are, however, mostly observational and 42 out of the 99 studies are of single-arm cohort studies or case series, thus limiting the overall evidence quality by study heterogeneity and imprecision. Long-term data for hysteropexy outcomes remain scarce, and few studies exist to compare different methods of hysteropexy against each other at present.

Concluding remarks

SUI and POP are prevalent, multifactorial conditions that confer a significant health care burden for women, especially in the aging population. Treatment for SUI and POP has evolved over the past five years with increasing evidence supporting routine, supervised PFMT as the first-line therapy in symptomatic women. Despite a paucity of new literature, vaginal pessaries continue to be a cost-effective and acceptable treatment for SUI and POP, serving as a reasonable alternative to surgical management. With the ongoing controversy around mesh use in SUI and POP surgery, a trend toward non-mesh-based SUI repairs including the Burch urethropexy and PVS has emerged over the past few years. Although the MUS has low complication rates and remains the most extensively studied SUI treatment, health care providers should counsel women regarding the potential rare but serious mesh-related complications.

For the surgical treatment of symptomatic POP, the evidence increasingly favors native-tissue vaginal repairs involving apical suspension as the primary surgical approach in women with moderate to severe POP, and the routine use of TVM is no longer recommended. The recent FDA decision to discontinue TVM kits for prolapse will likely further limit this as a treatment option. Uterine preserving mesh-based POP repairs appear to have similar success rates and lower risks of complication, including mesh erosions, in the short term, but long-term data on hysteropexies are still lacking.

Based on the available current evidence, we suggest that clinicians individualize SUI and POP treatments based on women's symptomology, medical comorbidities, and intra-operative risk factors.

Disclosure

The authors report no conflicts of interest in this work.

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