

Pelvic Organ Prolapse

Controversies in Surgical Treatment



Alexis Anne Dieter, MD

KEYWORDS

• Urogynecology • Pelvic organ prolapse • Reconstructive surgery • Prolapse repair

KEY POINTS

- This article reviews some of the current controversies confronting providers and patients when determining what is the best perioperative plan for women choosing to undergo surgery to treat pelvic organ prolapse.
- These controversies include preoperative counseling and patient preparedness, preoperative urodynamics and concomitant anti-incontinence procedures, uterine preservation, total versus supracervical hysterectomy at the time of sacrocolpopexy, same day discharge, and use of telemedicine for routine postoperative care.

INTRODUCTION

Patients often ask, “what is the best surgery to fix my problem?” This is a seemingly simple question that involves a clear understanding of what the actual “problem” is and what perceived risks the patient is willing to take on in return for the potential benefits to achieve their desired goals. In a field where most surgical procedures are elective, patients have high expectations for postoperative outcomes and providers aim to meet them. In striving to meet those expectations and examining the relationship between patient goals and provider perspectives, it has become apparent that often what a provider considers a success or complication may not be the case for the patient and vice versa. This lack of understanding is the root of some of the “controversies” (or debates) regarding pelvic organ prolapse surgery that currently demand attention and research. Other current controversies exist because of a lack of sufficient data to give a clear picture regarding the balance of outcomes and risks with different approaches to surgery and perioperative care. This article discusses a few of the most prominent controversies currently confronting providers and patients when planning for surgical repair of pelvic organ prolapse (POP).

Department of Obstetrics and Gynecology, MedStar Washington Hospital Center, Georgetown University School of Medicine, 106 Irving Street, Northwest, Suite 405 South, Washington, DC 20010, USA

E-mail address: alexis.a.dieter@medstar.net

Obstet Gynecol Clin N Am 48 (2021) 437–448

<https://doi.org/10.1016/j.ogc.2021.05.001>

0889-8545/21/© 2021 Elsevier Inc. All rights reserved.

obgyn.theclinics.com

PREOPERATIVE COUNSELING, DECISION-MAKING, AND PATIENT PREPAREDNESS

In most practices the process of deciding on a surgery and obtaining preoperative informed consent from the patient involves an informal discussion between the provider and patient reviewing options for management, the potential risks and the expected outcomes, and ultimately electing on and finalizing the plan for surgery. The specific details and the exact processes included in these discussions can vary significantly from one provider or practice to another with providers infrequently or at most informally assessing patient literacy or understanding.¹ As clinicians have become more aware of health literacy (HL), knowledge of patients' understanding of these discussions and the influence of their understanding on recovery and success following surgery has become of more interest and value.

In 2018 a cross-sectional study assessing HL in a urogynecology clinic population (mean age 61 years; 85% white race; 54% college education) Sripad and colleagues² found 95% of patients demonstrated adequate HL. Anger and colleagues³ also demonstrated high HL in a urogynecologic population; but, when Anger and coauthors³ assessed understanding of pelvic floor disorders, they found that, despite high HL, patients had a poor understanding of their pelvic floor disorders with their comprehension worsening with older age.

For prolapse surgery specifically, there has been significant focus on patient preparedness and the process of informed consent as it relates to outcomes. In a 2017 study Hallock and colleagues⁴ examined a population with similar demographics as Sripad's (mean age 58 years, 87% white, 51% with at least some college education) and they found that high satisfaction with the decision for surgery correlated with increasing knowledge of the plan for surgery (regardless of HL, age, race, education level, or anxiety score). A particularly significant study was performed by Kenton and colleagues⁵ who examined a group of women undergoing reconstructive pelvic surgery, and found that increased patient-reported preparedness for reconstructive prolapse surgery was associated with improved patient-perceived surgical outcomes including satisfaction, symptom improvement, and quality of life after surgery. These findings highlight the importance of patient understanding and the need for interventions focused on increasing comprehension surrounding the specific pelvic floor disorders affecting women and their preparedness for surgery to optimize care and postoperative outcomes for patients.

In this regard, researchers have made efforts to assess strategies aiming to increase patient preparedness for surgery. A few of the strategies that have been studied include the following:

- Peer support: Madsen and colleagues⁶ performed a multicenter study to compare peer support (via group or one-on-one) and usual care in women undergoing pelvic reconstructive surgery. They found that the proportion of women feeling prepared (as measured by the preoperative preparedness questionnaire) was equal between the groups (66% peer support vs 63% usual care; $P = .9$) but a greater proportion of those randomized to peer support reported improved preparedness from baseline (71% peer support vs 44% usual care; $P = .001$).
- Preoperative patient telephone call: Halder and colleagues⁷ performed a randomized trial to assess how the addition of a semiscripted checklist-driven preoperative provider-initiated telephone call to the usual preoperative care affected patient preparedness as assessed via the patient preparedness questionnaire in patients undergoing POP and/or stress urinary incontinence (SUI) surgery. They found that the addition of a preoperative telephone call resulted in a higher

proportion of patients feeling prepared for surgery but was not correlated with patient-reported outcomes in the 4 to 8 weeks postoperatively.

- Preoperative patient education video: Greene and colleagues⁸ found that the addition of a preoperative patient education video at the preoperative visit before prolapse sacrocolpopexy surgery did not increase patient preparedness for surgery, with most patients in both groups feeling prepared for surgery. The authors found that greater preparedness correlated with patient perception of time spent with the patient, but not the actual time spent.
- Preoperative risk calculator to assist in patient counseling: Miranne and colleagues⁹ studied patient satisfaction with the decision for concomitant sling at time of prolapse repair randomizing patients to either standard preoperative counseling or preoperative counseling with the use of a validated online risk calculator for de novo SUI after prolapse surgery. They found that at 3 months postoperatively there was no difference between groups in patient-reported satisfaction with regards to concomitant midurethral sling placement during POP surgery (**Box 1**).

These findings highlight the difficulty in defining and in measuring patient-perceived preparedness, and the challenge of improving communication surrounding the decision for surgery and a comprehension of surgical risks and outcomes. It is promising that these studies found high preparedness and satisfaction among participants overall, indicating that patients overall feel well-prepared for undergoing pelvic organ prolapse surgery. More research is needed to clearly delineate the relationships between understanding, preparedness, and outcomes to help inform the development of effective strategies that optimize understanding and preparedness and, as a result, patient outcomes following prolapse surgery.

PREOPERATIVE URODYNAMICS AND CONCOMITANT ANTI-INCONTINENCE SURGERY

Nearly 15 years ago the landmark Colpopexy and Urinary Reduction Efforts (CARE) randomized trial was published, which found that women undergoing abdominal sacrocolpopexy who did not have symptomatic SUI had significantly reduced postoperative stress incontinence symptoms when they had a concomitant Burch colposuspension at the time of their prolapse repair.^{11,12} Visco and colleagues¹³ then found that those patients with urodynamic stress incontinence during prolapse reduction testing were at the highest risk of de novo SUI postoperatively. These findings were repeated in the outcomes following vaginal prolapse repair and midurethral sling (OPUS) randomized trial, which compared midurethral sling versus no sling at time of vaginal reconstructive prolapse repair in women with prolapse who did not have incontinence symptoms.¹⁴ Wei and colleagues¹⁴ similarly found that women who demonstrated preoperative SUI with reduction (either via urodynamics or via in

Box 1

Tools for clinicians and researchers in assessing preoperative preparedness and satisfaction with decision for surgery

- Satisfaction with decision scale for pelvic floor disorders¹⁰
- Decision regret scale-pelvic floor disorders¹⁰
- Preoperative preparedness questionnaire (patient preparedness questionnaire)⁵

office stress testing) were at a higher risk of postoperative SUI when compared with women who did not demonstrate stress incontinence with reduction. These data have led some practitioners to argue for the routine use of preoperative urodynamics to evaluate for occult SUI in women undergoing prolapse repair surgery to identify high-risk patients who would most benefit from a concomitant anti-incontinence procedure, and, conversely, these data have led other providers to argue against routine urodynamics assessment before POP surgery.

Urodynamic testing offers the additional benefits of providing a complete evaluation of bladder function and emptying mechanisms but does add cost and uses additional provider resources, patient time, and potentially delays surgery because of the need to coordinate additional visits to obtain and review results before finalizing a plan for surgery. The OPUS trial showed that while concomitant midurethral sling lowered rates of postoperative SUI, concomitant sling had a higher rate of urinary tract infection and bladder perforation and only a minority of women who did not have concomitant anti-incontinence procedure at the time of prolapse repair went on to have a subsequent anti-incontinence surgery.¹⁴ A 2014 systematic review and meta-analysis found that concomitant sling reduced postoperative SUI, but women with concomitant midurethral sling had higher rates of short-term voiding difficulty and adverse events.¹⁵ These data have led some providers to forego preoperative urodynamics and concomitant sling at the time of prolapse repair and instead opt for a staged approach to perform anti-incontinence surgery only if bothersome SUI develops postoperatively.

To assist practitioners and patients in making an informed and more personalized decision regarding a staged versus concomitant sling, Jelovsek and colleagues^{16,17} have produced and validated a risk calculator to predict likelihood of developing postoperative de novo SUI. This risk calculator can provide an individualized estimate of the risk of postoperative SUI with or without concomitant midurethral sling at the time of a prolapse repair surgery. However, when assessing the effect of adding the use of a risk calculator to preoperative counseling, Miranne and colleagues⁹ found similar rates of postoperative satisfaction with the decision regarding concomitant sling whether or not the risk calculator was used. The utility of these types of risk calculators and how best to incorporate them into clinical practice needs further assessment and research to determine what is the most effective use for such information (Box 2).

A Cochrane systematic review published in 2018 summarized the current evidence nicely in concluding that in women with POP and symptomatic or occult SUI “a concurrent MUS probably reduces postoperative SUI and should be discussed in counseling.”¹⁸ At this time there is no clear “best” answer and the debate about the utility and benefit of routine, selective, or no preoperative urodynamics in patients

Box 2

Risk calculator for SUI after POP surgery

<https://riskcalc.org/FemalePelvicMedicineandReconstructiveSurgery/>

Data needed for the model:

- Age
- Body mass index
- Vaginal births
- Diabetes
- Urinary leakage with urgency
- \pm Preoperative stress test result (ok if not available)

planning surgical repair of their prolapse continues. The lack of a consensus highlights the importance of a clear discussion with the patient, providing her with a review of the options available and the various utility of each decision. This discussion and the balance of provider perceptions with patient perceptions of various risks and potential complications provides an additional opportunity for providers to assess their patient's values, comprehension, and preparedness in making an informed decision regarding their care.

UTERINE PRESERVATION AT THE TIME OF PROLAPSE REPAIR

In the United States, hysterectomy has commonly been performed when repairing uterovaginal prolapse; however, recent data have called into question the theory that concomitant hysterectomy is the preferred or even the optimal surgery. It is known that prior hysterectomy is a risk factor for pelvic organ prolapse and this begs the question: should the uterus be removed at the time of pelvic organ prolapse repair?

In an enlightening 2013 study performed by Korbly and colleagues,¹⁹ the research team interviewed women with prolapse symptoms who were being evaluated for initial urogynecologic evaluation to assess views on uterine preservation at the time of prolapse repair. The authors found that when asked about various options in prolapse repair, a higher proportion of women preferred an option that included uterine preservation compared with hysterectomy.¹⁹

Women may desire uterine preservation for a variety of reasons including a feeling of femininity, attachment to their womb, a belief that it will preserve sexual function, a wish to minimize surgery, and others. To examine the evidence and help inform provider and patients regarding the outcomes of uterine-preserving prolapse repair, the Society for Gynecologic Surgeons Systematic Review Group performed a systematic review and meta-analysis in 2018, which examined uterine preservation as compared with hysterectomy in pelvic organ prolapse surgery.²⁰ In this systematic review, Meriwether and colleagues²⁰ included 96 papers representing 94 original studies, 57 of which were comparative investigations. After reviewing these data, the authors concluded that, when compared with prolapse repair with concomitant hysterectomy, uterine preservation at the time of prolapse repair is associated with lower rates of mesh exposure, faster operative time, and a lower risk of bleeding, and that "the majority of comparative trials on the topic do not show substantive differences in prolapse outcomes or recurrence."²⁰ This review provided sound evidence to challenge the current paradigm and for keeping the uterus in situ at the time of prolapse repair but had limited data at 3 years or more following repair.

In the following year, Nager and colleagues²¹ from the Pelvic Floor Disorders Network published 3-year outcomes of the study of uterine prolapse procedures randomized trial (SUPeR trial) comparing total vaginal hysterectomy with suture uterosacral apical suspension versus transvaginal mesh hysterectomy. Schulten and colleagues²² published 5-year outcomes of the Sacrospinous Fixation Versus Vaginal Hysterectomy in Treatment of Uterine Prolapse \geq Two (SAVE U) randomized trial comparing sacrospinous hysterectomy versus vaginal hysterectomy and uterosacral ligament suspension.

- SUPeR Trial 3-year outcomes: At 3 years postoperatively, vaginal mesh hysterectomy as compared with vaginal hysterectomy with uterosacral ligament suspension did not result in a significantly lower rate of the composite primary outcome (retreatment of prolapse, prolapse beyond hymen, or prolapse symptoms) with a 36-month adjusted failure incidence of 26% in the mesh hysterectomy cohort

compared with 38% with vaginal hysterectomy and uterosacral suspension cohort.²¹

- SAVE U Trial 5-year outcomes: At 5 years postoperatively, there was a significantly higher rate of composite success in the sacrospinous hysteropexy group (87%) as compared with the vaginal hysterectomy and uterosacral ligament suspension group (76%) with no differences in secondary outcomes.²²

These data provide compelling evidence in support of incorporating uterine-sparing prolapse procedures into practice and discussing uterine preservation in the preoperative discussion between patient and provider when making a plan for pelvic organ prolapse repair surgery.

When considering a uterine-sparing procedure, in 2019 the Food and Drug Administration recalled the product used for mesh transvaginal hysteropexy procedures²³ leaving two evidence-based options for uterine-preserving reconstructive surgery for apical prolapse: sacrohysteropexy or vaginal native tissue hysteropexy.²⁴

In comparing outcomes of the various hysteropexy procedures, Meriwether and colleagues²⁵ published a systematic review examining the evidence supporting the different types of uterine-preserving surgeries for prolapse repair, including sacrohysteropexy via abdominal, laparoscopic, or robotic approach; vaginal mesh hysteropexy; vaginal native-tissue hysteropexy; Manchester procedure; and Le Fort colpocleisis. This study was a planned secondary analysis of the original systematic review examining uterine-sparing versus hysterectomy at time of prolapse repair. In this secondary review, Meriwether and colleagues²⁰ found there were limited comparative data to enable an informed decision regarding one type of hysteropexy procedure as compared with another, but that the available data indicated few differences in recurrence when comparing one type of hysteropexy procedure to another. Because of the lack of evidence to support one hysteropexy procedure as compared with the other options, surgeon experience and patient preference are best to act as the guides in circumstances where a prolapse repair surgery that preserves the uterus is desired (**Box 3**).

TYPE OF HYSTERECTOMY TO PERFORM AT THE TIME OF MESH SACROCOLPOPEXY

In a woman with a uterus who elects to undergo an abdominal sacrocolpopexy there are several approaches for performing a concomitant hysterectomy: vaginally, laparoscopically, robotically, or abdominally. When performing the hysterectomy via an abdominal approach the surgeon has the option to remove or preserve the cervix. Proponents of supracervical hysterectomies argue that it reduces the risk of infection by avoiding potential vaginal contamination of the mesh graft, and that preserving the cervix leaves a thicker layer of tissue at the vaginal apex reducing the risk of apical vaginal mesh exposure.²⁶ In contrast, surgeons who support performing a total hysterectomy argue that cervical removal reduces risk of

Box 3

Potential benefits of uterine preservation

- Faster recovery
- Less risk of significant bleeding
- Shorter operative time
- Patient preference

prolapse recurrence and reduces risk of cervical cancer/dysplasia, and, in women who are premenopausal, prevents episodic bleeding and avoids the need for intra-abdominal morcellation.^{27–29}

- National trends and practice patterns: Using the American College of Surgeons National Surgical Quality Improvement Program database, several studies have recently examined the rate of total versus supracervical hysterectomy at the time of sacrocolpopexy.^{30–32} The two studies that sampled thousands of procedures between 2010 and 2017 found that total hysterectomy is more commonly performed at a rate of 53% to 56% of all laparoscopic/robotic hysterectomies during sacrocolpopexy.^{31,32} In their study examining the 2014 to 2016 National Surgical Quality Improvement Program database, Slopnick and colleagues³¹ reported that in patients undergoing minimally invasive sacrocolpopexy with concomitant hysterectomy, performance of a total hysterectomy was associated with younger age, greater uterine weight, and non-White race with no differences found in postoperative 30-day complications between the two routes. Similarly Winkelman and colleagues³² found a higher rate of total hysterectomies compared with supracervical at time of colpopexy; but, in contrast to Slopnick's study, they found no significant difference in characteristics between groups and they found a significantly higher rate of blood transfusion and deep surgical site infection associated with total hysterectomy.
- Risk of recurrence: One recent retrospective cohort study showed an increased risk of recurrent anatomic prolapse following supracervical hysterectomies but others have failed to show a difference.^{27,28,33} In a 2019 a study performed by Maldonado and colleagues³⁴ the research team used human cadavers to assess the ability of abdominal sacrocolpopexy with total hysterectomy as compared with supracervical hysterectomy to resist downward traction as a measure of functional anatomic support. The authors found no difference in the ability of the cervix compared with vaginal cuff to resist downward traction of successive weights after sacrocolpopexy indicating that either approach should result in sufficient strength of repair.
- Risk of mesh exposure: As with the risk of recurrence, studies examining the risk of mesh exposure between supracervical hysterectomy compared with total hysterectomy report conflicting results.
 - Vaginal hysterectomy versus supracervical hysterectomy: One study by Nosti and colleagues²⁸ comparing vaginal hysterectomy versus laparoscopic supracervical hysterectomy at time of laparoscopic sacrocolpopexy found no difference in mesh-related complications (1.6% vs 1.7%) and no difference in intraoperative/postoperative complications with decreased operative time with total vaginal hysterectomy (TVH). However, Tan-Kim and colleagues³⁵ found the opposite when examining patients undergoing minimally invasive sacrocolpopexy, showing that vaginal hysterectomy was associated with a higher but not statistically significant rate of mesh erosion compared with supracervical hysterectomy (23% total vs 5% supracervical; $P = .109$).
 - Total vaginal/laparoscopic-assisted vaginal versus laparoscopic supracervical hysterectomy: When comparing total vaginal/laparoscopic-assisted vaginal hysterectomy versus laparoscopic supracervical hysterectomy Warner and colleagues³⁶ found higher mesh exposure with total hysterectomy compared with supracervical hysterectomy (4.9% [9/185] vs 0% [0/92]; $P = .032$) and higher mesh exposure in patients undergoing open cuff laparoscopic suturing

than transvaginal suturing (14.3% [5/35] vs 2.7% [4/150]; relative risk, 5.4; $P = .013$).

- Robotic total versus robotic supracervical hysterectomy: A study by Crane and colleagues³⁷ examining mesh exposure in women who underwent robotic sacrocolpopexy with either total versus supracervical hysterectomy found that of the women in the study who had a mesh exposure, all of them had had a robotic total hysterectomy but this was not statistically significant when compared with women who had undergone supracervical hysterectomy ($P = .55$) (Box 4).

LENGTH OF STAY

The main goal of vaginal and laparoscopic/robotic minimally invasive procedures is faster recovery and return to normal function. In the last 20 years, enhanced recovery after surgery protocols have become widely adopted and have helped to improve recovery in the immediate postoperative period. One aspect of this expedited recovery is the potential for patients to go home on the day of surgery and same-day discharge has been increasingly used following pelvic organ prolapse surgery including after hysterectomy and sacrocolpopexy procedures performed via minimally invasive routes. Because this is a recent advancement in the field, there are limited data regarding the use of same-day discharge following pelvic organ prolapse surgeries. So far studies have shown similar outcomes in patients discharged home on the day of surgery but larger studies are needed.^{38–40} One of the largest studies to date to specifically examine this topic was a recent paper by Berger and colleagues³⁸ published in 2020 that used data from the Kaiser Permanente managed care organization to compare the 30-day postoperative outcomes in patients discharged home same day (discharged before midnight on postoperative day 0) versus those discharged home on postoperative day 1 after undergoing minimally invasive pelvic reconstructive procedures with and without concomitant hysterectomy. Of the more than 13,000 patients included, approximately 40% (about 5500) were discharged home on the day of surgery. The authors found no differences in 30-day readmission rates or emergency department visits within 30 days for the overall population and when comparing specific prolapse surgeries or concomitant minimally invasive hysterectomy.^{38–40} These data provide reassuring evidence that same day discharge after pelvic organ prolapse repair is a safe and feasible option for many women.

Box 4

Factors favoring total hysterectomy (as compared with hysteropexy or supracervical hysterectomy)

- Cervical dysplasia
- Known endometrial hyperplasia, high risk for uterine malignancy, or unevaluated postmenopausal bleeding
- Cervical elongation^a
- Elongated vaginal length such that shortening total vaginal length is needed to enable either proper placement of mesh graft on the sacrum at time of sacrocolpopexy or for sufficient suspension of the vaginal apex at the time of native tissue repair

^aUnless Manchester procedure or concomitant trachelectomy will be performed.

IN-PERSON VERSUS VIRTUAL POSTOPERATIVE CARE

Telemedicine has been steadily gaining availability but with the COVID-19 pandemic the accessibility to telemedicine has dramatically risen. Before the pandemic Thompson and colleagues⁴¹ performed a noninferiority randomized trial comparing in-person visits with telephone interviews for postoperative checks at 2, 6, and 12 weeks following pelvic floor surgery. Patient satisfaction was not inferior in the telephone interview cohort as compared with in-person visits with no differences in clinical outcomes or adverse events. As clinicians discover and use new technologies and practices, this area of surgery and postoperative care will continue to change. At this point in time few studies have assessed outcomes or patient/provider satisfaction with postoperative evaluation and follow-up using telemedicine, but those that have been performed reveal promising results, which would support further research and increased flexibility in offering telemedicine for routine postoperative care.⁴²

SUMMARY

Female pelvic medicine and reconstructive surgery is a young field and there is still a lot to learn about the “best practices” for pelvic organ prolapse repair surgery. The robust research that has been and continues to be performed is exciting and each study provides new insights that allow providers and patients to come to a clearer understanding of one another and gain a greater comprehension of the various options available at each step in the perioperative pathway. The current controversies discussed here provide an overview of some of the larger questions the field is confronted by at this time, highlight opportunities for further research, and aim to further stimulate the discussion and debate that continues to move the field forward as clinicians strive to improve the lives of the millions of women affected by pelvic organ prolapse, and more specifically those women who elect for a surgical approach to therapy.

CLINICS CARE POINTS

- Patient satisfaction, success, and quality of life is increased with better preparedness for pelvic organ prolapse repair surgery.
- Women planning to undergo pelvic organ prolapse surgery are candidates for preoperative evaluation for occult stress urinary incontinence to provide additional information and guide counseling.
- Preoperative counseling on the management of uterovaginal prolapse should include discussion of uterine-sparing prolapse repair surgeries in patients who are appropriate candidates for uterine preservation.
- Supracervical hysterectomy at the time of mesh sacrocolpopexy for reconstructive repair of uterovaginal prolapse is performed commonly and in appropriate candidates may confer a benefit of decreasing the risk of mesh exposure at the vaginal apex.
- Same-day discharge seems to be a safe option following pelvic organ prolapse surgery including for women undergoing concomitant minimally invasive hysterectomy.
- Telemedicine is a viable option for routine postoperative care in the appropriate patient population and clinical setting.

DISCLOSURE

The author has nothing to disclose.

REFERENCES

1. Abed H, Rogers R, Helitzer D, et al. Informed consent in gynecologic surgery. *Am J Obstet Gynecol* 2007;197(6):674.e1-5.
2. Sripad AA, Rupp BM, Gage JL, et al. Health literacy in women presenting to a urogynecology practice. *Female Pelvic Med Reconstr Surg* 2018;24(6):435–9.
3. Anger JT, Lee UJ, Mittal BM, et al. Health literacy and disease understanding among aging women with pelvic floor disorders. *Female Pelvic Med Reconstr Surg* 2012;18(6):340–3.
4. Hallock JL, Rios R, Handa VL. Patient satisfaction and informed consent for surgery. *Am J Obstet Gynecol* 2017;217(2):181.e1-7.
5. Kenton K, Pham T, Mueller E, et al. Patient preparedness: an important predictor of surgical outcome. *Am J Obstet Gynecol* 2007;197(6):654.e1-6.
6. Madsen AM, Rogers RG, Dunivan GC, et al. Perioperative peer support and surgical preparedness in women undergoing reconstructive pelvic surgery. *Int Urogynecol J* 2020;31(6):1123–32.
7. Halder GE, White AB, Brown HW, et al. A randomized control trial evaluating preoperative telephone calls on surgical preparedness in urogynecology. *Int Urogynecol J* 2021. [Epub ahead of print].
8. Greene KA, Wyman AM, Scott LA, et al. Evaluation of patient preparedness for surgery: a randomized controlled trial. *Am J Obstet Gynecol* 2017;217(2):179.e1-7.
9. Miranne JM, Gutman RE, Sokol AI, et al. Effect of a new risk calculator on patient satisfaction with the decision for concomitant midurethral sling during prolapse surgery: a randomized controlled trial. *Female Pelvic Med Reconstr Surg* 2017;23(1):17–22.
10. Sung VW, Kauffman N, Raker CA, et al. Validation of decision-making outcomes for female pelvic floor disorders. *Am J Obstet Gynecol* 2008;198(5):575.e1-6.
11. Brubaker L, Cundiff GW, Fine P, et al. Abdominal sacrocolpopexy with Burch colposuspension to reduce urinary stress incontinence. *N Engl J Med* 2006;354(15):1557–66.
12. Brubaker L, Nygaard I, Richter HE, et al. Two-year outcomes after sacrocolpopexy with and without Burch to prevent stress urinary incontinence. *Obstet Gynecol* 2008;112(1):49–55.
13. Visco AG, Brubaker L, Nygaard I, et al. The role of preoperative urodynamic testing in stress-continent women undergoing sacrocolpopexy: the Colpopexy and Urinary Reduction Efforts (CARE) randomized surgical trial. *Int Urogynecol J Pelvic Floor Dysfunct* 2008;19(5):607–14.
14. Wei JT, Nygaard I, Richter HE, et al. A midurethral sling to reduce incontinence after vaginal prolapse repair. *N Engl J Med* 2012;366(25):2358–67.
15. van der Ploeg JM, van der Steen A, Oude Rengerink K, et al. Prolapse surgery with or without stress incontinence surgery for pelvic organ prolapse: a systematic review and meta-analysis of randomised trials. *BJOG* 2014;121(5):537–47.
16. Jelovsek JE, Chagin K, Brubaker L, et al. A model for predicting the risk of de novo stress urinary incontinence in women undergoing pelvic organ prolapse surgery. *Obstet Gynecol* 2014;123(2 Pt 1):279–87.
17. Jelovsek JE, Ploeg JMV, Roovers JP, et al. Validation of a model predicting de novo stress urinary incontinence in women undergoing pelvic organ prolapse surgery. *Obstet Gynecol* 2019;133(4):683–90.

18. Baessler K, Christmann-Schmid C, Maher C, et al. Surgery for women with pelvic organ prolapse with or without stress urinary incontinence. *Cochrane Database Syst Rev* 2018;8:CD013108.
19. Korbly NB, Kassis NC, Good MM, et al. Patient preferences for uterine preservation and hysterectomy in women with pelvic organ prolapse. *Am J Obstet Gynecol* 2013;209(5):470.e1-6.
20. Meriwether KV, Antosh DD, Olivera CK, et al. Uterine preservation vs hysterectomy in pelvic organ prolapse surgery: a systematic review with meta-analysis and clinical practice guidelines. *Am J Obstet Gynecol* 2018;219(2):129–46.e2.
21. Nager CW, Visco AG, Richter HE, et al. Effect of vaginal mesh hysteropexy vs vaginal hysterectomy with uterosacral ligament suspension on treatment failure in women with uterovaginal prolapse: a randomized clinical trial. *JAMA* 2019;322(11):1054–65.
22. Schulten SFM, Detollenaere RJ, Stekelenburg J, et al. Sacrospinous hysteropexy versus vaginal hysterectomy with uterosacral ligament suspension in women with uterine prolapse stage 2 or higher: observational follow-up of a multicentre randomised trial. *BMJ* 2019;366:l5149.
23. Available at: <https://www.fda.gov/medical-devices/urogynecologic-surgical-mesh-implants/fdas-activities-urogynecologic-surgical-mesh>. Accessed November 28, 2020.
24. Developed by the Joint Writing Group of the American Urogynecologic S, the International Urogynecological Association. Individual contributors are noted in the acknowledgment s. Joint Report on Terminology for Surgical Procedures to Treat Pelvic Organ Prolapse. *Female Pelvic Med Reconstr Surg* 2020;26(3):173–201.
25. Meriwether KV, Balk EM, Antosh DD, et al. Uterine-preserving surgeries for the repair of pelvic organ prolapse: a systematic review with meta-analysis and clinical practice guidelines. *Int Urogynecol J* 2019;30(4):505–22.
26. Nygaard IE, McCreery R, Brubaker L, et al. Abdominal sacrocolpopexy: a comprehensive review. *Obstet Gynecol* 2004;104(4):805–23.
27. Myers EM, Siff L, Osmundsen B, et al. Differences in recurrent prolapse at 1 year after total vs supracervical hysterectomy and robotic sacrocolpopexy. *Int Urogynecol J* 2015;26(4):585–9.
28. Nosti PA, Carter CM, Sokol AI, et al. Transvaginal versus transabdominal placement of synthetic mesh at time of sacrocolpopexy. *Female Pelvic Med Reconstr Surg* 2016;22(3):151–5.
29. Vallabh-Patel V, Saiz C, Salamon C, et al. Prevalence of occult malignancy within morcellated specimens removed during laparoscopic sacrocolpopexy. *Female Pelvic Med Reconstr Surg* 2016;22(4):190–3.
30. Cardenas-Trowers O, Stewart JR, Meriwether KV, et al. Perioperative outcomes of minimally invasive sacrocolpopexy based on route of concurrent hysterectomy: a secondary analysis of the national surgical quality improvement program database. *J Minim Invasive Gynecol* 2020;27(4):953–8.
31. Slopnick EA, Roberts K, Sheyn DD, et al. Factors influencing selection of concomitant total versus supracervical hysterectomy at the time of sacrocolpopexy and associated perioperative outcomes. *Female Pelvic Med Reconstr Surg* 2020. <https://doi.org/10.1097/SPV.0000000000000950>.
32. Winkelman WD, Modest AM, Richardson ML. The surgical approach to abdominal sacrocolpopexy and concurrent hysterectomy: trends for the past decade. *Female Pelvic Med Reconstr Surg* 2020;27(1):e196–201.

33. Davidson ERW, Thomas TN, Lampert EJ, et al. Route of hysterectomy during minimally invasive sacrocolpopexy does not affect postoperative outcomes. *Int Urogynecol J* 2019;30(4):649–55.
34. Maldonado PA, Norris KP, Florian-Rodriguez ME, et al. Sacrocolpopexy with concomitant total vs supracervical hysterectomy: functional support comparisons in cadavers. *Female Pelvic Med Reconstr Surg* 2019;25(3):213–7.
35. Tan-Kim J, Menefee SA, Lubert KM, et al. Prevalence and risk factors for mesh erosion after laparoscopic-assisted sacrocolpopexy. *Int Urogynecol J* 2011; 22(2):205–12.
36. Warner WB, Vora S, Hurtado EA, et al. Effect of operative technique on mesh exposure in laparoscopic sacrocolpopexy. *Female Pelvic Med Reconstr Surg* 2012;18(2):113–7.
37. Crane AK, Geller EJ, Sullivan S, et al. Short-term mesh exposure after robotic sacrocolpopexy with and without concomitant hysterectomy. *South Med J* 2014;107(10):603–6.
38. Berger AA, Tan-Kim J, Menefee SA. Comparison of 30-day readmission after same-day compared with next-day discharge in minimally invasive pelvic organ prolapse surgery. *Obstet Gynecol* 2020;135(6):1327–37.
39. Kisby CK, Polin MR, Visco AG, et al. Same-day discharge after robotic-assisted sacrocolpopexy. *Female Pelvic Med Reconstr Surg* 2019;25(5):337–41.
40. Romanova AL, Carter-Brooks C, Ruppert KM, et al. 30-Day unanticipated health-care encounters after prolapse surgery: impact of same day discharge. *Am J Obstet Gynecol* 2020;222(5):482.e1-8.
41. Thompson JC, Cichowski SB, Rogers RG, et al. Outpatient visits versus telephone interviews for postoperative care: a randomized controlled trial. *Int Urogynecol J* 2019;30(10):1639–46.
42. Grimes CL, Balk EM, Crisp CC, et al. A guide for urogynecologic patient care utilizing telemedicine during the COVID-19 pandemic: review of existing evidence. *Int Urogynecol J* 2020;31(6):1063–89.