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CLINICAL OPINION

FPMRS challenges on behalf of the Collaborative Research in Pelvic Surgery Consortium (CoRPS): managing complicated cases

Series 3: Challenging recurrent prolapse in a medically complicated patient

Danielle D. Antosh[1] · Ladin A. Yurteri-Kaplan[2] · David Shveiky[3] · Madalena Liu[4] · Chris Heisler[5] · Aparna Hegde[6,7] · Cara L. Grimes[8]

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Abstract
This case presents the work-up and management of a spina bifida patient with recurrent prolapse. Four international experts also provide their evaluation of and approach to this complex case. According to the literature, little is known regarding the approach to the management of this specific patient population.

Keywords Recurrent prolapse · Spina bifida · Vaginal mesh

Case

A 35-year-old nulligravid woman with spina bifida is complaining of a large vaginal bulge for the last 2 years causing discomfort and affecting her ability to self-catheterize. She has a history of neurogenic bladder with a bladder augmentation and a transureteroureterostomy as a child. She takes oxybutynin daily and performs intermittent self-catheterizations every 3 h. She denies urinary incontinence with this regimen. She denies constipation and has three bowel movements daily.

She has tried multiple pessaries in the past but each was expelled with Valsalva. Last year she underwent a sacrospinous hysteropexy and a posterior repair with placement of a bovine biologic graft, perineorrhaphy, and endometrial ablation for stage 4 apical compartment prolapse and irregular menstrual bleeding. The prolapse recurred 2 months postoperatively. She does not desire future fertility and is not sexually active because of the lack of a partner. Her surgical history is complex with 30 abdominal surgeries as a child for bladder and ureteral reconstruction and a ventriculoperitoneal shunt for hydrocephalus. Per patient report, she had an aborted abdominal hysterectomy because of adhesions.

Her physical examination is significant for a BMI of 50, and she is wheelchair bound. Her abdomen has multiple vertical scars. On examination, she had stage 3 uterine prolapse.

POP-Q examination

+1 Aa | +3 Ba | +3 C
4 Gh | 2 Pb | 6 TVL
0 Ap | 0 Bp | +3 D
How would you proceed?

✉ Ladin A. Yurteri-Kaplan
ly2401@cumc.columbia.edu

[1] Department of Obstetrics and Gynecology, Houston Methodist Hospital, Houston, TX, USA

[2] Department of Obstetrics and Gynecology, Columbia University Medical Center, 622 West 168th Street, New York, NY 10032, USA

[3] Department of Obstetrics and Gynecology, Hadassah, Hebrew University Medical Center, Jerusalem, Israel

[4] Department of Urology, Monash University, Melborune, Australia

[5] Department of Obstetrics and Gynecology, University of Wisconsin-Madison School of Medicine & Public Health, Madison, WI, USA

[6] Tata Center for Urogynecology and Pelvic Health, Cama Hospital, Grant Government Medical College, Mumbai, India

[7] Center for Urogynecology and Pelvic Health, New Delhi, India

[8] Department of Obstetrics and Gynecology, New York Medical College, Valhalla, NY, USA

Expert urogynecologist recommendations

Recommendations from an expert, Dr. D. Shveiky (Urogynecology, Jerusalem, Israel)

This patient has several risk factors for prolapse recurrence: morbidly obesity, neurologic disease that may negatively affect her pelvic floor musculature, and failed prior reconstructive pelvic surgery.

She is at high risk for abdominal surgery. Her heavy weight and reduced mobility place her at risk for anesthesia-related complications and thromboembolism. I would choose the least invasive, yet durable, vaginal procedure for this patient.

Morbid obesity is a significant risk factor for endometrial hyperplasia and carcinoma. This patient has undergone endometrial ablation, but her uterus needs to be accessed for future sampling or, alternatively, removed. This case demonstrates the importance of preoperative discussion of the patient's goals. Two different paths will then be offered to her: the *obliterative* approach and the *reconstructive* approach.

1. Obliterative surgery: This young patient has no future plans for fertility. She is not sexually active because of the lack of a partner. If she has no plans or hopes, or if she is physically incapable of having sexual intercourse, an obliterative surgery may be offered to her. There is evidence that the LeFort procedure and total colpocleisis are associated with a high cure rate and patient satisfaction. In well-selected patients, the regret rate is very low [1]. Although the uterine-preserving LeFort procedure may be a compelling option, it may be difficult to sample her endometrium in the future given her morbid obesity. I would therefore prefer a trans-vaginal hysterectomy, followed by a colpocleisis and perineorrhaphy. A mid-urethral sling may be considered if indicated.
2. Reconstructive surgery: If the patient has even the slightest hope for future sexual activity that involves intercourse, I would refrain from the obliterative approach and offer her a reconstructive surgery. She has already failed a biologic graft augmented surgery. For this high-risk patient, I would offer an apical and anterior vaginal mesh, such as the *Uphold*™ vaginal support system (Boston Scientific, Springfield, MA). By approaching the sacrospinous ligaments via the anterior vaginal wall and vesico-vaginal space, most of the dissection in the previously operated pararectal space will be avoided. The uterus can be preserved to reduce the risk of mesh exposure and to further support the proximal mesh to the cervix. A native-tissue posterior repair and perineoplasty may be added, as well as a midurethral sling if indicated. This procedure will allow us to sample the uterus in case of a future suspicion of endometrial abnormality. Two retrospective studies including over 200 patients reported subjective and objective cure rates exceeding 90% 1 year after the procedure and 83% in the 5-year follow-up [2, 3]. The risks of vaginal mesh should be thoroughly discussed with the patient, including FDA public health notification [4] and the current medico-legal status of these products. In this particular patient, the benefits of a transvaginal mesh procedure may exceed its risks.

Recommendations from an expert, Dr. M. Liu (Urogynecology, Melbourne, Australia)

Under normal circumstances, the ideal solution would be to proceed with an abdominal sacrocolpopexy (laparoscopic, robotic- assisted or open), possibly with supracervical hysterectomy in the setting that future fertility is not desired and presence of uterine pathology. However, this patient presents a major management dilemma due to her significant comorbidities: morbid obesity, multiple and complex abdominal/reconstructive surgical procedures resulting in a "hostile" peritoneal cavity with dense adhesions rendering further abdominal surgery almost impossible, and presence of a ventriculoperitoneal shunt. I would obtain operative notes and clarification of the patient's account of a prior abandoned hysterectomy.

Faced with the above challenges, I would avoid the abdominal approach and proceed with further attempts at vaginal reconstructive procedures. Given that the primary concern is that of significant prolapse hindering her ability to perform intermittent self- catheterizations, the main objective of this prolapse repair is to achieve a functional outcome rather than a "perfect" anatomical result.

I would recommend performing vaginal hysterectomy with vault suspension (either bilateral sacrospinous ligament fixations ensuring good bites of the ligaments or high uterosacral suspension). The method of suspension may be dictated by the intraoperative findings. Ideally, a vaginal approach will encounter fewer adhesions than an abdominal approach. It would be advisable to perform cystoscopy and a retrograde pyelogram to delineate the urinary tract anatomy and prophylactic stenting to facilitate identification and to avoid injury to the orthotopic ureter. The stent can be removed at the end of the procedure after ensuring no inadvertent injury has been caused. A preoperative dynamic MRI may be useful to delineate the possibility of enterocele and aid surgical planning. If present, then obliteration of the cul-de-sac would be warranted. A good vault suspension is likely to address the concomitant cystocele but may require anterior colporrhaphy ± biologic graft.

Should the prolapse recur despite the second vaginal repair, given the absence of a uterus, a pessary may suffice on this occasion. Finally, despite the patient's young age and although currently not sexually active because of the lack of a partner, I would still discuss the option of colpocleisis with her and gauge her attitude with regard to this. There is a possibility

that she may prefer this option especially in the future given her circumstances.

Recommendations from an expert, Dr. C. Heisler (Urogynecology, Wisconsin, USA)

Recurrent prolapse after vaginal surgery is a recognized occurrence, and the severity of prolapse at a young age unquestionably contributes. It is imperative to consider not only her immediate surgical goals, but the long-term benefits and risks of the surgical approach next taken.

Although she has a history of endometrial ablation, I would discuss the option of removing her uterus with her prolapse surgery. An endometrial ablation is not a guarantee of an inactive/quiescent endometrium until menopause and, given her obesity, she is at risk of endometrial cancer. I would recommend and plan to perform a bilateral salpingectomy transvaginally; the ovaries would remain in situ.

The overarching surgical options to address her prolapse would include: vaginal reconstruction, combined abdominal and vaginal reconstruction, or colpocleisis. Avoiding a transabdominal route in light of the number of surgeries—including the aborted abdominal hysterectomy, multiple urinary reconstructive surgeries, and VP shunt—would be advised. A vaginal reconstruction would require use of native structures or apical support; she failed a sacrospinous ligament fixation, and it is likely that a uterosacral ligament suspension would also be unsuccessful. Since she is not sexually active, a colpocleisis would afford her the lowest risk of recurrent prolapse and the least morbidity.

I would plan my dissection of the anterior vaginal wall to the bladder neck to reduce the posterior axis deviation of her urethra (which may increase her risk of stress urinary incontinence) and allow the ability to perform intermittent self-catheterization. I would perform an aggressive posterior colpoperineorrhaphy (essentially a levator myorrhaphy) to reduce her genital hiatus to < 2 cm. If the biologic graft was encountered, it would be excised and removed. As mesh is not recommended in the posterior compartment, there is no role for placing mesh to augment the posterior repair.

My surgical recommendation: total vaginal hysterectomy with bilateral salpingectomy, colpocleisis, posterior colpoperineorrhaphy/levator myorrhaphy, possible posterior vaginal graft excision, and cystoscopy.

Recommendations from an expert, Dr. A. Hegde (Urogynecology, Mumbai and New Delhi, India)

A thorough urogynecologic examination, detailed neurologic review, USG/MRI of the upper tract, midstream urine microscopy and culture, and renal function tests are necessary. Repeat urodynamics are not indicated unless there have been recent changes in clinical parameters. I am assuming the bladder function and compliance have been followed while on oxybutynin and CIC. It may be prudent to rule out occult incontinence. There are two incontrovertible facts at this stage:

1. It is important to facilitate self-catheterization. A Mitrofanoff catheterizable abdominal stroma is not an option since performing an abdominal surgery is next to impossible and in an obese patient the stoma can get ischemic as it traverses the abdominal wall. A long-term suprapubic indwelling catheter is a last option because it requires closure of the bladder neck to prevent urgency incontinence.
2. Recurrent prolapse is at stage 3, and surgery may be the only option given pessary failure.

It is important to appraise the patient that the available treatment options are limited and set realistic treatment expectations since the surgical failure rate is potentially high. Vaginal surgery is the only option as abdominal/laparoscopic surgery is next to impossible. Vaginal hysterectomy may be difficult since the uterus may be severely adherent, given her history. In a patient with skeletomuscular weakness resulting from spina bifida, an uterosacral ligament suspension and Manchester-Fothergill's surgery may not work. I recommend a vaginal extraperitoneal apical sacrospinous sling surgery using an anterior approach [5] with anterior repair using a permanent suture for the reattachment of the endopelvic fascia to the apical sling [6] and posterior repair with a perineorrhapy. Though sacrospinous hysteropexy was done earlier, it may have failed as a 'suture bridge' may not have provided adequate support [7, 8].

This apical sling surgery implements a tape used for midurethral slings to suspend the apex to the sacrospinous ligaments bilaterally [5]. I would recommend the apical sling surgery because it uses an incontinence sling to minimize mesh size, provides permanent support to the entire apex, and prevents midline apical prolapse [5]. I would discuss the pros and cons of using mesh with the patient. I would use the ISTOP sling (CL Medical, Winchester, MA) as it is a lightweight (100-μm) monofilament polypropylene mesh with looped edges [9, 10].

In a wheelchair-bound patient with a high BMI, an appropriate diet and regular exercise need to be prescribed pre- and postoperatively. Annual sonography of the upper tracts, serum creatinine and CBC testing are required. The patient seems to be doing well on oxybutanin, but if problems with compliance due to side effects arise, I would consider combination treatment with a lower dose of Oxybutyninand, a newer anti-cholinergic (e.g., selective M3 anti-cholingergic), or beta-3 agonist. Appropriate prophylaxis to prevent recurrent UTI is required as she is on long-term CIC.

How the case was managed

Since the patient had failed pessary placement and displayed bothersome symptoms, she desired definitive surgical management. With her complicated surgical history and recurrent prolapse, she opted for transvaginal repair with synthetic polypropylene mesh. Risks, benefits, and the FDA advisory regarding mesh were reviewed [4]. She underwent anterior repair with insertion of transvaginal mesh (Uphold®), sacrospinous hysteropexy, posterior repair with perineorrhaphy, and cystoscopy. On cystoscopy, there was a large redundant bladder with folds posteriorly from prior bowel augmentation. There were no intraoperative complications, and she was discharged home on postoperative day 1. At her 8-week postoperative visit, she denied any prolapse symptoms and was able to easily self-catheterize.

Postoperative POP-Q examination

−3 Aa | -3 Ba | -4 C
2.5 Gh | 3 Pb | 6.6 TVL
-3 Ap | -3 Bp | -6.5 D

Literature review

This patient is in a unique population of women born with myelomeningocele, also known as spina bifida. Spina bifida impairs innervation to the pelvic floor, which may result in higher rates of pelvic organ prolapse in women at a younger age. Women with spina bifida can present in adolescence with prolapse, but commonly present in their 20s—30s, and many are nulliparous [11]. In a prior review of women presenting to a transitional urology clinic for congenital malformations, such as myelomeningocele, sacral agenesis, and bladder exstrophy, approximately 21% presented with bothersome pelvic organ prolapse [12]. Furthermore, these patients have a complex anatomy, neurogenic bladder, and a history of numerous abdominal and pelvic procedures as a child. This can lead to extensive pelvic adhesive disease and distortion of the anatomy.

Options for treatment of pelvic organ prolapse for uterovaginal prolapse include conservative management with observation or pessary versus surgical management. Surgeries vary widely depending on the stage of prolapse, compartment of prolapse, patient goals, and preference and skill of the surgeon. Treatment options include vaginal native tissue repairs with hysterectomy or hysteropexy, synthetic or biologic vaginal mesh augmented repairs, mesh sacrocolpopexy, or obliterative repairs such as a colpocleisis. Prior systematic reviews report that a mesh sacrocolpopexy may be the most durable approach to advanced prolapse compared with native tissue repairs [13]. Transvaginal synthetic mesh in the anterior compartment has also been shown to have higher anatomic cure rates compared with native tissue repair, but with increased risk of mesh exposure complications [14, 15]. Vaginal mesh exposure from anterior vaginal mesh ranges from 1.4–19% [15]. In 2008 and 2011, the United States Federal Drug Administration released an advisory on transvaginal mesh warning of the risk of complications [4]. Since the advisories, there has been a declining trend in the overall number of mesh repairs in the USA [16]. Similarly, several countries, such as New Zealand, Australia, and the UK, have banned its use. However, in a patient such as this, who has recurrent prolapse, obesity, and intra-abdominal adhesions precluding a sacrocolpopexy or sacrohysteropexy, transvaginal mesh may be a suitable option.

Among our experts, there is consensus toward a vaginal approach. This approach was universally chosen to avoid significant adhesions given the prior surgeries. One expert offered a vaginal approach with mesh, while another offered either an obliterative procedure or a vaginal mesh procedure based on the patient's sexual function interest. Two of our experts offered only a native tissue approach (either sacrospinous ligament fixation or an obliterative procedure), possibly because of the environment in which they practice. Two experts offered vaginal hysterectomies, but it should be noted that a prior abdominal hysterectomy was attempted and aborted because of adhesions. Given the patient's multiple abdominal and pelvic surgeries, there is a potential to still encounter adhesions vaginally, which could lead to injury of the surrounding structures or failure to complete the hysterectomy via this route. This must be considered preoperatively and the patient counseled accordingly.

In this case, the patient was young but did not desire future fertility. Despite this, we were hesitant to recommend a hysterectomy because of pelvic adhesions. She had failed a native tissue and biologic graft augmented repair. An obliterative repair with uterine conservation is not ideal because of her age and risk of endometrial hyperplasia due to her morbid obesity. Treatment in these patients must be individualized based on the quality of life, personal goals, risks based on their anatomy, and desire for future fertility.

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Compliance with ethical standards

Conflicts of interest None.

References

1. Buchsbaum GM, Lee TG. Vaginal obliterative procedures for pelvic organ prolapse: a systematic review. Obstet Gynecol Surv. 2017;72(3):175–83.
2. Rahkola-Soisalo P, Mikkola TS, Altman D, Falconer C, for Nordic TVM Group. Pelvic organ prolapse repair using the uphold vaginal support system: 5-year follow-up. Female Pelvic Med Reconstr Surg. 2017. https://doi.org/10.1097/SPV.0000000000000530.
3. Lo TS, Pue LB, Tan YL, Hsieh WC, Kao CC, Uy-Patrimonio MC. Anterior-apical single-incision mesh surgery (uphold): 1-year outcomes on lower urinary tract symptoms, anatomy and ultrasonography. Int Urogynecol J. 2018. https://doi.org/10.1007/s00192-018-3691-6.
4. Urogynecologic surgical mesh: update on the safety and effectiveness of transvaginal placement for pelvic organ prolapse. https://www.fda.gov/downloads/medicaldevices/safety/alertsandnotices/ucm262760.pdf.
5. Alas AN, Pereira I, Chandrasekaran N, Devakumar H, Espaillat L, Hurtado E, et al. Apical sling: an approach to posthysterectomy vault prolapse. Int Urogynecol J. 2016;27:1433–6.
6. Zebede S, Smith AL, Lefevre R, Aguilar VC, Davila GW. Reattachment of the endopelvic fascia to the apex during anterior colporraphy: does the type of suture matter? Int Urogynecol J. 2013;24(1):141–5.
7. Barber MD, Brubaker L, Burgio KL, et al. Comparison of 2 transvaginal surgical approaches and perioperative behavioral therapy for apical vaginal prolapse: the OPTIMAL randomized trial. JAMA. 2014;311(10):1023–34.
8. Morgan DM, Rogers MA, Huebner M, Wei JT, Delancey JO. Heterogeneity in anatomic outcome of sacrospinous ligament fixation for prolapse: a systematic review. Obstet Gynecol. 2007;109(6):1424–33.
9. Pariente JL, Villars F, Bram R, Ibarboure E. Mechanical evaluation of various suburethral tapes used for the treatment of stress urinary incontinence. Prog Urol. 2005;15(6):1106–9.
10. Jijon A, Hegde A, Arias B, Aguilar V, Davila GW. An inelastic retropubic suburethral sling in women with intrinsice sphincter deficiency. Int Urogynecol J. 2013;24(8):1325–30.
11. Liu JS, Vo AX, Doolittle J, Hamoui N, Lewicky-Gaupp C, Kielb SJ. Characterizing pelvic organ prolapse in adult spina bifida patients. Urology. 2016;97:273–6.
12. Khavari R, Tokaz MC, Stewart JN, Boone TB. Pelvic organ prolapse in female patients presenting to transitional urology care clinic. J Urol. 2015;194(6):1654–8.
13. Maher C, Feiner B, Baessler K, Christmann-Schmid C, Haya N, Brown J. Surgery for women with apical vaginal prolapse. Chochrane Database Syst Rev. 2016;10:CD012376.
14. Maher C, Feiner B, Baessler K, Christmann-Schmid C, Haya N, Brown J. Surgery for women with anterior compartment prolapse. Cochrane Database Syst Rev. 2016;11:CD004014.
15. Schimpf MO, Abed H, Sanses T, White AB, Lowenstein L, Ward RM, et al. Graft and mesh use in transvaginal prolapse repair: a systematic review. Obstet Gynecol. 2016;128(1):81–91.
16. Sammarco AG, Swenson CW, Kamdar NS, Kobernik EK, DeLancey JOL, Nallamothu B, et al. Rate of pelvic organ prolapse surgery among privately insured women in the United States, 2010-2013. Obstet Gynecol. 2018;131(3):484–92.

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