

How I Do It: Techniques to avoid complications in transvaginal mesh surgery

Ken Faber, MD, Debra Fromer, MD

Department of Urology, Hackensack University Medical Group, Hackensack, New Jersey, USA

FABER K, FROMER D. How I Do It: Techniques to avoid complications in transvaginal mesh surgery. *Can J Urol* 2015;22(3):7844-7846.

This article details recommendations on minimizing complications in pelvic floor reconstruction using mesh.

It is designed to incorporate real world experience from an expert urologist in female pelvic floor reconstruction with medical literature and prevailing theories.

Key Words: pelvic organ prolapse, transvaginal mesh, mesh complications

Introduction

Transvaginal mesh, particularly when utilized for pelvic organ prolapse (POP), has been associated with specific complications, often requiring reoperation.¹ In July 2011, the Food and Drug Administration (FDA) issued a safety update in which they identified surgical mesh for transvaginal repair of POP as an area of continuing serious concern.² Although mesh for the use of stress urinary incontinence (SUI) was not included, transvaginal mesh has become a hot topic amongst urologist, gynecologists, patients, and the medico-legal community. Litigation has been brought against the companies that have manufactured these products, as well as physicians who have utilized them. These concerns have altered the landscape of prolapse and incontinence surgery, from both a patient and provider perspective. In the appropriate hands, however, these feared complications are less than have been reported. As mesh-related complications

are often technique-related, and there are declining rates with increased surgical experience.³ These rare but serious complications can occur in all POP repairs, including sacrocolpopexy, and are not just limited to the transvaginal route.⁴⁻⁶

In our own experience, in the past year (January 2014-February 2015) we have performed 42 transvaginal midurethral slings and 14 transvaginal mesh kits for prolapse. To date we have not identified any mesh extrusion or erosion. Two of the sling patients have recurrent stress incontinence, one with mild incontinence who is not bothered and the other with bothersome incontinence who will be undergoing another surgery. Of the 14 prolapse patients, one has persistent gluteal pain requiring daily Percocet use, and one has a recurrent grade I cystocele that is not bothersome.

To keep our complication rate as low as possible, we undertake specific measures to avoid potentially serious complications. In this article we outline the measures, which are designed to prevent the complications associated with pelvic floor reconstruction with mesh, such as visceral injuries, bleeding, infection, erosion, extrusion, pelvic pain, dyspareunia, and vaginal distortion among others. These measures can be broken down into pre, intra, and postoperative categories, Table 1.

Accepted for publication April 2015

Address correspondence to Dr. Debra Fromer, Center for Bladder Prostate and Pelvic Floor Health, Hackensack University Medical Group Urology, 360 Essex Street, Suite 403, Hackensack, NJ 07601 USA

TABLE 1. Key points

Preoperative	Identify baseline pelvic pain, dyspareunia Vaginal ulcerations/excoriations should be allowed to heal Treat vaginal atrophy with 4 weeks of topical estrogen Remove pessary 4 weeks prior to surgery
Intraoperative	Have received the appropriate training! Minimize anything that will disrupt blood flow Full thickness incision Identify (and repair) inadvertent injuries If a concomitant hysterectomy is planned, utilize a different incision for placement of mesh The mesh must lay flat and loose Full-thickness closure without vaginal trimming
Postoperative	Vaginal packing and foley catheter overnight Minimize activity and vaginal rest for 6 weeks Postop visit at 2 weeks to remind patient to continue minimal activity

Preoperative considerations

There are many important questions to address with patients prior to undergoing pelvic floor reconstruction, particularly when considering mesh implantation. A thorough and detailed history and physical exam, coupled with extensive counseling will minimize the effects of postoperative complications. Included in this history, one of the most important, and often overlooked questions to address is that of sexual activity. As vaginal extrusion may not bother the patient, it may bother a sexual partner, and hence appropriate counseling of a sexually active patient and her partner is paramount. It has been reported that sexual activity is a risk factor for vaginal mesh exposure, however this could simply reflect that those who are sexually active are more likely to identify the exposure.⁷

Any baseline pelvic pain or dyspareunia should also be elucidated, as this may be exacerbated with pelvic floor reconstruction. Prior vaginal surgery, including mesh placement or complications, may play a factor.

During the physical exam, baseline epithelial integrity should be evaluated. Atrophy and ulcerations should be identified and treated. Ulcerations that are related to long term pessary use should be allowed ample time to heal. History of menopause, smoking, diabetes, and radiation exposure may all negatively affect vaginal epithelial integrity. Despite a lack of good evidence based on the literature, we recommend topical estrogen for at least 4 weeks prior to surgery when epithelial atrophy is identified if no

contraindications. Ulcerations and excoriations should be given ample time to heal. Topical estrogen in the absence of atrophy has not been shown to be beneficial in postoperative outcomes.⁸ Pessaries should be removed at least 4 weeks prior to surgery in order to preserve epithelial integrity and improve blood flow.

Intraoperative considerations

Prior to any pelvic floor surgery, the surgeon should have an extensive knowledge of pelvic anatomy, as this will be key to prevention of injuries. Fellowship training is ideal, however detailed and structured courses can be utilized. Having an expert surgeon proctor through early cases is also preferable.

In the operating room, hydrodissection with a non-hemostatic solution should be utilized prior to making the incision. We use injectable saline, which can be used liberally as it will help define planes, and minimize likelihood of creating a cystotomy. Minimizing the use of hemostatic clamps and electrocautery will help prevent the disruption of blood flow, which can lead to necrosis and tissue breakdown. We make as small of an incision as possible and closer to the bladder neck than the apex, where the blood supply is more plentiful and the vaginal epithelium is thicker.

The importance of making a full thickness incision cannot be understated. A partial thickness dissection will disrupt the blood supply to the vaginal mucosa and greatly increase the risk of mesh exposure. Theoretically, we believe abdominal sacrocolpopexy techniques seem to benefit from a decreased rate of vaginal exposure of mesh secondary to the thicker

vaginal wall that covers the mesh. From the abdominal route, the plane that develops between the bladder and the vagina inherently leaves the entire vaginal epithelium intact.

Another important surgical principle is the early detection and management of intraoperative complications. Bladder or ureteral injuries can usually be identified cystoscopically with or without the utilization of dye. If a cystotomy is encountered in a location where mesh would be left in place, mesh placement should be aborted. We perform a 2-layer closure of the bladder with foley decompression for 5 to 7 days. A native tissue repair of prolapse is still acceptable in this setting, and if the patient was counseled on potential injuries and their management, the decision of whether to move forward with this type of repair will have previously been addressed. A rectal injury should similarly be closed in a layered fashion and mesh placement aborted.

Although the literature does report a higher rate of mesh exposure following concomitant vaginal hysterectomy, we believe a hysterectomy does not need to be removed from the operative plan. Instead, to minimize risk, utilization of a separate incision than from that of the hysterectomy will lend to an easier dissection and better blood supply to the vaginal mucosa. In our experience, we have found that prolapse repair with mesh in a patient with an intact uterus leads to an elevated risk of apical prolapse and uterine decent, and hence may require a secondary surgery. Rather than eliminate a necessary hysterectomy or avoid the use of mesh, it is better to take steps to minimize mesh exposure and perform the appropriate surgery.

We have also identified techniques to decrease complications when it comes to the placement of the mesh itself. The first is that the mesh must lay flat. This may require correction of fixation points and/or trimming of the mesh in order to fit the vaginal length and defect. Tacking the mesh with nonabsorbable suture at the bladder neck and apex will also prevent folds and twists. All maneuvers to ensure the mesh is flat will pay dividends in decreasing complications. Equally important is to make sure the mesh is not too tight. Loose mesh is good mesh!

Proper technique should not be ignored during closure of the prolapse repair, as well. We do not trim the vaginal wall as this can disrupt blood supply further and reduce coverage of the mesh. A full-thickness closure is also imperative along with use of an antibiotic solution. We place vaginal packing to reduce hematoma formation, which may be related to extrusion,⁹ and leave a foley overnight. We generally admit the patients for 1 night postoperatively.

Postoperative

Upon discharge, patients are instructed to minimize all activity and avoid heavy lifting for at least 6 weeks. We routinely bring patients back to the office at 2 weeks postop, in part to reinforce that they are to maintain minimal activity for 4 more weeks as they often want to return to regular activity at this point. Equally important in the post-operative period is vaginal rest. The patient is instructed to avoid any vaginal insertion, which includes tampons as well as intercourse. Topical estrogen, especially if used prior to surgery, can also be considered, as it may help the healing of vaginal mucosa.

Conclusions

With surgical experience and careful techniques, mesh can be used in the appropriate patient with good results and few complications. □

References

1. Tayrac R, Sentilhes L. Complications of pelvic organ prolapse surgery and methods of prevention. *Int Urogynecol J* 2013;24(11):1859-1872.
2. US Food and Drug Administration. UPDATE on Serious Complications Associated with Transvaginal Placement of Surgical Mesh for Pelvic Organ Prolapse: FDA Safety Communication 2011. <http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm262435.htm>
3. Murphy M, Holzberg A, van Raalte H, Kohli N, Goldman HB, Lucente V. Time to rethink: an evidence-based response from pelvic surgeons to the FDA Safety Communication: "UPDATE on Serious Complications Associated with Transvaginal Placement of Surgical Mesh for Pelvic Organ Prolapse". *Int Urogynecol J* 2012;23(1):5-9.
4. Paraiso MF, Walters MD, Rackley RR, Melek S, Hugney C. Laparoscopic and abdominal sacral colpopexies: a comparative cohort study. *Am J Obstet Gynecol* 2005;19(5):1752-1758.
5. Klauschie JL, Suozzi BA, O'Brien MM, McBride AW. A comparison of laparoscopic and abdominal sacral colpopexy: objective outcome and perioperative differences. *Int Urogynecol J Pelvic Floor Dysfunct* 2009;20(3):273-279.
6. Hsiao KC, Latchamsetty K, Govier FE, Kozlowski P, Kobashi KC. Comparison of laparoscopic and abdominal sacrocolpopexy for the treatment of vaginal vault prolapse. *J Endourol* 2007;21(8):926-930.
7. Ganj FA, Ibeanu OA, Bedestani A, Nolan TE, Chesson RR. Complications of transvaginal monofilament polypropylene mesh in pelvic organ prolapse repair. *Int Urogynecol J Pelvic Floor Dysfunct* 2009;20(8):919-925.
8. Gullibert F, Chene G, Fanget C, Huss M, Seffert P, Chauleur C. Risk factors of mesh exposure after transvaginal repair of genital prolapse. *Gynecol Obstet Fertil* 2009;37(6):470-475.
9. Deval B, Haab F. Management of the complications of the synthetic slings. *Curr Opin Urol* 2006;16(4): 240-243.