Iatrogenic Pelvic Pain

Surgical and Mesh Complications

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KEYWORDS

- Chronic pelvic pain • Vaginal mesh • Synthetic midurethral sling • Prolapse
- Stress urinary incontinence

KEY POINTS

- Chronic pelvic pain (CPP) from vaginal mesh is a diagnostic and management challenge that may require a multidisciplinary approach.
- CPP cannot always be cured, however a multimodal approach is required for optimal pain control and psychological support can be provided.
- The need for future large prospective cohort studies and national registries in assessing outcomes of patients following mesh/tape removal has never been more desirable.

INTRODUCTION

The increasing prevalence of stress urinary incontinence (SUI) and pelvic organ prolapse (POP) in our aging population has translated into an increased volume in surgical procedures among women afflicted with the condition. It is estimated that 1 in 8 women in the United States will require surgical management for SUI or POP by 80 years of age.[1]

In trying to offset the morbidity of more traditional reconstructive surgeries, such as the autologous pubovaginal sling for SUI or to lessen the recurrence rate of native tissue repair for POP, a range of synthetic mesh materials were gradually introduced in the market. Heavy promotion by the device companies offering various all inclusive "mesh-kits" have led to a significant uptake in surgeries by clinicians. In 210 alone, an estimated 210,000 women had placement of synthetic midurethral sling (MUS) for SUI treatment and 75,000 women had transvaginal mesh (TVM) placement for prolapse repair.[2,3]

The escalation of mesh-related complications, including mesh exposure, pain, dyspareunia, and revision surgeries, prompted the US Food and Drug Administration

The authors have nothing to disclose.

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Phys Med Rehabil Clin N Am ■ (2017) ■–■
http://dx.doi.org/10.1016/j.pmr.2017.03.010 pmr.theclinics.com

(FDA) to issue safety communications for the use of TVM for POP in 2008,[2] and more recently in 2011.[3] The FDA safety notifications exempted MUS for SUI but these devices were not without complications either. Several issues were raised in the FDA report at the time including severity, incidence, and outcome results: "Serious complications associated with surgical mesh for transvaginal repair of POP are not rare." This is a change from what the FDA previously reported on October 20, 2008. Furthermore, it is not clear that transvaginal POP repair with mesh is more effective than traditional nonmesh repair in all patients with POP and it may expose patients to greater risk. Mesh-related complications seen in tertiary referral institutions have increased and their management has become more and more multifaceted and complicated; in fact it is now clear that the FDA warning "mesh erosion can require multiple surgeries to repair and can be debilitating for some women. In some cases, even multiple surgeries will not resolve the complication" was indeed accurate.

Furthermore, multidistrict litigations (MDLs) emerged against some of the device companies, reaching levels rarely seen before (approaching 100,000 in some reports). In March 27, 2013, the FDA updated the Urogynecologic Surgical Mesh Implant Web site to include more information for patients about SUI. At present, women electing to undergo a synthetic sling placement should have a thorough discussion with their surgeons on (1) the indication for using synthetic material, (2) how the surgeon trained to place such device, (3) which device specifically the surgeon was trained to place, (4) what might happen in terms of complications, and (5) who will deal with these complications should they happen. This detailed information has clearly changed the environment in caring for these patients.[4]

The incidence of requiring subsequent revision in patients with implanted mesh according to a recent Cochrane review was estimated at 7% to 18%.[5] Among these mesh-related complications, pelvic pain has proven to be extremely challenging to treat. Therefore, this review focuses on chronic pelvic pain (CPP) following synthetic mesh surgery.

VAGINAL AND URETHRAL NEURO-ANATOMY

The vagina is a highly vascular structure rich in nerve endings. Innervations to the vagina can be split into 2 parts: the upper third and the lower two-thirds. The upper two-thirds of the vagina is innervated in a visceral manner. The uterovaginal nerve plexus, which is derived from the inferior hypogastric plexus (IHP) and the pelvic splanchnic nerve (S2-S4) innervate the upper two-thirds of the vagina. The uterovaginal nerve plexus is found at the base of the broad ligament and forms a dense network on the lateral walls of the middle and proximal vagina. The uterovaginal nerve plexus carries sympathetic (T1-L2), parasympathetic (S2-S4), and visceral afferent fibers.[6,7] The lower third of the vagina is supplied by somatic innervations of the deep perineal nerve, which is a branch of the pudendal nerve (S2-S4). The deep perineal nerve carries sympathetic and visceral afferent fibers but lack any parasympathetic fibers. It fuses with autonomic nerves arising from the pelvic plexus (IHP) via the cavernous nerves of the clitoris and becomes the dorsal nerve of the clitoris (DNC) and runs on the medial aspect of the inferior pubic rami (IPR) to innervate the urethra and clitoris.[8]

Depending on the location of the mesh, either the deep perineal nerve, which carries the somatic sensation or the uterovaginal nerve plexus, which carries the vague autonomic mediated pain signals, may be injured, resulting in CPP.

Cadaveric studies by Achtari and colleagues[9] demonstrated the potential risks of 3 vaginal slings to the DNC in cadavers in which distances of a tension-free vaginal tape (TVT), in-out transobturator (TVT-O), and out-in transobturator (Monarc) varied from