Aims of Workshop
Many surgeons learn best by observing expert surgeons. Given the number of mesh sling and prolapse repair cases performed experts are confronted with complications of such cases. Most patients with such complications who are appropriately treated have resolution of symptoms. The critical point is that those surgeons dealing with such cases have the expertise to successfully manage them. This course will review the management of such complications with a focus on using surgical video demonstrations to specifically review the surgical techniques necessary for successful outcomes.

Learning Objectives
Understand the appropriate evaluation prior to surgical removal of mesh complications

Target Audience
Urogynaecology

Advanced/Basic
Advanced

Suggested Learning before Workshop Attendance
This course details the management of different types of sling and prolapse mesh complications utilizing surgical videos and case discussion. The following complications will be reviewed via such a format.

Transvaginal prolapse mesh extrusion
Transvaginal removal of intravesical mesh
Single port removal of intravesical sling
Urethrolysis/sling incision
Mesh perforation of the urethra
Urethral destruction due to sling - Neourethra formation
Severe thigh pain due to transobturator mesh arm – thigh dissection
Transrectal mesh extrusion and removal
**Transvaginal prolapse mesh extrusion:**

From 3-15% of transvaginal prolapse meshes may extrude vaginally. When asymptomatic some may be left alone. Vaginal estrogen cream has been reported to allow reepithelialization in some cases. If symptomatic, and very small, excision may be attempted in the office. In other cases excision should be done in the operating room. The area of extrusion is carefully identified and lidocaine with epinephrine is injected under the vaginal skin around the extrusion. Typically a small cuff of skin is excised after which vaginal skin flaps are developed using sharp and blunt dissection in all direction for at least 1 cm. Finally, the mesh is incised at one side and then the underlying tissue (bladder/rectum) is carefully dissected off of the undersurface of the mesh taking great care to stay right on the mesh and leave all other underlying tissue intact. Enough mesh is removed so that there will be no mesh under the skin closure.

**Transvaginal removal of intravesical mesh:**

A patient with a history of an anterior prolapse mesh developed hematuria. Cystoscopy showed prosthetic material eroded in the bladder with encrustation. After an inverted U-shaped vaginal incision, the prosthetic material is removed until the bladder wall is opened after which the prosthetic material is extracted. Bilateral JJ stents are placed. Repair to the bladder wall is performed with interrupted Vicryl sutures and then the vaginal wall is closed. At 6 months the patient had complete healing with a total recovery.

**Single-Port Sling Excision:**

The use of single port technology has allowed minimally invasive intervention to help with sling excisions. When a sling is calcified and or otherwise perforated into the bladder, definitive excision should be undertaken in most circumstances. Single port access either directly into the bladder or with a combined intra and extravesical approach can allow definitive excision of the sling and adjacent sling. It remains important to allow a margin of sling to be excised deep to the mucosa (in the muscle layer) to avoid another segment perforation. Bladder repair of the entry sites can be challenging with this modality and requires specialized skills. Other forms of minimally invasive surgery (laparoscopy and robotics) can be undertaken as well for extravesical management of the sling.

**Urethrolysis/Sling Incision:**

Two varieties of this procedure are noted. That for synthetic material focuses primarily on loosening or excising identified synthetic material whilst that for biologics frequently requires retropubic dissection and lysis of the fibrotic response at the level of the endopelvic fascia.

**Urethral mesh removal:**

Intra-urethral mesh should be removed in toto and therefore laser or mechanical removal from an endoscopic approach is insufficient to remove intramural fibers. Mesh excision from the urethra involves use of controlled urethral access via urethrotomy, excision of mesh inclusive of extra urethral fragments and watertight closure of both formal urethrotomy and also urethrorrhaphy of the areas of mesh involvement.

**Urethral destruction following sling – Neourethra construction:**

Most sling excision and repairs are fairly straightforward; however, some can completely transect and damage the urethra. One must consider urethroplasty techniques to surgically re-establish continuity to the urethra. The adjunctive use of a Martius flap should be strongly considered as the urethra is a high pressure zone and this flap placement may minimize fistula formation.

**Severe thigh pain after transobturator sling:**

Temporary thigh pain after a transobturator sling is not uncommon. It typically resolves within a few days. On very rare occasions severe thigh pain can persist and if unresolved after conservative management a thigh dissection to identify and remove the thigh portion of the mesh may be necessary.

An incision is made about one cm lateral to the thigh crease. On rare occasions the sling may be identified in the subcutaneous tissues and then followed through the muscles to the obturator foramen. Typically, the sling is not evident until a more complete dissection has been performed. We typically detach the gracilis and adductor brevis from the pubis to allow for complete inspection in the area of the obturator externus. The adductor longus tendon is the superior margin and we do not incise that. On occasion though the sling may be found above or in the tendon. Once the sling is identified (often via blunt palpation) it is dissected and followed out to the subcutaneous tissues and back to the obturator membrane allowing for complete removal. The skin and deeper layers are closed and a drain is left in place.
Transrectal mesh erosion and removal:

One year after placement of a posterior vaginal mesh, this 70 year old woman developed bothersome symptoms. Exam showed the presence of a part of the prosthesis floating in the rectal cavity. After removing the central part of the mesh, the procedure was continued with blunt and sharp dissection of the inside arms of the mesh which perforated the lateral rectal wall. This dissection was carried out following the two arms of the mesh near the ischial sThe rectal wall including the muscularis mucosa was reconstructed with two layers of absorbable suture.

References


Firoozi F, Goldman HB. Transvaginal excision of mesh erosion involving the bladder after mesh placement using a prolapse kit: a novel technique. Urology 2010


Firoozi F, Goldman HB. Pure transvaginal excision of mesh erosion involving the bladder. Int Urogynecol J 2013 Jun;24(6):925-6

Moore CK, Goldman HB. Simple sling incision for the treatment of iatrogenic bladder outlet obstruction. Int Urogynecol J. 2013 Dec;24(12):2145-6

Mesh Complications Videos

Single Port Mesh Removal
Neourethra formation after Urethral Sling Damage

Sandip Vasavada, MD
Professor of Urology
Glickman Urological Institute
Cleveland Clinic, Cleveland, Ohio

Disclosures
• none

Sling Mesh Perforation into Bladder

Can be managed:
Transvaginally
Endoscopically
Open
MIS

Case
• 49 year old female 2 years after retropubic mid urethral sling
• Complaints of recurrent UTI, bladder pain, urge and frequency (even when not infected)
• Cystoscopy reveals mesh perforation in bladder
• Options discussed
Conclusions

• Single port robotic applications have improved and allows complete mesh excision from edges
• Skill set required for this is simplified from prior versions of the robot
• Mesh complications in the urethra may vary from simple to complex and the operating surgeon may need to employ reconstructive techniques to correct them
Transrectal mesh extrusion and removal
Transvesical mesh removal through vaginal way

MAURO CERVIGNI
Professor Urogynecology
Female Pelvic Medicine & Reconstructive Surgery Center
Dep. Urology “La Sapienza“ Univ. – Polo Pontino
ICOT – Latina
Italy

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Rectal mesh erosion after posterior vaginal kit repair

Video article

Transrectal mesh extrusion and removal
M. Cervigni

Transvesical mesh removal through vaginal way
M. Cervigni
Transvaginal Removal of Extruded Transvaginal Prolapse Mesh

Howard B Goldman MD
Glickman Urologic Institute
Lerner College of Medicine
Cleveland Clinic
Cleveland, OH USA

Transvaginal Mesh Extrusion

- 2-16% depending on study/mesh type
- If asymptomatic – can observe
- If symptomatic
  - Vaginal hormonal cream
  - May work for very small extrusions
  - Excision

Technique

- Critical to remove all exposed mesh and border
- Should be no mesh under final vaginal closure
- Dissect on the mesh – remove tissue from the mesh
  - Only mesh removed – not underlying tissue

Purely Transvaginal/Perineal Management of Complications From Commercial Prolapse Kits Using a New Prostheses/Grafts Complication Classification System


Conclusions: Although technically difficult in some cases, purely transvaginal mesh excision appears to be safe with resolution of almost all presenting symptoms. Although slightly cumbersome, the new UROLOGIST mesh graft complication classification system can be used to report and more accurately characterize mesh complications.
Vaginal Mesh Removal Outcomes: Eight Years of Experience at an Academic Hospital

Olivia O. Cardenas-Travers, MD,* Pouran Malekzadeh, BS,*
David E. Nis, PharmD,† and Kenneth D. Hoch, MD,*

• N=83
  • 43% mesh erosion

• Majority resolved
  • Some required second surgery

Outcomes

• Majority of patients do well and have symptom relief
• Can have prolapse recurrence
• Rarely may have trouble with enough skin for closure
  • Can use SIS or other biologics to fill the gap
• Unusual to have bladder or other injury as by definition the mesh is typically superficial
Removal of Thigh Portion of TOT

Howard B Goldman MD
Glickman Urologic Institute
Cleveland Clinic
Lerner College of Medicine
Cleveland, OH USA

Thigh Pain Post TOT

- Immediate thigh discomfort not rare
- Typically resolves within a few days/weeks
- Rare cases may not resolve
  - Can be disabling

Treatment

- Conservative Management
- Time
- Oral Analgesics and Anti-Inflammatories
- Local Anesthetic/Nerve Block
- Surgical Excision
  - Vaginal Segment
  - Thigh/Transobturator Segment
  - Laparoscopic
  - Thigh Dissection

Laparoscopic Thigh Dissection

Reported good outcomes in 5 of 8 patients.

Outcomes

Prospective Evaluation of the Effect of Thigh Dissection for Removal of Transobturator Mid Urethral Slings on Refractory Thigh Pain

A. B. King, C. Tenggardi, and H. B. Goldman
From the Division of Female Pelvic Medicine and Reconstructive Surgery, Division of Urogynecological and Reconstructive Surgery, Urology, and Urology, University of California, San Francisco, San Francisco, Calif.

J Urol, 2018

Methods

• All patients undergoing thigh dissection for persistent pain after transobturator mesh placement were followed prospectively from October 2012

Preoperative Survey

Average initial pain score 7.9
Mean response on GRA: 1.6 (0.7)
All patients noted improvement

Complications
• 1 superficial wound infection
• 1 seroma

Outcomes
• 1/3 complete resolution
• 1/3 significant improvement
• 1/3 not as much improvement as desired