**Mid-urethral sling procedures**

- **Transobturator Tape (TOT)** (Fig 3a, 4) )
  - Vaginal approach of trocars into retropubic space3.
  - Sling appearance of the sling in the RP space (blue arrows), while the traversing the rectus fascia on the left (blue arrows). Posterior to the peri urethral and RP spaces (blue arrows). The sling is seen extending along the vaginal wall (green arrow). Axial T2W image (b) demonstrates redundant linear hypointense signal intensity bands along the anterior and posterior vaginal wall (orange arrows), represented to mesh and scar tissue. Axial T2W 2 images (c, d) seen deep to the rectus abdominis (blue arrows). Coronal T2W image (b) demonstrates the arms of the mesh extending laterally through the levator muscles and then coursing in cranial direction through the obturator foramen (orange arrows).

**Sacral Colpopexy (SC) (Fig. 8)**

- Mesh placed from sacral promontory to vaginal apex in suprapublic-TVT configuration.s utilize radiopaque curvature from superior to inferior.
- Variable extension of mesh components anterior and posterior vaginal wall pathologies extend typically to the right.
- Superior outcomes vs sacrospinous or uterosacral staples, and transvaginal mesh, but longer operative time, longer time to return to activities of daily living if performed via transabdominal approach.
- Lower rate of vaginal erosion/extrusion (3-5%) compared with vaginal mesh kits (8-20%).

**Pelvic mesh MRI protocol**

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Imaging Plane</th>
<th>Slice thickness (mm)</th>
<th>FOV (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D T2 TSE</td>
<td>Sagittal</td>
<td>4/0.4</td>
<td>20</td>
</tr>
<tr>
<td>2D T2 Fat suppression</td>
<td>Axial</td>
<td>4/0.4</td>
<td>20</td>
</tr>
<tr>
<td>3D T2 TSE</td>
<td>Axial</td>
<td>4/0.4</td>
<td>18</td>
</tr>
<tr>
<td>3D T2</td>
<td>Axial</td>
<td>1.5 (axial)</td>
<td>18</td>
</tr>
<tr>
<td>2D T1 TROP</td>
<td>Axial</td>
<td>5/1</td>
<td>18</td>
</tr>
<tr>
<td>3D SPGR pre-and post contract</td>
<td>Axial</td>
<td>3.5/1.5</td>
<td>24</td>
</tr>
</tbody>
</table>

**References**

1. **WHAT A MESH! A RADIOLOGIST’S GUIDE TO MR IMAGING OF PELVIC FLOOR SURGICAL REPAIR**
   - Elizabeth Frye MD, Gaurav Khatri MD, April Bailey MD, Maude Carmel MD, Philippe Zimmern MD, Ivan Pedrosa MD
   - Departments of Radiology and Urology, UT Southwestern Medical Center, Dallas, TX

2. **Mid-urethral Sling procedures**
   - Biologic/absorbable Graft
   - Mesh Sacral Colpopexy

3. **Stress Urinary Incontinence (SUI)**
   - Types of surgery for pelvic organ prolapse.
   - Treatment of pelvic organ prolapse.
   - Radiologist checklist:
     - Check specific brand of synthetic product.
     - Look for biopsy mesh and/or surgical repairs.
   - Surgical options:
     - Native tissue repairs: in situ repairs and staged repairs.
     - Biologic/absorbable grafts.
     - Mesh sacral colpopexy.

4. **Surgical options**
   - Transobturator tape: TOT. Sling appearance of the sling in the RP space (blue arrows), while the traversing the rectus fascia on the left (blue arrows). Posterior to the peri urethral and RP spaces (blue arrows). The sling is seen extending along the vaginal wall (green arrow). Axial T2W image (b) demonstrates redundant linear hypointense signal intensity bands along the anterior and posterior vaginal wall (orange arrows), represented to mesh and scar tissue. Axial T2W 2 images (c, d) seen deep to the rectus abdominis (blue arrows). Coronal T2W image (b) demonstrates the arms of the mesh extending laterally through the levator muscles and then coursing in cranial direction through the obturator foramen (orange arrows).

5. **Native Tissue Repair**
   - Advantages: no mesh exposure, low incidence of infection, low incidence of chronic pelvic pain.
   - Disadvantages: recurrence, mesh and tissue injury, infection, pain.

6. **Pelvic Organ Prolapse**
   - Transvaginal approach- Tension-free 'U'-shaped sling around mid urethra relative to the pubic symphysis, urethra, and vagina.
   - Complications: vaginal, urethral, and bladder injuries, infection, pain, and organ injury.

7. **Sacral Colpopexy (SC)**
   - Mesh placed from sacral promontory to vaginal apex in suprapubic-TVT configuration.
   - Variable extension of mesh components anterior and posterior vaginal wall pathologies extend typically to the right.
   - Superior outcomes vs sacrospinous or uterosacral staples, and transvaginal mesh, but longer operative time, longer time to return to activities of daily living if performed via transabdominal approach.
   - Lower rate of vaginal erosion/extrusion (3-5%) compared with vaginal mesh kits (8-20%).

8. **Pelvic mesh MRI protocol**
   - Sequence: 2D T2 TSE, 2D T2 Fat suppression, 3D T2 TSE, 2D T1 TROP
   - FOV: 40/0.4 cm
   - Axial, Sagittal

9. **Images**
   - Sagittal T2W image (a) in a 69YD female with suspected recurrent anterior post SC mesh shows normal caliber and expected rightward curvature of the mesh (green arrows). Sagittal T2W image (d) in a 57 YDD female with clinical mesh erosion and mesh draining abnormal fluid surrounding a markedly thickened SC mesh (yellow arrows). Pelvic exenteration was performed at surgery.

**SUMMARY**

- • Various surgical options exist for repair of pelvic floor dysfunction.
- • Patients with prior surgical repair may present with various complications such as chronic pain, infection, erosion, etc.
- • Radiologists should be aware of the expected locations and appearances of various urethral and pelvic mesh kits/products.
- • Radiologist checklist:
  - Check specific brand of synthetic product.
  - Look for biopsy mesh and/or surgical repairs.

**Stress Urinary Incontinence (SUI)**

- Arterial sling as around mid urethra, arms extend anteriorly into retropubic space.
- Potential complications: blood loss or blood vessel injury.
- Sagittal T2W image (a) in a 49YO female with RP sling and vaginal mesh demonstrates slit line on end appearance of the sling in the RP space (blue arrows), while the sagittal T2W image (f) demonstrates breech appearance in the RP space (blue arrows). Anterior and posterior vaginal wall mesh is also seen on the sagittal image (orange arrow).

**Stress Urinary Incontinence (SUI)**

- U-shaped sling around mid urethra, arms extend anteriorly into retropubic space.
- Potential complications: bladder perforation.
- Transvaginal approach- Tension-free vaginal tape (TVT) / TVT-O (Gynecare, Ethicon, Bridgewater, NJ) (Fig 1a, 2)
  - Most widely used RP sling.
  - Trocars passed via vaginal incision into retropubic space and then to seminal vesicle wall (bottom-up).
  - Arms of sling course between bladder and pubic bone, and through suprapubic cutaneous, 2 cm lateral to symphysis pubis, on either side of midline.

**Urethral sling procedures**

- Advantages: minimal access, low risk of infection, low incidence of chronic pelvic pain.
- Disadvantages: recurrence, mesh and tissue injury, infection, pain.

**Surgical options**

- Biologic/absorbable grafts.
- Mesh sacral colpopexy.

**Stress Urinary Incontinence (SUI)**

- Arms of sling are approximately 1 cm lateral to pubic symphysis on either side of midline.

**Pelvic mesh MRI protocol**

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