Management of Mid-Urethral Sling Complications

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Types of Mid-Urethral Slings

- TVT
- TOT
- MINI SLINGS
- ADJUSTABLE SLINGS
Contributing Factors for Complications

I- Local Tissue Factors
- Scarring from previous surgery.
- Urethral atrophy.
- Estrogen deficiency.

II- Sling Type
- Monofilament Vs Multifilament
- Macropore Vs Micropore
- Polypropylene Vs Others

Severe soft tissue infection of the thigh after vaginal erosion of TOT. Karsenty et al, IUJ 2007. Case report. [Obtape]
Contributing Factors for complications

III- Iatrogenic Factors

Surgical Technique
- Transabturator Vs Retropubic approach.
- Sling tension.
- Dissection too close to the urethra.
- Direct injury by the sling, needle or suture.

Bladder perforation with trocar seen with Cystoscopy
Complications

1- Bladder Injury
2- Sling Erosion
3- Post-sling Obstruction
4- Denovo Urge
5- Ureteric Injury
6- Bleeding
7- Neurovascular injury

1- Injuries of the bladder

More likely if bladder left full during procedure.

Diagnosis:
- Immediate urine extravasation. Hematuria
- Decrease urine output, postop. Fever, sapubic tenderness.

Imaging techniques: Cystogram: A-P, oblique, and postdrainage

Cystoscopy (esp. with TVT)
Bladder erosion & stones formation

Treatment

A- Intraoperative Diagnosis
* **TVT trocar perforation** → Removal of passer and readjustment laterally and urethral catheter indwelling for 5-7 days.

* **Intraperitoneal bladder injuries** → Primary closure.

B- Postoperative Diagnosis:
* **Extraperitoneal injury** → Indwelling urethral catheter
* **Intraperitoneal injury** → Exploration
II- Sling Erosions

- **Mechanism:**
  1. Delayed infection of synthetic materials
  2. Extensive tension of sling

- **Symptoms of erosion:** vaginal or urethral pain, vaginal discharge, bleeding, and irritative voiding symptom.
1- Treatment of Vaginal Exposure

* The mesh is either partially excised or completely removed (under general anesthesia).

* Most surgeons recommend tape removal to improve symptoms and to eliminate the source of infection

2- Treatment of Urethral Perforation

- **Endoscopic Approach:**
  1- Sling Incision (Cold knife or laser) → allow disengagement.
  2- Sling Resection (Scissors)

- **Transvaginal Approach:**
  1- Sling Excision and urethral Reconstruction.
  2- Martius flap.
3- Treatment of Bladder Perforation

A- Open surgery and Sling excision

B- Percutaneous Supropubic Approach
   Easier manipulation of the sling than urethral approach

C- Endoscopic Approach
   - Using Laser or Endoscopic scissors
   - More challenging but avoids the suprapubic incision.

III- Post-Sling Obstruction

Etiology

- Tight sling (Not tension-free)
- Pre-operative impaired contractility
- Tissue Factors:
  Excess fibrosis and scarring around the tape
TVT vs TOT: (16 RCTs, Level 1b & 2b)

<table>
<thead>
<tr>
<th></th>
<th>TVT</th>
<th>TOT</th>
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</thead>
<tbody>
<tr>
<td>Total # of patients</td>
<td>920</td>
<td>921</td>
</tr>
<tr>
<td>Mean follow up (months)</td>
<td>12.6</td>
<td>12.6</td>
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<tr>
<td>Mean cure rate</td>
<td>93.2%</td>
<td>91.1%</td>
</tr>
<tr>
<td>Vaginal erosion</td>
<td>1.4%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Bladder perforation</td>
<td>5.6%</td>
<td>2.1%</td>
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<tr>
<td>Obstructive voiding</td>
<td>19.1%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Post-Sling BOO: Diagnosis

Examination:

1. Immobile urethra / Q-tip <30 degrees
2. Resistance feeling to catheter or sound
3. **Swan's neck sign** (Ghoniem 2008):
   - Combination of elevated bladder neck with small urethrocele distally and small cystocele proximally
FUDS

Fluorourodynamics:
Shows the site of obstruction (Mid-urethra)

Management of Post-Sling Obstruction

I- Conservative (Early postoperative):
  1- Bladder Drainage (Indwelling Catheter, CIC)
  2- Urethral distraction caudally
     - (CAUTION of causing sling erosion)
Management of Post-Sling Obstruction

II- Surgical:

A- In the 1st 4 weeks
   ➔ Re-tensioning (Re-opening the incision and pulling on the tape)

B- After 3 or more months:
   1- Sling incision
   2- Sling partial excision
   3- Urethrolysis (vaginal, retropubic)
   4- Urethrolysis with Martius flap

Sling Incision
Sling Incision + Graft lengthening
(only biological)


Urethrolysis

- Complete sling excision and dissection of the urethra
Failure of Urethrolysis

- The cause of this failure can be due to:
  - a- Incomplete initial urethrolysis
  - b- Recurrence of fibrosis

- More aggressive urethral mobilization is warranted & Interposition flap is important

Martius Flap

- Vaginal Labial fat flap
IV- De novo urge

- **Etiology**: Damage to autonomic innervation of the bladder by surgical dissection.

- **Diagnosis**: Urodynamics (Cystometrogram)

- **Treatment**:
  - 1- Conservative medical treatment
  - 2- Urethrolysis may be required (Secondary Urge)

**FDA WARNING 2011 for use of TVM!!**

- **3000 mesh-related complications in USA from 2008 – 2011**

- **TVM (Transvaginal mesh) are not recommended**, however, abdominal mesh is allowed (ASC)

- For Vaginal mesh in Prolpase only
  
  **Not including the Tapes for SUI**
Take Home Messages

1- The problem is not the complication, but the failure to recognize it.
2- Intra-operative recognition is the key to optimum management
3- Obtain good surgical knowledge & training.
4- Know when to ask for help

THANK YOU