Laparoscopic Sacrocolpopexy with & without the Robot: Tips and Tricks for success and avoidance / management of complications

Course Faculty:
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What is a Sacrocolpopexy?

When uterus present: Supracervical Hysterectomy vs. Total

- Anterior dissection to level of trigone
- Posterior dissection to perineum
- 6 – 10 permanent sutures per compartment (GoreTex)
- Sacral Sutures - GoreTex
- Re-peritonealization (Barbed or Monocryl)
No longer a “true” Sacrocolpopexy...

- If you’re just fixing the mesh to the vaginal apex, you’re not taking advantage of the possibilities of the sacrocolpopexy procedure.

- Worse yet – lightweight may be *too light* for this “minimalist” technique
Sacrocolpopexy Continues to Evolve

- 1962 (Lane) → 2016 (Various)
- Single graft strip – 1960’s
- Cone around vaginal apex – late 1970’s
- Y-mesh – 1980’s
- Extension down to perineum – 1990’s
- SCH rather than total hyst – 2000’s
- Very lightweight Y-mesh - 2009
- Extensive coverage from trigone to perineum
Patient Selection

- Basic considerations
  - Apical relative to anterior / posterior descent
  - Perineal descent
  - Primary v. recurrent prolapse

- Laparoscopic

- Robotic
Classic Sacrocolpopexy Patient
(i.e. post-hysterectomy recurrent POP)
Combined Apical & Anterior Defect
Could chooseobliterative or
reconstructive
(She chose sacrocolpopexy)
Prolapse Surgery Decision Tree

Surgical Correction

- Reconstructive
  - Native Tissue
  - Graft Augmentation
- Obliterative
  - LeForte
  - Or Colpectomy
Perineal Descent
More Perineal Descent
Patient positioning

- Egg-crate
- “Pink Pad” or Safe-T-Secure
- Gelpad
- Bean bag
- Arm boards / toboggan
- Stirrups
- Trendelenburg position
Safe-T-Secure®
by NinoMed, LLC

A complete positioning solution for all laparoscopic & robotic surgery

www.safe-t-secure.com

PCT/US2014/035286
Safe-T-Secure® Simple – Efficient - Effective
Tucking Arms
Trocar Placement Strategy

- **Laparoscopic**
  - Access to vagina and sacrum
  - Maximize exposure

- **Robotic**
  - Distal posterior dissection
  - Sacral dissection
Laparoscopic trocar strategy - example
Robotic Trocar Placement for the Si

- Third Arm on patient’s Left side
- W shape
- At least 10 cm between Robotic ports
- At least 6 cm between Robotic & Assistant ports
Robotic Trocar Placement for the Xi

- Third Arm on patient’s Left side
- Roughly straight line
- 8 - 10 cm between Robotic ports
- At least 6 cm between Robotic & Assistant port
Center Docking
Side Docking at 45 degrees
OPTIMAL SURGICAL STEPS
Supracervical Hysterectomy

Why supracervical as opposed to TOTAL hyst???

May decrease incidence of mesh erosion

Cuts down or may eliminate need for vaginal instrumentation
Supracervical hysterectomy with sacrocervicopexy

Advantages

- Less complicated than total hysterectomy
- No vaginal cuff suture line / erosion risk
- Firm attachment site for mesh
- Posterior colpotomy for removal of fundus

Disadvantages

- Morcellation
- Patients with h/o cervical dysplasia
- Need for continued surveillance
- Possible need for trachelectomy in future
Sacral dissection

- Lifting peritoneum away
- Monopolar / bipolar / ultrasonic
- Allow CO2 to dissect space
- Dissect to anterior longitudinal ligament
- Consider cauterizing middle sacral vessels
Sacral & Sidewall Dissection
Sacral Dissection

1. Find "window of opportunity" at promontory
2. Dissect at least 1/2 way down paracolic gutter
3. Use minimal cauterization
4. Usually no need to cauterize middle sacral vessels
Opening peritoneum v. tunneling

- Advantages / disadvantages
- Anatomic landmarks
  - Lateral: R uterosacral ligament
  - Medial: Rectum
- Laparoscopic techniques
- Robotic techniques
Peritoneal Tunneling
Anterior vaginal dissection

- General considerations
  - Back-fill bladder
  - Bladder often tacked high on apex
  - How far to dissect?

- Laparoscopic techniques

- Robotic techniques
Posterior vaginal dissection

- General considerations
  - Fat belongs on the rectum
  - Areolar tissue
  - How far to dissect?
  - Rectal probe?

- Laparoscopic techniques
  - Surgeon’s hand in vagina

- Robotic techniques
Vaginal Dissection
Anterior Dissection
No Vaginal Instrumentation

Key Aspects

Have a specific goal in mind for each patient

Create "fingers" by pushing most of tissue

Use small amount of cautery when cutting these fingers
If there is no uterus...

Try to leave “dome” of peritoneum intact at apex....

- Doing so may cut down mesh erosion risk
If there is no uterus...
More vaginal dissection
More vaginal dissection
Posterior Dissection
No vaginal or rectal instrumentation

Key Aspects
Have a specific goal in mind for each patient
Create "fingers" by pushing most of tissue
Use small amount of cautery when cutting these fingers
Dealing with a ballooning anterior segment

- Plication with absorbable sutures before mesh
  - Longitudinal
  - Horizontal
- “Neo-rugae” with tacking mesh down
- Anterior colporrhaphy
- Paravaginal repair
Preparation and introduction of mesh

- Pre-formed Y-mesh v. “DIY” Y-mesh
- Separate anterior / posterior mesh arms
- Rolling up sacral portion of mesh
- Insertion through cannula
- Laparoscopic considerations
- Robotic considerations
Mesh Prep
More Mesh Prep
Vaginal Suturing

- How?
- Where?
- What type?
- How many?
- Laparoscopic considerations
- Extra- v. intra-corporeal knot tying
- Robotic considerations
  - Maximizing efficiency / self-dependence
Mesh Attachment
More Vaginal Suturing
Posterior Mesh Placement
Anterior Mesh Placement
Peritoneal Closure:
STEP ONE (before attaching mesh to sacrum)
Sacral Attachment Options

- Anatomic considerations
  - Avoiding L5-S1 disc space
- Mesh considerations
- Tensioning techniques
- Laparoscopic
  - Suture v. Tack
  - Transcervical approach?
- Robotic
# Y-mesh Products available for SCP

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<th>Brand name</th>
<th>Pore size (mm²)</th>
<th>Density (g/m²)</th>
<th>Thickness (microns)</th>
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<tr>
<td>Restorelle Y</td>
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<td>ALYTE® Y-mesh Graft - vaginal flaps (CR Bard)</td>
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<tr>
<td>ALYTE® Y-mesh Graft - sacral flap (CR Bard)</td>
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<td>IntePro (AMS)</td>
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<tr>
<td>Upsylon (Bos Sci)</td>
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<tr>
<td>Vertessa (Caldera)</td>
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12 August 2014
Advanced review of anatomy and surgical techniques for sacrococcygeopexy
Traditional laparoscopy

- Suturing alternatives for mesh attachment
  - EndoStitch
  - Endo360
  - Barbed suture
  - ProTack
Sacral Suturing
Sacral Fixation Techniques
Another Alternative for Sacral Fixation
Robotic Sacral Suturing
Re-peritonealization options

- General considerations
  - Interrupted v. running suture
  - LapraTy clips with suture
  - Barbed suture
  - Danger areas

- Laparoscopic considerations

- Robotic considerations
  - Fisherman’s knot
Peritoneal Closure:
STEP TWO
Peritoneal Closure with Barbed Suture
RECOGNIZING AND AVOIDING SURGICAL PITFALLS
Identifying Anatomy while Avoiding Complications

- Normalize anatomy
  - Lysis of adhesions
  - ? Useful adhesions
- Identify anatomy
  - Ureters
  - Bladder reflection
  - Rectum
  - Sacrum
Right hypogastric artery
Middle sacral vessel
Sacral promontory
Left common iliac vein
Right common iliac artery
Right ureter
Waterbed Sign
Tips for getting exposure

- Vaginal / rectal probe
- ? Bowel prep
- Uterine manipulator
- Laparoscopic
  - T-lift
  - NovaGrasp
  - Suture epiploica
  - Fan retractor
- Robotic
  - Uses of 4th robotic arm
Retraction of Rectosigmoid
Potential complications

- Sacral hemorrhage
- Cystotomy
- Lost needle
- Small bowel injury
- Rectal injury
- Post-operative pain
- Mesh exposure
- Deep dyspareunia
PITFALLS AROUND THE BLADDER
Cystotomy
Cystotomy
Bladder injury during dissection
Near miss of cystotomy
Repairing bladder injury

- Double layer closure with 2.0 or 3.0 braided delayed absorbable suture
  - First layer running / water-tight
  - Second layer interrupted

- If cystotomy is well away from UO’s, no need to stent ureters, but you MUST verify efflux and integrity of repair via cysto when finished.
PITFALLS AROUND THE SACRUM
Sacral anatomy

- Promontory
- L5-S1 disc space
- Middle sacral vessels
- L common iliac vein
- Aortic bifurcation
- R ureter
- Anatomic variants
Pitfalls Around the sacrum

- **Bleeding – two kinds**
  - 1) small vessel, self-limited bleeding
  - 2) serious bleeding (L Common Iliac)

  Three things lead to serious bleeding:
  - 1) small bleeders that stain tissue and ruin the view
  - 2) Pre-sacral Fat
  - 3) Vessel Anomalies

- Suture or Dissection into Disc
- Suture or Dissection into Sacral Nerves
Variations of PreSacral Vessels

[Images of anatomical structures with labels such as MSA, MSV, LIIV, LCIA, LEIV, SHP, LCIV, RCIA, etc., showing different variations of pre-sacral vessels.]
Variations in Sacral Anatomy
Fatty Sacrum
Beware of the Disc!!
Sacrum Ski Slope Analogy

- Reverse of Skiing Difficulty
  - Green Slopes – HARDER
  - Double Black Diamond - EASIER
Poor dissection technique around sacrum
Vascular injury around sacrum
Resolution of Same Injury
Bleeding at Sacrum
Bleeding at Sacrum
PITFALLS AROUND THE VAGINA
Poor start to a posterior dissection
EQUIPMENT / MATERIAL PROBLEMS
Be careful with the Tenaculum!
PITFALLS AROUND THE COLON / RECTUM
Preparing Peritoneal Closure Stitch (Fisherman’s knot)
Alternative Technique (all 5 mm trocars)
Special / Tricky Situations

- Uterine preservation
- Trans-cervical access techniques
- Concomitant rectopexy
- Achieving near-total self sufficiency
- Mini-laparoscopy
- Need for cystoscopy?
Endo 360 device
Cystoscopy: ureteral jets

- Indigo carmine IV
- Methylene blue IV
- Fluorosine IV
- Phenazo-pyridine Po
- Sterile water or 10% Dextrose
Mesh Failure
Proctotomy

- Modern meshes can still be colonized
- Go to plan B
  - Laparoscopic native tissue repairs
  - Vaginal Approach
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<th>Condition</th>
<th>Vaginal</th>
<th>Laparoscopic</th>
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<td>Ureteral compromise</td>
<td>4 (4.2%)</td>
<td>0</td>
</tr>
<tr>
<td>Ureteral stent placement</td>
<td>1 (1.0%)</td>
<td>0</td>
</tr>
<tr>
<td>Ureteral compromise</td>
<td>1 (1.0%)</td>
<td>0</td>
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<tr>
<td>Urinary retention</td>
<td>20 (20.8%)</td>
<td>1 (4.6%)</td>
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<tr>
<td>Neuropathic pain</td>
<td>14 (14.6%)</td>
<td>2 (9.1%)</td>
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<td>Granulation tissue requiring silver nitrate application</td>
<td>15 (15.8)</td>
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<td>Any symptomatic recurrent prolapse</td>
<td>12 (12.5)</td>
<td>1 (4.5)</td>
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<td>Recurrent vault prolapse (stage II or greater)</td>
<td>6 (6.3)</td>
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<tr>
<td>Surgery</td>
<td>4 (4.2)</td>
<td>0</td>
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<td>Recurrent anterior prolapse (stage II or greater)</td>
<td>21 (28.7%)</td>
<td>2 (9.5%)</td>
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<tr>
<td>Pessary</td>
<td>4 (5.5%)</td>
<td>0</td>
</tr>
<tr>
<td>Surgery</td>
<td>4 (5.5%)</td>
<td>0 (0)</td>
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PROLAPSE RECURRENCE
EARLY POST-OP COMPLICATIONS
Sacrohystereopexy