Surgical repairs for vaginal apical support

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Surgical Procedures for repair of the vaginal apex

Disclosures:
Any references made to CPOE is in no way an endorsement for CPOE in it’s current form.
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CREOG

DeLancey Level 1 support:

- A. Normally resides at the level of the ischial spine.
- B. Is supported by the uterosacral ligaments
- C. Provides more than 50% support to the anterior vaginal wall.
- D. Is corrected surgically with A+P repair
- E. AB+C are correct
- F. ABC+D are correct
Pelvic Organ Prolapse (POP)- is present when one or more compartments (segments) are out of position to result in visceral or descent symptom(s) of bother.

Levels of support: DeLancey Levels

- **Level 1= apex – level of ischial spines, USLs**
- Level 2= midvagina – paravaginal attachments of endopelvic fascia / pubocervical fascia to ATFP
- Level 3 = lower 1/3 dense connective tissue-confluence of PB and LAM complex.
Prolapse of the Vaginal Apex
Definitions/Terminology/Synonyms

- Vaginal apex / apical segment
- Central compartment
- Superior segment
- Vaginal vault prolapse (post hysterectomy)
- + Point C / D (POPQ) (beyond the hymen)
- Loss of Level I support (DeLancey 1992)
- Cervical prolapse
- Procidentia / vaginal vault prolapse /enterocele
The pelvic diaphragm (see also pages 91 and 92) forms a musculotendinous, tendinous arch, spanning between the pelvis and perineum, and is an important structural component of the pelvic floor.
FIGURE 1.6  Orientation and connective tissue support of the vagina. (From Retzky SS, Slone JK, deLamater JD: Essentials of Gynecologic Surgery, 2nd ed. Philadelphia, Lippincott Williams & Wilkins, 2010.)
Muscles, “ligaments”, pelvic organs
Vaginal Vault Prolapse—surgical procedures

Transvaginal

- Uterosacral ligament colposuspension
- McCall culdoplasty
- Sacrospinous ligament colposuspension / synthetic mesh kits
  - Iliococcygeus (prespinous) fascia suspension

Transabdominal / Laparoscopic

- Sacrocolpopexy (synthetic graft/mesh)
- Uterosacral ligament colposuspension
Surgical Goals

- Reduce bulge
- Alleviate symptoms
- Preserve or restore visceral (bladder & bowel) and sexual function (if required)
- Restore anatomic relationships
- Correct accompanying defects
- Avoid future failures by choosing a durable operation with least morbidity/benefit
- First reparative operation offers best chance for cure
Modified McCall –Mayo culdoplasty/
High Uterosacral Ligament Suspension (vaginal)

- May be performed at time of vaginal hysterectomy or post hysterectomy vault prolapse
- Incorporate both uterosacral ligaments to elevate the vaginal cuff & close off cul de sac
Modified McCall culdoplasty/
High Uterosacral Ligament Suspension (vaginal)

- **Principles-**
  1. obtain exposure
  2. substantial purchases of “good” USL on each side
  3. “high” plication at or just above ischial spine
  4. plicate to obliterate cul de sac / enterocele and...
  5. attach to anterior and posterior vaginal apex bilaterally
  6. permanent and delayed absorbable suture
  7. confirm ureteral integrity
Initiation of the "Mayo Repair"

Forshortening of the uterosacral-cardinal ligament pedicles (at hyst or post-hyst)
Fig 6. A second Allis clamp is placed on top of the surgeon's finger to directly grasp the uterosacral ligament.
Fig 7. The proximal suture through the uterosacral ligament is sewn to the anterior vaginal cuff and the distal suture is sewn to the posterior vaginal cuff.
Fig 8. (A) A coronal view showing the reconnection of the rectovaginal fascia and the uterosacral ligament. The stitches to elevate the anterior vaginal wall have yet to be tied. (B) A lateral view showing what happens when the uterosacral sutures have both been tied, drawing the anterior and posterior apices against the intact portion of the uterosacral ligament, and thereby changing the vaginal axis into a position over the sacrum. The repaired support is both anatomically correct and strong.
Anterior cuff with proximal stitch to be tied

Posterior cuff with distal stitch in uterosacral ligament
EEA sizer
Dilating apical prolapse
Bladder margin

Mesh previously placed anteriorly

Vaginal clamp on anterior margin fascia
FIGURE 12  Abdominal plication of the uterosacral ligament.

Note: ureter closest to most distal suture
Use of uterosacral ligaments for vaginal apical reattachment

- **Advantages**
  - Less dissection
  - Restores natural upper vaginal axis
  - Less risk/morbidity than other vaginal procedures?
  - Just as efficacious as SSLF

- **Disadvantages**
  - May not be able to identify adequate ligaments
  - Cystoscopy required
Vaginal Vault Prolapse—surgical procedures

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SACROSPINOUS LIGAMENT FIXATION (SUSPENSION)
Sacrosinous Ligament Suspension (fixation)

- Attaches vaginal apex to sacrosinous ligament / coccygeus muscle complex
- Unilateral (traditional) or bilateral (preferable)
- Permanent suture (delayed absorbable?)
- Access via posterior dissection- presacral /pararectal space
- Risks-bleeding, nerve injury, gluteal pain
High Uterosacral Ligament Suspension (vaginal)

- Techniques & experience described by:
  - McCall 1957
  - Webb, Aronson, and Ferguson 1998
    - N=46, f/u 3mo-3.5 yrs, 10% symptomatic recurrence (2 apical, 1 ant, 1 post) *10% ureteral occlusion*(2 reimplants)
    - N=302, f/u 1-3yrs, 5% >Grl recurrence (most ant), ureteral kinking/injury 1%, 1 death
    - N=202(168), f/u 0.5-3yr, 5.5% re-operation rate 10% recurrent prolapse, (5)2.4% ureteral kinking/injury (1 ureterotomy +re-implant), 1sb inj, 1 abscess, QOL improvement
  - Silva, et al (Cincinnati) 2006 Obstet Gynecol
    - N=72, f/u(5 yrs) 3.5-7.5 yrs, 15%> Grl, QOL improvement
Sacrosinous ligament fixation - Surgical Anatomy
Anchor stitch
PULLEY MECHANISM
Sacropinous Ligament Fixation

- HOW SUCCESSFUL?
  - ~ 80 – 90%
    - Sze & Karram 1997 *Obstet Gynecol*
      - 1,062 pts in 22 studies (MEDLINE review)
      - 77-82% objective/subjective cure
      - 726 pts. f/u 1mo.-11yrs
      - Most unilateral
      - Recurrence 109 (18%) at all sites
        - 32 vag vault
        - 81 anterior
        - 24 posterior
        - 56 unspecified
Sacropinous Ligament Fixation

- Risks / complications
  - Nerve injury
  - Vascular injury
  - Buttock pain
  - Recurrence of anterior prolapse
The abdominal sacral colpopexy:

- A. Uses synthetic graft material
- B. Takes longer operating time than SSLF and USLS
- C. Requires opening the vaginal wall to obtain optimal dissection
- D. Does not require precise dissection of the presacral space to avoid serious complications
- E. A+B
- F. C+D
Sacrocolopopexy - INDICATIONS

- Preserve vagina
- Sexual function
- Previous vaginal repair failure
- Vagina scarred / retracted
- Need RPU
- Neurogenic basis for POP
SACROCOLPOPEXY
Surgical Techniques
(50 yrs of experience)

- Use graft material (don’t attach uterus/vaginal directly to sacrum)
- Avoid excess tension to anterior vagina (minimize SUI)
- Attach to S1-S2 (sacral promontory) to avoid bleeding
- Avoid graft attachment to raw open vagina
- Multiple sites of attachment (spread tension, reduce graft detachment)
Abdominal Sacrocolpopexy

FIGURE 15 Attachment of the mesh to the sacrum. Closure of the peritoneum over the mesh is shown in the inset.
SACROCOLPOPEXY EFFICACY

- 38 – 100% “satisfied” subjective cure rate
- 85 – 100% objective cure rate
- Many studies, but...
  - F/U 6 – 105 months (average ~ 1-5 yrs)
  - Measurement tools inconsistent & poorly described
  - Recurrences/failures often described at sites other than apex
SACROCOLOPOPEXY
COMPLICATIONS

- Mesh erosion (0 – 14%) ~ 6%
  - True rate not known due to short follow up
  - All types erode. (Prolene, Mersilene, Gore-Tex, Teflon) No large differences
- Hemorrhage / Transfusion (<1 – 16.9%) ~ 4.4%
- UTI ~ 11%
- Wound infection, separation, hematoma – 4-5%
- Ileus – 3-4%
Which operation to use? How to choose??

What is the best?
Comparison of operations
Maher, et al 2004
95 pts / 2 yrs similar subjective and objective cure rates.

- **SSLF**
  - More anterior failures (16%)
  - More VVP recurrence

- **ASCP**
  - More posterior failures
  - Less VVP recurrence
  - Less dyspareunia
  - Greater OR time+ recovery
  - Greater complications
Open SCP vs. LS SCP
Paraiso, et al 2005

- **Open ASCP**
  - Shorter OR time
  - Higher EBL
  - Longer hosp stay
  - Complications equal
  - Reoperation equal

- **LS SCP**
  - Longer OR time
  - Lower EBL
  - Shorter hosp stay
  - Complications equal
  - Reoperation equal
  - Trend toward > LUTI
Laparoscopic vs robotic SCP
Paraiso, et al 2011
comparable anatomic results and complications

- Standard L/S
  - $$

- Robotic L/S
  - $$$$$$
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DeLancey Level 1 support:
A. Is maintained by the sacrospinous ligaments
B. Is maintained by the uterosacral ligaments
C. Can be surgically corrected with a sacrospinous ligament fixation (suspension)
D. Can be non-surgically managed with a pessary.
E. A + C
F. BC+D
G. Is a computer support system for CPOE super users
Prolapse of the Vaginal Apex

Final Points

- More than one operation available
- No strict criteria for which to base surgical decision making on.
- ASCP vs. SSLF - have comparable success rates, although ASCP may be more durable long-term
- SSLF vs. USLS – may be comparable in success, however, no randomized / controlled trials to compare. Risks are comparable
- Recurrences in other vaginal segments occur with relatively high frequency (up to 1/3rd) – if able, repair all defects