Vaginal Dissection and Prolapse Repair

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Overview Pelvic Organ Prolapse

- Approximately 200,000 inpatient surgical procedures for prolapse are performed annually in the United States.
- 11 to 19 percent of women will undergo surgery for POP or incontinence by age 80 to 85 years, and 30 percent of these women will require an additional POP or incontinence surgery.
- Anterior vaginal wall is both the most common site of pelvic organ prolapse and most frequent site of operative failure.
  - 81% of surgical repairs involving the anterior wall.
  - Failure rates as high as 41%.
- Posterior wall prolapse is a common pelvic support defect that often occurs in over 50% of women with concomitant anterior and apical defects.

Evidence Based Overview

Anatomic Success Rates

• Anterior Compartment:
  o Anterior colporrhaphy 37 to 83%
  o Graft augmented anterior repair (lower risk of recurrence of anterior prolapse, at one-year follow-up, following use of absorbable synthetic mesh (24 versus 43 percent)

• Posterior Compartment:
  o Posterior Colporrhaphy 76% to 96%
  o Site-specific Posterior Repair 56% to 100%
  o Graft Augmented Posterior Repair 54 to 94%

• Abdominal sacral colpopexy 76 to 100%

• Uterosacral ligament suspension 81 to 98%

• Sacrospinous Ligament Fixation associated with 22 to 37% anterior vaginal wall recurrence

3. UpToDate
Evidence Based Overview
Apical Prolapse

- **Abdominal sacral colpopexy was associated with:**
  - Lower rate of recurrent vault prolapse (4 vs. 15%)
  - Less dyspareunia
  - Longer operating time
  - Longer time for recovery
  - More expensive

  *compared to vaginal sacrospinous colpopexy*


Evidence Based Overview
Anterior Prolapse

- **Compared to native tissue anterior repair:**
  - **Porcine dermis augmentation** of the anterior vaginal wall might be beneficial in reducing recurrent anterior vaginal wall prolapse.
  - **Cadaveric fascia lata (Tutoplast)** overlay was not beneficial.
  - **Polypropylene mesh anterior repair** was superior to native tissue anterior colporrhaphy on:
    - Objective anatomical evaluation
    - Reducing the risk of recurrent anterior compartment prolapse.
  - **Polypropylene mesh anterior repair** was not demonstrated to be superior in terms of:
    - Subjective success
    - Quality of life outcomes
    - Reoperation rates for prolapse or incontinence.

Evidence Based Overview

Posterior Prolapse

There were no significant differences in functional outcomes and quality of life between posterior colporrhaphy, site-specific repair, or site-specific repair augmented with porcine small intestine submucosa.


Pelvic Support
Anatomic Considerations

Endopelvic Fascia
• Composition
  • Collagen
  • Elastin
  • Smooth muscle
• Attachment of vaginal walls to pelvic sidewall
• Provides pelvic support

Pubovesicocervical Fascia

Rectovaginal Fascia
Pelvic Support
Anatomic Considerations

DeLancey Levels of Support

• Level I (upper fourth of vagina)
  • support of upper vagina and cervix, or the vaginal cuff, by cardinal-uterosacral ligament complex.

• Level II (middle one-half of vagina)
  • lateral support of the mid-vagina fascial extending to levator ani muscles

• Level III (lower one-fourth of vagina)
  • fusion of fascia with the perineal body.


Pelvic Support
Anatomic Considerations (Level I Support)
**Pelvic Support**

**Anatomic Considerations (Level II Support)**

### Endopelvic Fascia

- **Composition**
  - Collagen
  - Elastin
  - Smooth muscle

- **Attachment of vaginal walls to pelvic sidewall**
- **Provides pelvic support**
Anterior Prolapse Repair
Anterior Prolapse Repair
Anatomic Considerations

Normal Support
Anterior Prolapse Repair
Anatomic Considerations

Normal Support
Anterior Prolapse Repair
Anterior Vaginal Wall Prolapse

Simulated restoration of apical vaginal support appears to correct 55% of anterior vaginal prolapse and 30% of cases of posterior vaginal prolapse.

Half of the observed variation in anterior compartment support may be explained by apical support on MRI study.

Anterior Prolapse Repair
Stage III Anterior Vaginal Wall Prolapse
Anterior Prolapse Repair
Stage III Anterior Vaginal Wall Prolapse

Anterior Vaginal Wall Prolapse
Anterior Prolapse Repair
Vaginal Wall Dissection
Anterior Prolapse Repair
Anterior Colporrhaphy
Anterior Prolapse Repair
Anterior Colporrhaphy

Kelly Plication
Anterior Prolapse Repair
Vaginal Paravaginal Repair
Anterior Prolapse Repair
Vaginal Paravaginal Repair with Graft
Anterior Prolapse Repair

Mesh Augmentated Anterior Vaginal Wall Repair
Posterior Prolapse Repair
Posterior Prolapse Repair
Anatomic Considerations

Pubococcygeal line

45 year old with clinical Stage II posterior vaginal wall prolapse

50 year old s/p supracervical hysterectomy with clinical Stage II posterior vaginal wall prolapse and significant perineal descent
Rectocele

- Condition in which bowel muscularis is in contact with vaginal mucosa
- All rectoceles represent breaks in the rectovaginal fascia
- Site-Specific Defect in the rectovaginal fascia occur in many locations and shapes

Posterior Prolapse Repair
Anatomic Considerations

Kleeman et al, 2005

- Perineum, posterior vaginal wall, and upper part of the rectum removed en bloc from 4 fresh cadavers without pelvic prolapse
- Dense connective tissue 3 to 3.5 cm proximally from the posterior forchette
- Proximal to this, space between muscular wall of the vagina and the muscular wall of the rectum was composed of adipose tissue with discontinuous bands of fibrous tissue or loose areolar tissue
- There appears to be a natural line of cleavage.
- Histologically, no evidence of fascia or a rectovaginal septum was identified

Farrell et al, 2001

- 60 biopsies were taken from five patients undergoing anterior and posterior colporrhaphy.

“Despite the fact that the bulk of research evidence supports the conclusion that no true fascia exists between the vagina and its adjacent organs, authors continue to describe the use of this fascia to achieve surgical cure of cystocele and rectocele…”

Our study has demonstrated that the surgical “fascia” identified and used to achieve site-specific repair of cystocele or rectocele is composed of moderately dense connective tissue indistinguishable histologically from the deep layer of the vaginal wall. We conclude that this fascia is actually a surgical artifact of the technique used to separate the vaginal wall from the surrounding organs. If we accept that fascia does not exist between the bladder and rectum and the vagina, then the use of artifactual “fascia” created by splitting the vaginal wall during colporrhaphy should be no more effective than a simple excision of redundant full-thickness vaginal wall and subsequent repair.”

Posterior Prolapse Repair
Anatomic Considerations
Posterior Prolapse Repair
Anatomic Considerations

Natural line of cleavage
Posterior Prolapse Repair
Site-Specific Rectovaginal Fascia Repair
Apical Prolapse Repair
Apical Prolapse Repair
Sacrospinous Ligament Fixation
Apical Prolapse Repair
Sacrospinous Ligament Fixation

CSSL
Vaginal wall
Pulley stitch

Unilateral fixation of vaginal vault
Apical Prolapse Repair
Uterosacral Ligament Suspension
Apical Prolapse Repair
Uterosacral Ligament Suspension
Apical Prolapse Repair
Uterosacral Ligament Suspension
Apical Prolapse Repair
Uterosacral Ligament Suspension

- Ureteral obstruction is a known complication of uterosacral ligament suspension
- Reported in 1.0% to 10.9% of published cases
- Rate of ureteral injury associated with a “deep” (dorsal/posterior) uterosacral ligament suture placement modification to the standard Mayo culdoplasty procedure for restoration of apical vaginal support was evaluated
- University of Massachusetts and Tufts
- 1 ureteral obstruction (0.24% [0.01%-1.35%]) in 411 consecutive patients utilizing ≥3 uterosacral sutures placed “deep” bilaterally
- Reduced rate of injury by 4.6%

Summary

- Success rates for pelvic organ prolapse surgery are dependent on many factors
- Choose appropriate surgical procedures depending on the surgeons skillset, and the patients symptoms and anatomic findings
- Develop a thorough understanding of anatomical relationships to minimize surgical complications while maximizing surgical results
Surgical Pictures and Illustrations