Didactic:
Vaginal Hysterectomy: Guidelines for Increasing Its Use in Your Surgical Practice

PROGRAM CHAIR
Michael D. Moen, MD

Rosanne M. Kho, MD  Charles R. Rardin, MD  Eric R. Sokol, MD
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VHYS-705: Didactic:
Vaginal Hysterectomy: Guidelines for Increasing Its Use in Your Surgical Practice

Presented in affiliation with the American College of Obstetricians and Gynecologists (ACOG) and the Society of Gynecologic Surgeons (SGS), and in cooperation with the AAGL Special Interest Group on Vaginal Surgery

Michael D. Moen, Chair
Faculty: Rosanne M. Kho, Charles R. Rardin, Eric R. Sokol

This course will provide an overview of the various reasons vaginal hysterectomy is underutilized, and will offer suggestions and guidelines for increasing its use. The course is designed to provide practical information for all surgeons interested in improving their skills in performing vaginal hysterectomy, and will focus on surgical anatomy, step-by-step tips and tricks for performing vaginal hysterectomy, including peritoneal entry, control of vascular pedicles, management of adnexa, and techniques for transvaginal tissue extraction. The course will also offer a specific focus on the role of laparoscopic assistance with vaginal hysterectomy, highlighting the complementary nature of these two minimally-invasive techniques. It also will be useful for advanced laparoscopic surgeons who are interested in adding vaginal surgery skills to their surgical practice.

Learning Objectives: At the conclusion of this course, the clinician will be able to: 1) Identify specific barriers to the use of vaginal hysterectomy in his or her practice; 2) utilize strategies and techniques to increase the use of vaginal hysterectomy alone, and with laparoscopic assistance when indicated; and 3) recognize common trouble spots in vaginal hysterectomy, including anterior dissection and entry, control of the utero-ovarian/round ligament/tube complexes, and management of the adnexae.

Course Outline

7:00 Welcome, Introductions and Course Overview M.D. Moen
7:05 Scientific Rationale for Choosing Vaginal Hysterectomy M.D. Moen
7:30 Positioning and Instrumentation R.M. Kho
7:55 Anterior and Posterior Entry C.R. Rardin
8:20 Use of Energy/Vessel Sealing Devices E.R. Sokol
8:45 Questions & Answers All Faculty
8:55 Break
9:10 Support of the Apex at VH M.D. Moen
9:35 Morcellation Techniques E.R. Sokol
10:00 Managing the Adnexae at VH R.M. Kho
10:25 Role of Laparoscopy in VH C.R. Rardin
10:50 Questions & Answers All Faculty
11:00 Adjourn
PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop (listed in alphabetical order by last name).
Art Arellano, Professional Education Manager, AAGL*
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Eric R. Sokol
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Content Reviewer has no relationships.

Asterisk (*) denotes no financial relationships to disclose.
Scientific Rationale for Choosing Vaginal Hysterectomy
Michael Moen, MD, FACOG, FACS
Professor of Obstetrics and Gynecology
Rosalind Franklin University/Chicago Medical School

Disclosure
I have no financial relationships to disclose

Learning Objectives
- Provide a brief historical perspective on performance of vaginal hysterectomy
- State factors that contribute to the variation in the route of hysterectomy
- Discuss strategies to increase awareness of the evidence supporting vaginal hysterectomy, to improve resident training, and to promote collaboration among practicing physicians

Historical Perspective
- J Baptiste Palletta (Milan) – 1812
  - Inadvertent vaginal hysterectomy when amputating cervix
- Langenbeck (Gottingen, Germany) – 1813
  - First planned vaginal hysterectomy for endometrial cancer (wasn’t reported until 1817)
- Joseph Recamier (Paris) – 1824
  - Successful vaginal hysterectomy for cervical cancer
- By 1886, mortality rate for VH was reduced to 15%
- By 1910, mortality reduced 2.5% (much lower than the mortality rate for TAH at the time)
- 1929 – Richardson performed first total abdominal hysterectomy, but subtotal hysterectomy continued to be more common until 1940s
- 1940s – 1980s: Use of antibiotics and blood transfusion resulted in significant reduction of mortality with TAH, which became most common approach for hyst
- 1982 - First large scale report providing evidence of the advantages of VH compared to TAH
  - (Dicker et al. Am J Obstet Gynecol)

Route of Hyst - U.S. Statistics
- 1990: AH 75%  VH 25%
- 1998: AH 65%  VH 24.8%  LH 10.2%
- 2003: AH 66.1%  VH 21.8%  LH 11.8%
- 2005: AH 64%  VH 22%  LH 14%
- 2009: AH 56%  VH 18.8%  LH 20.4%  RH 4.5%
- 2010: AH 40.1%  VH 19.8%  LH 30.5%  RH 9.5%

Wide Variation in Rates in U.S

- New York State 2011
  - AH 58%  VH 12%  LH 18%  RH 13%

- Brigham and Women's 2009
  - AH 36%  VH 12%  LH 46%  RH 6%

- Lutheran General Hospital 2009
  - AH 35%  VH 23%  LH 28%  RH 14%

- Magee-Womens/Univ of Pittsburgh 2014
  - AH 17%  VH 20%  LH 48%  RH 15%


Route of Hyst - Other Countries

- United Kingdom – (Mukhopadhaya et al. J Mid Health 2013)
  - 2001-2002: AH 82%  VH 18%
  - 2011-2012: AH 79%  VH 21%

- Belgium – (Donnez et al. BJOG 2009)
  - 1990-1993: AH 23%  VH 34%  LH 42%
  - 2005-2006: AH 4%  VH 8%  LH 88%

- Norway – (Istre et al. JMIG 2007)
  - 2001: AH 73.1%  VH 9.2%  LH 17.7%
  - 2005: AH 43.1%  VH 3.4%  LH 53.5%

  - 1987-1990: AH 96%  VH 4%
  - 2001-2003: AH 69%  VH 29%  LH 2%

Route of Hyst - Other Countries

- Australia – (Medicare data)
  - 2001: AH 49%  VH 35%  LH 16%
  - 2011: AH 34%  VH 35%  LH 31%

- Finland – (Buenouncer et al. Hum Repro 2009)
  - 2006: AH 24%  VH 44%  LH 32%

- Germany – (Stang et al. Dtsch Arztebl Int 2011)
  - 2005-2006: AH 41.2%  VH 48.1%  LH 10.7%

What should the percentage of vaginal hysterectomies be in the U.S.?

Factors affecting use of VH

- Common “contraindications” to VH
  - Uterus too large (related to uterine fibroids)
  - Lack of uterine mobility
    - Nulliparity
    - Adhesive disease (related to prior pelvic surgery)
    - Advanced endometriosis
    - Need for adnexal removal

Using basic criteria to increase VH

VH increased by 30% by using following criteria:

- At least 1 prior vaginal delivery
- No more than 1 prior laparotomy
- Uterine size less than 14 weeks

Indications for Hysterectomy

- Uterine fibroids/Abnormal bleeding - 50-60%
- Pelvic organ prolapse - 12-15%
- Endometriosis - 9-13%
- Benign mass - 8-10%
- Other - 5-10%

VH rate of 40% is feasible and scientifically supported.

Factors affecting route of hysterectomy

- Surgeon Factors (training and experience)
  - Formal training - residency; fellowship
  - Informal training - learning new skills once in practice
  - Maintaining skills once in practice (case volume)
- Marketing of hysterectomy procedures (i.e. robotics)
  - Industry; hospitals; individual surgeons
- Awareness of the data supporting vaginal approach
  - Patients
  - Referring physicians
  - Hospitals (quality, safety, costs)
  - Payors - United Healthcare - April 2015

Training Issues - Case Numbers

- Changes in training - continual increase in knowledge and skills requirements; concomitant decrease in work hours
- Focus on OB and Office Practice >> GYN Surgery
  - ACGME: minimum case numbers
    - OB: Vaginal Delivery - 200; C-section - 145
    - GYN: Abdominal Hyst - 35; Vag hyst - 15; Lap Hyst - 20
- Current numbers for VH, LH are below the learning curve threshold required to master these techniques

Bottom line: many (most?) residents graduate without sufficient proficiency in MIH surgical techniques including VH.

Training - Impact of Robotics

- Robotic technology appears to have had significant influence in U.S.
  - Increase in RH has resulted in reduction in VH and LH
    - Matthews et al. AJOG 2010
      - VH: 28% to 24%
      - LH: 10% to 9%
    - Jeppson et al AJOG 2014
    - Washburn et al JMIG 2014

Maintaining Skills in Practice

- Significant differences in outcomes between low-volume and high-volume surgeons performing hysterectomy (all types)
  - Vaginal - Ragu Gapanan & Others Gynaeol 2010
  - Laparoscopic - Wallenstein et al Obstet Gynecol 2012
- Lower volume surgeons less likely to perform VH or LH
  - Boyd et al. Obstet Gynecol 2010

Bottom line: Majority of OB/GYNs are low-volume surgeons.
Marketing issues

Marketing - Robotics

Strategies to increase VH

- Increase awareness of scientific data and benefits of VH
- Improve training and maintenance of skills
- Promote collaboration in practice

Abdominal Hysterectomy

- An abdominal hysterectomy is a surgical procedure to remove the uterus and its cervix. It is often performed to treat conditions such as uterine fibroids, uterine prolapse, or uterine cancer. Abdominal hysterectomies are usually performed through a large incision in the lower abdomen, which allows the surgeon to remove the uterus and surrounding tissues. This type of hysterectomy is often used for patients who have not had children or for those who are at higher risk of complications during vaginal birth. Abdominal hysterectomies are typically associated with a longer recovery time and more extensive incisions compared to other types of hysterectomies. However, they provide a thorough and direct approach to removing the uterus and surrounding structures, which can be beneficial for some patients.
VH is the approach of choice whenever feasible based on its well-documented advantages and lower complication rates.

LH is an alternative to AH for those patients in whom a VH is not indicated or feasible.

Most hysterectomies for benign disease should be performed either vaginally or laparoscopically and continued efforts should be taken to facilitate these approaches. Surgeons without the requisite training and skills required for the safe performance of VH or LH should enlist the aid of colleagues who do or should refer patients requiring hysterectomy to such individuals for their surgical care.

Recognize industry impact on use of Laparoscopy and Robotics
Based on financial goals rather than scientific evidence
Acronyms for different types of hysterectomy approaches add to the confusion, many patients and providers unaware of details
TAH, TVH, TLH, AH, VH, LH, LSH, LESS, TVH, LESS, RH, LRH, RATLH, DVH...
VH not “marketable”
Let’s face it, there is nothing flashy about a procedure that is over 100 years old and uses standard instruments
Is the term “vaginal” a problem? (vs. “robotic”, “laparoscopic”, “laser”)
Rename VH
Natural Orifice Hysterectomy (NO hysterectomy)
Mini Hysterectomy (Minimally Invasive No Incision)

Not feasible to train all residents in all programs in all techniques due to limited numbers of cases?
Focus on training fewer residents, but trained to appropriate level of proficiency/competence?
Increased use of simulation for basic skills in VH?
Discussion point - Will likely result in great deal of variation between programs and individual residents?

VH
21-27 cases (Jelovsek et al. AJOG 2010)
Easiest to learn and likely easiest to maintain since relies on standard instruments and surgical movements

LH
30-125 cases (Tuninisky et al. AJOG 2010, Twijnstra et al Obstet Gynecol 2012)
Skills deteriorate rapidly without continued performance

RH
50-80 cases (Lemesh et al. JMG 2008, Weick et al. Obstet Gynecol 2012)
Technique most dependent on additional resources

How can lower-volume surgeons provide high-quality surgical care for their patients?
Increase volume; Collaborate with colleagues; Refer patients
Collaboration
High-volume vaginal surgeons
FPNRS specialists
What are the limits to this type of collaboration?
Will this change in academic centers/large groups?
European model -
Columbia University -
Kaiser prototypes -
Impact of payors/reimbursement?
ACO/“full capitation” models of care
Achieving Expertise in surgery

Role of Laparoscopy?

- LAVH may have a role as less experienced surgeons improve their skills in VH.
- Supported by data that suggests morbidity decreases as the laparoscopic phase is reduced.
- Strive to avoid a dogmatic 'TLH always' versus 'VH always' mentality.
- Key barrier with TLH - laparoscopic suturing.
- Probably the single laparoscopic skill that requires continual repetition.
- Is this the primary reason Robotics has been so readily adopted?
- Key advantage of LAVH - standard suturing of cuff can be done.
- What is most feasible for lower volume surgeons?
  - Close cuff from below with standard instrumentation and techniques.
  - Maintain laparoscopic suturing skills with regular use of simulation.

Conclusions

- Scientific evidence supports role of VH.
- Current statistics indicate VH is underused.
- Key factors to address in order to improve use of VH:
  - Changes in training during residency.
  - Provide the necessary number of cases needed for individual residents to achieve proficiency in VH technique.
  - May require selective training of some residents as opposed to incomplete training of all residents.
  - Collaboration among physicians in practice.
  - May involve co-management of surgical cases or referral.
  - Shift in awareness and marketing practices related to hysterectomy.
  - Challenge industry-supported marketing of non-VH approaches.
  - Challenge hospital marketing of robotic hysterectomy.
  - Increase public and medical community awareness of advantages of VH.

Slide courtesy of Dr. Oz Harmanli.
Vaginal Hysterectomy in 2016: Patient Positioning and Instrumentation

Rosanne M Kho MD
khor@ccf.org
Director, Benign Gyn Surgery
Cleveland Clinic OH

Disclosure

I have no financial relationships to disclose.

Objectives

• To review principles of patient positioning in vaginal surgery to facilitate exposure while maintaining safety
• To identify available instruments and devices to maximize success while containing costs

Case 1

• LA. 44 y/o P2 (C/S x 2) with heavy menstrual bleeding. Uterus is 14 weeks in size with a dominant 6.5 cm fundal intramural myoma. She is +BRCA 1 mutation. Patient desires hysterectomy and BSO.
  – BMI: 38.6 kg/m²
  – EMBx: benign. LDH total/iso III: wnl

Case 2

• NY. 37 y/o P2 (VDx2. BTL). Symptomatic leiomyomatous uterus. Heavy bleeding. Hgb: 10.8 g/dL. Increased pressure. Urinary frequency. Failed OCPs, IUD.
  – BMI: 30 kg/m²
  – EMBx: benign proliferative. LDH total/iso III: wnl
Case 3

- **AN.** 37 yo Po, referred by MIGS surgeon. H/o SLE with
  - end-stage renal disease. S/P kidney tx (pelvic kidneys x 2 on RLQ)
  - Connective tissue disorder. Carotid and vertebral artery dissection.
  - A fib, DVT on anticoagulation
- Menometrorrhagia. Secondary severe anemia. Hgb 8.8 gm/dL
- Needs hysterectomy
  - BMI: 36 kg/m²
  - EMBx: proliferative endometrium

What have we learned from LAPAROSCOPY AND ROBOTICS while maintaining patient safety and containing costs?

From Laparoscopy and Robotics, use technology to maximize:

- Exposure
- Visualization
- Ergonomics
- Ease in performance
- Simulation for training

Safe Patient Positioning - Candy canes
Take caution with:
- Flexion of hips
- Bend of knees
- Torque of ankles
Ergonomics for surgeon AND assistants

Elevate chair to level of assistants

Chair SANS wheels

Elevate table to level of assistants

Overhead Projection During Vaginal Surgery

Rosanne M. Kho, MD
Mayo Clinic in Arizona

Exposure: Magrina-Bookwalter Vaginal Retractor
Exposure: Fiberoptic Light, Table-mounted gynecologic scope

Lighted reusable retractor system (Invuity, CA.)

Exposure: Modified Long Deavers

Vaginal tray
To keep bowel away: one long 4" x 36" x-ray detectable vaginal pack (Dukal, NY)

**Conclusion**

- In keeping the vaginal approach at the forefront of your MIS armamentarium, consider the many new devices, instrumentation and technologies that are available to facilitate and maximize success.
Vaginal Hysterectomy: Anterior and Posterior Entry

Charles R. Rardin, MD
Associate Professor, OB/Gyn
Director, Fellowship in Female Pelvic Medicine and Reconstructive Surgery
Alpert Medical School of Brown University
Director, Minimally Invasive and Robotic Surgical Services
Care New England

Disclosures
- Contracted Research: Pelvalon, Solace Therapeutics

Objectives
- Emphasize the importance of safe peritoneal entry
- Explain anatomic and procedural considerations
- Review alternatives for special situations

History of the Vaginal Hysterectomy
- Predates Abdominal Hysterectomy by 2000 years
  - Themison of Athens, 50 BC
  - Soranus in Greece, 120 AD
  - Arabic physician Alsaharavius in 11th cent
  - Berengario da Carpi of Bologna in 1507
- Outcomes universally dismal

History of the Vaginal Hysterectomy
- First documented survivor – Faith Haworth ca. 1650
  - Frustrated with her prolapse related to heavy lifting
  - Pulled and cut
  - Survived (albeit with a fistula)
  - Went back to work
- Percival Willoughby, male midwife, reports the case

Obstacles to hysterectomy (real and perceived)
- Nulliparity
- Obesity
- Lack of descent
- Need for removal of adnexa
- Previous surgery
- Uterine size >12 weeks

Does “contraindication really mean excuse – R Kho
**Observation**

- A great deal of gynecologic surgery relates to the peritoneum, and the planes it creates
- Abdominal, laparoscopic and robotic hysterectomy seek to exclude the broad ligament leaves (anterior and posterior) from the clamps
- Vaginal hysterectomy seeks to include both leaves in the clamp

**Anterior Peritoneal Entry**

- Often considered the most challenging component
- No data-driven answers
- Experience and repetition drive success

**Concerns about access:**

**Obesity, narrow introitus, lack of descent**

- Candy canes (if stable result)
- Anesthesia!
  - Relaxation of levators with regional and/or paralytics can result in significant change
- Adequate light!
- Careful use/selection of retractors
- Uterosacral stretch/massage

**Access:** Schuchardt Incision

**Anterior Peritoneal Entry**

1. ![Image 1](image1.png)
2. ![Image 2](image2.png)
3. ![Image 3](image3.png)
4. ![Image 4](image4.png)
Anterior Peritoneal Entry

New (?) technologies in Retraction

History of C/S and Bladder Injury

- No differences in cystotomy rates between women with or without previous C/S
- Puerperal infection after C/S is a risk
- Filling of bladder, probe in the bladder to delineate edge, or proceeding posteriorly until coming over the fundus digitally have all been successful
- Some suggest vaginal approach may be safer
- Stay lateral until entry completed (scarring is in the middle 2/3, not lateral aspects?)

- Sheth, SS. Int J Gynaecol Obstet 1995

Some General Technique Issues

- Bowel Prep not indicated
- Betadine douche advocated by some
  - No proven infection benefit, but low risk
- Catheter is an individual preference
  - Indwelling vs red rubber
  - Urine in bladder to identify injury? Cystoscopy is vastly superior to this
- Vasoconstriction at the cuff
  - Reduction in EBL (clinically significant?)
  - Not associated with cuff cellulitis (Kammerer-Doak AJOG 2001)
  - One study suggested higher pain? (Ascher-Walsh AJOG 2012)

- Obiterated cul de sac makes posterior entry difficult
- Caveat – in cases of pain or significant endometriosis, vaginal approach may limit ability to treat/resect endo
Doderlein Hysterectomy

- Anterior cul de sac entered
- Fundus delivered through colpotomy
- Pedicles taken in order of TAH

Conclusions

- There is no technique demonstrably better than another
- Anatomic principles are key
- Control of peritoneal planes is part of surgical proficiency
Use of Energy/Vessel Sealing Devices in Vaginal Hysterectomy

Eric R. Sokol, MD
Associate Professor of Obstetrics and Gynecology
Associate Professor of Urology
Co-Chief, Urogynecology and Pelvic Reconstructive Surgery
Stanford University School of Medicine

Disclosure

• Contracted Research: American Medical Systems
• Stock ownership: Pelvalon

Objective

Discuss the use of energy/vessel sealing devices in vaginal hysterectomy.

Bipolar vessel sealing

• Advanced bipolar electric vessel-sealing devices (eg, LigaSure, PlasmaKinetic, EnSeal) are used to clamp vascular pedicles
• Bipolar vessel-sealing devices are preferred to ultrasonic vessel-sealing devices as the ultrasonic instruments are unable to achieve hemostasis on vessels larger than 4 to 5 mm

Bipolar energy

• Advanced bipolar devices (eg, LigaSure, PlasmaKinetic, EnSeal) combine bipolar current together with tissue apposition and compression to create a tissue seal
• Bipolar sealing is used to manage blood vessels contained within other tissue (eg, omentum, mesentery), or vessels that have been circumferentially dissected
• Advanced bipolar sealing devices provide excellent hemostasis for vessels up to 7 mm

Thermal spread

• Less lateral thermal spread occurs with bipolar sealing compared with monopolar electrocautery, for which thermal spread can be as wide as 25 mm
• With bipolar sealing, lateral thermal spread increases slightly as the diameter of the treated vessel increases
  – For a 2 to 3 mm vessel, the maximal thermal spread is about 1.5 mm
  – For a 6 to 7 mm vessel, the maximal thermal spread is about 3 mm
Mayo Clinic AZ: 2000-2013

- N = 2011 patients underwent TVH ± BSO
- Conversion rate: 19/2011
  - 5/19: endometrial cancer requiring LSCP LND
  - 0/19: leiomyosarcoma
  - 14/19: excessive bleeding, inability to complete morcellation
- Compared to VSD, traditional suturing increased risk for conversion (OR = 2.8, 95% CI 1.0 – 7.9)
Randomized trial of suture versus electrosurgical bipolar vessel sealing in vaginal hysterectomy

OBJECTIVE: To compare blood loss and procedure time of vaginal hysterectomy using an electrosurgical bipolar vessel sealer versus using sutures.

METHODS: Sixty patients scheduled for vaginal hysterectomy in a single surgical practice were randomized to either electrosurgical bipolar vessel sealer or sutures as the hemostasis technique. Procedure time was defined as time from initial mucusal injection to closure of the vaginal cuff with satisfactory hemostasis. Blood loss was estimated by the anesthesia service. Statistical methodology included the Student t and Wilcoxon rank-sum tests, and all comparisons were two-tailed, with P<.05 considered significant.

RESULTS: Use of an electrosurgical bipolar vessel sealer resulted in shorter procedure times: The mean procedure time in the electrosurgical bipolar vessel sealer arm was 39.1 minutes (range 22-93) versus 53.6 minutes (range 37-160) for the suture arm (P = .003). Mean estimated blood loss was also statistically less with electrosurgical bipolar vessel sealer: 68.9 mL (range 20-200) versus 126.7 mL (range 25-660) for the suture arm (P = .005). Complication rate and length of stay did not differ by hemostasis technique. Seventy-eight percent of all cases were outpatient.

CONCLUSION: Electrosurgical bipolar vessel sealer is an effective alternative to sutures in vaginal hysterectomy, resulting in significantly reduced operative time and blood loss.

Energy-Based Vessel Sealing in Vaginal Hysterectomy: A Systematic Review and Meta-Analysis
Kroft, Jamie MD, FRCSC; Selk, Amanda MD, FRCSC
Obstetrics & Gynecology. 118(5):1127-1136, November 2011

Results

- Only 7 studies met criteria
  - 5 studies compared Ligasure to suture
  - 2 studies compared Bicla to w/o cutting to suture
- Ligasure reduced suturing time by 17 minutes
- EBL decreased by 47.7 mL
- Postop pain score decreased by 1.25
- LOS decreased by 0.25 days
- No differences in complications
- Overall quality of evidence low or very low
Table 2: Evidence Profile - Should Energy-Based Vessel Sealing for Vaginal Hysterectomy be Used?

<table>
<thead>
<tr>
<th>Study</th>
<th>Group</th>
<th>VSDs</th>
<th>Conventional Suturing</th>
<th>VSDs</th>
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<td>79</td>
<td>87</td>
<td>93.6%</td>
</tr>
</tbody>
</table>

Table 3: Evidence Profile - Should Energy-Based Vessel Sealing for Vaginal Hysterectomy be Used?

<table>
<thead>
<tr>
<th>Study</th>
<th>Group</th>
<th>VSDs</th>
<th>Conventional Suturing</th>
<th>VSDs</th>
<th>Conventional Suturing</th>
<th>VSDs</th>
<th>Conventional Suturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith 2005</td>
<td>36</td>
<td>86</td>
<td>75.0%</td>
<td>80</td>
<td>87</td>
<td>91.7%</td>
<td>76</td>
</tr>
<tr>
<td>Brown 2006</td>
<td>35</td>
<td>88</td>
<td>79.4%</td>
<td>80</td>
<td>91</td>
<td>93.9%</td>
<td>82</td>
</tr>
<tr>
<td>Jones 2007</td>
<td>36</td>
<td>85</td>
<td>76.0%</td>
<td>80</td>
<td>90</td>
<td>92.3%</td>
<td>78</td>
</tr>
<tr>
<td>Smith 2008</td>
<td>37</td>
<td>82</td>
<td>75.7%</td>
<td>80</td>
<td>91</td>
<td>93.0%</td>
<td>81</td>
</tr>
<tr>
<td>Jones 2009</td>
<td>35</td>
<td>85</td>
<td>75.5%</td>
<td>80</td>
<td>90</td>
<td>92.5%</td>
<td>79</td>
</tr>
</tbody>
</table>

BENEFITS VS. RISKS OF VSDs

**POTENTIAL BENEFITS**
- May save time in some cases
- May reduce blood loss in some cases

**POTENTIAL HAZARDS**
- VSDs more costly than conventional suturing
- Negative impact on environment
- Limited level 1 evidence of benefit
- Potential for harm through thermal injury

Take home message

- Large, high-quality RCTs needed to determine:
  - Improved outcomes
  - Reduced costs
- There is currently insufficient evidence to recommend the use of energy-based vessel-sealing devices for vaginal hysterectomy
Support of the vaginal apex at Vaginal Hysterectomy

Michael D. Moen, MD, FACOG, FACS

Professor of Obstetrics and Gynecology
Rosalind Franklin University/Chicago Medical School

Disclosure: No conflicts of interest

Learning Objectives

- Review anatomic factors associated with surgery for pelvic organ prolapse
- Compare native tissue repairs to other options for surgical management of pelvic organ prolapse
- Demonstrate techniques for native tissue surgical repair of apical support at the time of vaginal hysterectomy

Pelvic Support – Levels of support

I – Apex/Vault
- uterosacral/cardinal
II - Mid/Lateral
- arcus tendineous
III – Distal
- endopelvic connective tissue (pubocervical “fascia”)
- rectovaginal “fascia”

Endopelvic connective tissue

POP - Principles of Surgical repair

- Reposition upper vagina upon levator plate
- Reestablish ligamentous/connective tissue attachments at apex
- Repair/reconstruct weakened endopelvic connective tissue layers of lower vagina
  - Anterior vaginal wall
  - Posterior vaginal wall and Perineal Body
POP - Principles of Surgical repair

Apex - Sacrospinous ligament fixation

Apex - Culdoplasty (McCall)

Apex - Uterosacral ligament suspension

Anterior - Colporrhaphy

Posterior - Colporrhaphy
Alternatives to Native Tissue repair

- **Abdominally placed mesh**
  - Sacro-colpopexy/cervicopexy/hysteropexy
  - Open, Lap, Robotic
- **Vaginally placed mesh**
  - Anterior, Posterior, TVM
  - Trocars, Direct attachment, Custom
- **Vaginally placed biologic grafts**

**Apex (Anterior/Posterior) - Sacrocolpopexy**

**Summary of Comparative Literature – NT vs. Mesh**

- **Apex**
  - Open ASC “better” than SSLF (3 RCTs)
  - USLS similar to SSLF (1 RCT)
- **Anterior**
  - Vaginal mesh
    - Better - anatomic outcomes (multiple RCTs)
    - No difference - QOL, satisfaction (multiple RCTs)
    - Added risk of mesh-related complications
  - No data supporting use of biologic grafts
- **Posterior**
  - No data supporting use of mesh/biologic grafts
**Conclusions**

- Native tissue repairs should be the primary approach to surgical repair of pelvic organ prolapse.
- Apical support is a key factor in maintaining lower compartment (anterior and posterior) support.
- Uterosacral ligament suspension and sacrospinous ligament suspension are best options for apical support at time of vaginal hysterectomy.

**References**

Morcellation Techniques in Vaginal Hysterectomy

Eric R. Sokol, MD
Associate Professor of Obstetrics and Gynecology
Associate Professor of Urology
Co-Chief, Urogynecology and Pelvic Reconstructive Surgery
Stanford University School of Medicine

Disclosure

• Contracted Research: American Medical Systems
• Stock ownership: Pelvalon

Learning Objectives

1. Review patient selection for TVH and vaginal tissue extraction
2. Demonstrate optimal positioning and equipment for TVH/tissue extraction
3. Review methods of tissue extraction for large uteri

Commonly Sited Contraindications to TVH

• Previous pelvic surgery
• No prior vaginal delivery
• Uterus > 12wks size
• Need for adnexectomy
• Pelvic pain
• Endometriosis
• Inaccessibility – arch <90 degrees or vaginal stenosis
• Inability to access uterine vessels
• Undiagnosed pelvic mass
• Malignancy

*Evidence-based

Advantages of vaginal approach

• TVH least expensive, least invasive, safest route for hysterectomy
  – Eliminates need for electric morcellation
  – Large specimens often removed intact
  – Tissue extraction generally completed outside peritoneal cavity (in vagina)
Exposure

Feet wrapped or padded

Buttocks slightly off end of bed

Not hyper-flexed or extended at knee and knee not resting on stirrup

Not hyper-flexed at hip

Consider Allen or Yellow-fin stirrups if expected case duration over 4 hours
Sidewall retraction only needed sparingly. Minimize metal in operative field...

Lighted suction-irrigator or retractor

Methods of tissue extraction

Vaginal morcellation safety tips
• Have anterior and posterior retractors in place
• Lateral retractors can be used as needed
• Bilvalving:
  – Place a tenaculum on each half to maintain orientation
  – Don’t amputate the cervix!
    • Prevents twisting and disorientation that can lead to sharp injury to surrounding structures
    • Prevents avulsion of upper pedicles
    • Can be used for downward traction

Vaginal morcellation safety tips
• Myometrial coring and wedge resection:
  – Stay within boundaries of serosa
  – Keep thin layer of myometrium and serosa intact

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Bivalve with myomectomy

Wedge extraction
Coring
Managing the Adnexae at VH

Rosanne M Kho MD
Director, Benign Gyn Surgery
Cleveland Clinic OH
For AAGL 2016 VH PG Course

Objectives

• To define the role of risk-reducing salpingectomy at the time of hysterectomy
• To discuss the limitations of traditional mesosalpinx-mesoovarian technique in BSO
• To show the round ligament technique for salpingectomy and salpingo-oophorectomy

Disclosure

• I have no financial relationships to disclose.

Risk—reducing or Opportunistic Salpingectomy

• Change in our understanding of the etiology of high-grade serous cancer
  — Originates from the distal fallopian tube 

McAlpine JL, Hanley GE et al. AJOG 2014;210:471

Risk—reducing bilateral salpingectomy (BS)³

— a regional (BC, Canada) initiative in 2010 for Gyns and assessed the uptake of BS as a strategy to reduce ov can in low-risk women
— Hysterectomy + BS or BSO and surgical sterilization (tubal or BS)
For women at average risk of ovarian cancer, risk-reducing salpingectomy should be discussed and considered with patients at the time of abdominal or pelvic surgery, hysterectomy or in lieu of tubal ligation.

Fertil Steril 2007;87:1005:9

Pathologic findings and outcomes of a minimally invasive approach to ovarian remnant syndrome

Sharon M. Koll, M.D., Javier S. Magrina, M.D., and Paul H. Magney, M.D.
Departments of Obstetrics and Gynecology, Maricopa Medical, Phoenix, Arizona

Objective: To review outcomes and pathologic findings of a primarily minimally invasive approach to ovarian remnant syndrome.

Design: Data were obtained from medical records documenting treatment using laparoscopic or vaginal salpingectomy and/or hysterectomy between January 1996 and January 2006 for pathologically confirmed ovarian remnant syndrome. Follow-up was by initial gynecology and gynecologic oncology evaluation.

Setting: Tertiary care academic medical center.

Patients: Twenty patients were age 40 years or younger with confirmed ovarian remnant syndrome after prior tubal salpingo-oophorectomy.

Intervention: Primarily minimally invasive approach to hysterectomy and tubal ligation for removal of ovarian remnant tissue.

Main Outcome Measures: Perioperative complications and recurrence.

Results: Ten patients had a mean follow-up of 47 months; indications were salpingo-oophorectomy in 9 and ovarian cystectomy in 1. Eighteen patients were parous with a prior history of tubal ligation, and 2 were postmenopausal with a pelvic mass. Nineteen had laparo¬scopic hysterectomy and tubal ligation, and 1 had a vaginal hysterectomy and bilateral salpingo-oophorectomy. Six patients had pelvic lymph node dissection. Ten patients had prior high-dose radiation therapy for ovarian cancer, and 5 had previous radiation therapy for cervical carcinoma. Nine of 18 patients had documented complete removal of the remnant tissue in 3 and corpus luteum in 3. Two patients had redundancy in remnant ovarian tissue. Perioperative complications included pneumonia (1 case), follow-up noted no recurrence.

Removal of the adnexae: Traditional mesosalpinx-mesoovarium (one pedicle) technique

Limitations:
- Thick pedicle
- Retraction of ov vessels
- Incomplete removal
- Up against the pelvic side wall: risk to ureters

Round ligament technique
Vaginal Salpingectomy: Mesosalpinx - Round ligament Technique

**Conclusion**

- Salpingectomy and salpingo-oophorectomy are feasible at the time of the vaginal hysterectomy
- To avoid incomplete removal, consider the round-ligament technique for adnexectomy

References:

2. Kurman et al. Hum Pathol 2011;42:918
3. Seidman et al. Gyn Onc 2011;120:470
6. Gyn Onc 2009;112:61
7. McAlpine JN et al. AOG 2014, 210:475
Role of Laparoscopy in VH

Charles R. Rardin, MD
Associate Professor, OB/Gyn
Director, Fellowship in Female Pelvic Medicine
and Reconstructive Surgery
Alpert Medical School of Brown University
Director, Minimally Invasive and Robotic Surgical Services
Care New England

LAVH: A Checkered Past

- “A procedure searching for an indication”
  - Quote to C Rardin, intern in OB/Gyn, by his chief resident
- Some institutions were able to convert some of their TAH to LAVH
- More commonly, TVH were converted to LAVH
  - Increasing cost, OR time, and abdominal entry risk

When Adnexal Removal is Required

- Multiple studies show 90-95% success when vaginal oophorectomy required
- After checking pedicles, pack bowel and use large Breisky retractors posteriorly and on contralateral side
  - Allows adnexa to hang into the field
- Gather the adnexa into clamp
  - Inferomedial traction pulls IP away from ureter

ACOG and salpingectomy

- The approach to hysterectomy should not be influenced by the theoretical benefit of salpingectomy. Surgeons should continue to observe and practice minimally invasive techniques. A vaginal hysterectomy should not be changed to a laparoscopic hysterectomy simply to perform a salpingectomy.

So when does laparoscopy add to TVH?

- When the indication is pain
- When the suspicion of etiology is outside the uterus
- When simple removal of the uterus and cervix may not offer therapeutic relief

Disclosure

Contracted Research: Pelvalon, Solace Therapeutics
But....

- Hold on a minute.....

Prolapse after TVH

- Hysterectomy does not treat prolapse
- Can convert uterine prolapse into vault prolapse
- Anterior and posterior prolapse usually reflect apical support failure
- Anterior and posterior repairs (on their own) do not repair apical failures
- May compound issues

Hysterectomy is a risk factor for development of prolapse

<table>
<thead>
<tr>
<th>Mode of hysterectomy</th>
<th>Total observed</th>
<th>Total observed prolapse</th>
<th>Incidence rates*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total abdominal hysterectomy</td>
<td>114 (95)</td>
<td>114 (95)</td>
<td>0.5 % SE</td>
</tr>
<tr>
<td>Total abdominal hysterectomy</td>
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</tr>
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<td>Total abdominal hysterectomy</td>
<td>114 (95)</td>
<td>114 (95)</td>
<td>0.5 % SE</td>
</tr>
<tr>
<td>Laparoscopic assisted vaginal hysterectomy</td>
<td>83 (69)</td>
<td>83 (69)</td>
<td>0.5 % SE</td>
</tr>
</tbody>
</table>

* Based on USPSTF 2018 guidelines/10-year incidence rates

What to do in the OR to prevent prolapse after TVH

- Cruikshank randomized 100 women without prolapse at time of TVH
  - Peritoneal closure
  - Moschowitz (peritoneal closure with midline plication of USLS)
  - McCall (plication of USLS/culdesac, attachment to posterior vagina)
  - McCall significantly better at 3 years (6%, compared to 30% and 39%)
Supporting Vaginal Hysterectomy

- Education as part of MIS program
- Simulation, mentoring, support
- COEMIG – vaginal surgery now counts!
- Solicit communication/requests
- Requirement: H&P for TRH states why not a vaginal hysterectomy
- Minimize mandates for robotic volume
- Let surgeons know what their services cost
CULTURAL AND LINGUISTIC COMPETENCY

Governor Arnold Schwarzenegger signed into law AB 1195 (eff. 7/1/06) requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California's physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP).

California Business & Professions Code §2190.1(c)(3) requires a review and explanation of the laws identified above so as to fulfill AAGL's obligations pursuant to California law. Additional guidance is provided by the Institute for Medical Quality at http://www.imq.org

Title VI of the Civil Rights Act of 1964 prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 http://www.usdoj.gov/crt/cor/pubs.htm.

Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency", signed by the President on August 11, 2000 http://www.usdoj.gov/crt/cor/13166.htm was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

Dymally-Alatorre Bilingual Services Act (California Government Code §7290 et seq.) requires every California state agency which either provides information to, or has contact with, the public to provide bilingual interpreters as well as translated materials explaining those services whenever the local agency serves LEP members of a group whose numbers exceed 5% of the general population.

If you add staff to assist with LEP patients, confirm their translation skills, not just their language skills. A 2007 Northern California study from Sutter Health confirmed that being bilingual does not guarantee competence as a medical interpreter. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2078538.