Surgical Tutorial 5: Management of Vaginal Cuff Closure, Dehiscence and Apical Support

PROGRAM CHAIR
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Professional Education Information

Target Audience
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## Table of Contents

Course Description ........................................................................................................................................ 1

Disclosure ...................................................................................................................................................... 2

Incidence and Techniques to Minimize Vaginal Cuff Dehiscence
A. Ghomi .................................................................................................................................................... 3

Lessons Learned from Years of Performing Laparoscopic Hysterectomy
H. Reich ........................................................................................................................................................ 6

Minimizing Risk and Managing Vaginal Cuff Dehiscence
J.D. Kondrup ................................................................................................................................................ 7

A Basic but Effective Method to Suspend the Vaginal Cuff at Hysterectomy
K.J.E. Stepp ................................................................................................................................................. 15

Cultural and Linguistics Competency ........................................................................................................ 17
Surgical Tutorial 5: Management of Vaginal Cuff Closure, Dehiscence and Apical Support

Kevin J.E. Stepp, Chair

Faculty: Ali Ghomi, James D. Kondrup, Harry Reich

Approachable and interactive expert faculty will conduct this informative and practical session to review a rare but important complication of hysterectomy. Faculty will review the data on incidence, risk factors, route of closure, closure techniques and pathophysiology of vaginal cuff dehiscence. Discover how each faculty interprets the available data illustrated by his surgical technique. Each will present specific methods for colpotomy, vaginal cuff closure, suture choice and tricks to minimize cuff complications. All will review their post-operative instructions as well as management of this unfortunate complication when it does occur. This tutorial will also review apical support anatomy and present a basic but effective method for prophylaxis and/or mild apical vaginal prolapse.

Learning Objectives: At the conclusion of this course, the clinician will be able to: 1) Describe multiple options for creating and closing the colpotomy at the time of hysterectomy; 2) discuss the anatomic support of the upper vagina and a basic method for maintaining apical support at the time of hysterectomy.

Course Outline

12:05 Welcome, Introductions and Course Overview  
   K.J.E. Stepp
12:10 Incidence and Techniques to Minimize Vaginal Cuff Dehiscence  
   A. Ghomi
12:20 Lessons Learned from Years of Performing Laparoscopic Hysterectomy  
   H. Reich
12:30 Minimizing Risk and Managing Vaginal Cuff Dehiscence  
   J.D. Kondrup
12:40 A Basic but Effective Method to Suspend the Vaginal Cuff at Hysterectomy  
   K.J.E. Stepp
12:50 Questions & Answers  
   All Faculty
1:05 Adjourn
PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop and have no conflict of interest to disclose (in alphabetical order by last name).
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Speakers Bureau: Myriad Genetics Lab
Other: Proctor: Intuitive Surgical
Erica Dun*
Frank D. Loffer, Medical Director, AAGL*
Linda Michels, Executive Director, AAGL*
Johnny Yi*

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Speakers Bureau: Ethicon Endo-Surgery, Myriad Genetics Lab
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Harry Reich*
Kevin J.E. Stepp
Consultant: CONMED Corporation, Teleflex
Stock ownership: Titan Medical

Asterisk (*) denotes no financial relationships to disclose.
Management of Vaginal Cuff Closure, Dehiscence, Apical support

Ali Ghomi, M.D.

Sisters of Charity Hospital
Buffalo, New York

Objectives

• Review the incidence of vaginal cuff dehiscence after hysterectomy.
• Review factors that may contribute to cuff dehiscence.
• Describe and demonstrate surgical techniques to minimize cuff dehiscence.

Incidence of vaginal cuff dehiscence after hysterectomy

• Total incidence of cuff dehiscence*: 38/12,398 (0.3%), Uccella et al, Obst-Gyn 2012
  28/11,606 (0.24%), Hur et al, Obst-gyn 2011

*: not including robotic approach

Vaginal Cuff Dehiscence by mode of hysterectomy

<table>
<thead>
<tr>
<th></th>
<th>Hur et al</th>
<th>RH</th>
<th>Uccella et al</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVH</td>
<td>2/2034, 0.08%</td>
<td>17</td>
<td>6/4534, 0.13%</td>
<td>4.9</td>
</tr>
<tr>
<td>TAH</td>
<td>11/7392, 0.15%</td>
<td>9</td>
<td>9/4292, 0.21%</td>
<td>3</td>
</tr>
<tr>
<td>TLH</td>
<td>13/956, 1.35%</td>
<td>23/3573, 0.64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAWH</td>
<td>2/772, 0.28%</td>
<td>4.9</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

Cuff Dehiscence after Robotic Hysterectomy

• Most studies are relatively small in numbers
• Kho et al in 2009, 21/510 (4.1%) after RH
• 9 cases performed for Gyn Onc
• 10 cases were post coital
• Suture: two-layered running Polyglactin with LapraTy
• Monopolar spatula with 50 W setting

Disclosure

• I have no financial relationships to disclose.
Cuff Dehiscence after Robotic Hysterectomy

- Payne et al, 2010, 1/256 (0.39%)
- Multicentered RH of uteri > 250 gm
- Barbed suture not used
- Polyglactin with or without Lapra-Ty

Potential Contributing Factors to Cuff Dehiscence

- Tissue damage at the time of colpotomy
- Technique of colpotomy (instrument used, setting)
- Closure technique (width of cuff incorporated, one layer vs. two layers, interrupted vs. running sutures)
- Suture material (braided vs monofilament, barbed vs unbarbed, bidirectional vs unidirectional)

Application of Barbed suture in Cuff Closure

- Siedhoff et al 2011
- Cuff dehiscence after TLH without barbed suture:
  - 10/338 (4.2%), 6 closed with EndoStitch, 3 RTH using Vicryl, 6/10 presented with post coital bleeding
  - 0/149 Barbed, Bidirectional TLH

- Rettenmaier et al, 2015
- Retrospective analysis of 1876 TLH and RH
  - 14/1876 dehiscence, 0.75%
  - All in RH group using Vicryl
  - None in Barbed group
  - Energy modality during colpotomy and mode of hysterectomy were not prognostic factor
My technique to minimize cuff dehiscence

• Energy source for colpotomy: Harmonic energy during TLH, Monopolar Shears using one blade set at 40 Watts coag during RH.
• Avoid applying bipolar energy to the cuff.
• Incorporate 5-10 mm of vaginal wall in the suture.

References


Video, Robotic Colpotomy

Video, Robotic Cuff Closure
Management of Vaginal Cuff Closure, Dehiscence and Apical Support

• "Lessons Learned from Years of Performing Laparoscopic Hysterectomy?"
• Harry Reich
• hrlscp@aol.com

Financial Disclosure

• I have no financial relationships to disclose.

Objectives

• Discuss lessons learned from years of performing laparoscopic hysterectomies.

What is a TLH?

• Continuation of the hysterectomy process to include
• 360° culdotomy
• Cuff repair from above
• VERTICAL CUFF CLOSURE (Never horizontal)
• That’s it, folks!
• Simple, right?
• And please remember that the solution to pollution is dilution!

Dehiscence

• Electrical energy destruction
• Suture destruction: too tight and without drainage so blood clot accumulates
• Anatomical identification of fascia borderline
• Hemostasis borderline if use bulk vaginal bites
• ?

Vaginal dehiscence post TLH WHY?

• Use of sutures for hemostasis
• Strangulating sutures inhibiting tissue circulation
• Cuff closure sutures: Too much vaginal epithelium and not enough fascia.
• Poor drainage. And please, never use a drain!
• Locked sutures are a sin! Both tissue strangulation AND poor drainage.
• And if both fascia and vagina included before complete hemostasis, blood filled space expands between them. Low grade infection ensues.
• We know that when closed vaginally, the result is breakdown and resultant granulation tissue a few weeks later, treated with AgNO3 sticks.
Vaginal dehiscence post TLH
Suggestions:

- Vertical closure
- Hemostasis with micro bipolar forceps before closure
- Interrupted well spaced sutures, so good drainage
- Apply sutures through fascia and not vagina
- Sutures are for support, not hemostasis!!!
- Cuff closure sutures are for the fascia, not the vaginal epithelium
- Cuff division with electrosurgery and harmonic is much more destructive than the CO2 laser was!!
- Harmonic may be over 200° C.
- Use low voltage cutting current. Avoid coagulation current.

A vaginalist’s opinion

- Lack of preservation of the fascia.
- Vag hyst is an intrafascial hysterectomy to preserve the pericervical ring.
- TLH is done extrafascially and the mucosa is re-approximated without bringing the pericervical fascia together.
- The lack of preserving the fascia is the cause of cuff dehiscence.
- But always get granulation tissue

Does the “whole” operation just mean taking out the uterus?

Or does it include prophylactic or indicated vaginal support repair?

Confusing!

Why so much Prolapse surgery after hysterectomy?

- Should be rare if the correct approach is taken for hysterectomy!

PROLAPSE

- Yet every meeting I go to has a long session on prolapse surgery.
- I suspect INDUSTRY board rooms frequently discuss what operation to do after the uterus is out!

TAH (Richardson technique)

- Surg Obstet Gynecol, 1929
- Written in response to the problems created by supracervical hysterectomy
- The major changes in technique introduced were extrafascial removal of the entire uterus with anchoring of the anterior and posterior vaginal cuff at the corners to the uterosacral ligaments
Should Laparoscopic Hysterectomy Replace Vaginal Hysterectomy?

NO

Conclusion:
Many problems with vaginal hysterectomy can be solved by TLH. Especially if we remember the original version of TLH which included vaginal cuff suspension by laparoscopic suturing!


- 1973 to present
- 162,488 women with hysterectomy
- 470,519 without hyst
- All modes and routes of hysterectomy were associated with an increased rate of future POP surgery


- Overall risk of subsequent prolapse surgery
- Increased by 50% after TAH
- Doubled after subtotal hysterectomy
- Quadrupled after vaginal hysterectomy

**FIGURE 1**
Age specific rates of prolapse surgery within five years of hysterectomy
My conclusion (What’s wrong with this picture)

- Some bad laparoscopic surgery being done

Table 1

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number of subjects</th>
<th>Number of prolapse surgeries</th>
<th>Incidence rates*</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls</td>
<td>143,055</td>
<td>9509</td>
<td>224</td>
<td>181–167</td>
</tr>
<tr>
<td>Total abdominal hysterectomy</td>
<td>108,010</td>
<td>3401</td>
<td>252</td>
<td>241–257</td>
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<tr>
<td>Subtotal abdominal hysterectomy</td>
<td>43,005</td>
<td>1574</td>
<td>314</td>
<td>299–329</td>
</tr>
<tr>
<td>Vaginal hysterectomy</td>
<td>9119</td>
<td>396</td>
<td>408</td>
<td>404–532</td>
</tr>
<tr>
<td>Supracervical vaginal hysterectomy</td>
<td>690</td>
<td>5</td>
<td>211</td>
<td>120–296</td>
</tr>
<tr>
<td>Laparoscopic hysterectomy</td>
<td>1124</td>
<td>14</td>
<td>287</td>
<td>187–438</td>
</tr>
</tbody>
</table>

*Incidence rates calculated for 15,000 woman-years.

TAH (Richardson technique)

- Surg Obstet Gynecol, 1929
- Written in response to the problems created by supracervical hysterectomy
- The major changes in technique introduced were extrafascial removal of the entire uterus with anchoring of the anterior and posterior vaginal cuff at the corners to the uterosacral ligaments.

Hysterectomy Technique

1. Ureteral dissection
2. Bladder mobilization
3. Upper uterine blood supply
4. Lower vessel ligation
5. Circumferential culdotomy
6. Laparoscopic vaginal vault suspension

Laparoscopic Hysterectomy

- A substitute for abdominal hysterectomy
- Not for vaginal hysterectomy
TLH Steps

- Intraumbilical incision
- 2 lower abdominal lateral incisions
- Bladder flap
- Vessel ligation: 4 major vessels
- 360 degree culdotomy
- Morcellation
- Vaginal cuff suspension
- Cysto &/or ureterolysis
What is a TLH?

- There is a huge difference between closing the vagina vaginally, closing the vagina laparoscopically, and closing the vagina and its supportive ligaments laparoscopically.
- Different operations called by the same name make comparisons with other techniques and long term results impossible to distinguish.

Opinion:
Not a TLH if cuff repaired vaginally
And not a TLH if severed ligaments are left unattached
Vaginal morcellation is encouraged in TLH if the cuff is reattached from above by laparoscopic suturing

Conclusion:
Many problems with vaginal hysterectomy can be solved by TLH. Especially if we remember the original version of TLH which included vaginal cuff suspension by laparoscopic suturing!

TLH

If the ligaments are divided laparoscopically and vagina closed vaginally, it is much more difficult to identify and incorporate them into the repair.
- Likewise, suturing just the vagina closed laparoscopically, often with expensive disposable devices, does little for support.
- I predict much future prolapse from these types of surgery that certainly are not a TLH!

What is a TLH?

- Reimbursement codes do not address the most important part of the operation
- It is evident that the technique of vaginal closure is not included.
- Thus, these codes are detrimental to women having this operation.

TLH Steps

- Intraumbilical incision
- 2 lower abdominal lateral incisions
- Bladder flap
- Vessel ligation: 4 major vessels
- 360 degree culdotomy
- Morcellation
- Vaginal cuff suspension
- Cysto &/or ureterolysis
New technique addresses both posterior and anterior vagina

- Brings the anterior vagina much higher than the posterior wall.
- Can be done in a patient with a previous hysterectomy or at the same time as hysterectomy.
Objective

Discuss minimizing risk and managing vaginal cuff dehiscence.

Vaginal Cuff Dehiscence

(Evisceration: Bowel extrudes)

Can be:
- Stressful for both patient and surgeon.
- Dangerous if not handled immediately.
- Easy to repair!

Incidence:
- 0.24-0.31% but range 0.14 to 4.9%.1
- Very underreported.
- Continuous running stitch may help.2
- Barbed suture can decrease incidence.3

“Sometimes it just lands on your number and dehiscence occurs.”

Three Levels

- Partial dehiscence.
- Mucosa separated.
- Vaginal cuff dehiscence.
  - Complete separation of cuff.
- Vaginal cuff evisceration.
  - True emergency must be handled immediately.

Partial Dehiscence

- Treat vaginally - Estrogen or interrupted 0 Vicryl.

Full Thickness

- May fix vaginally.
  - Freshen edges. Use balloon technique?
  - Do laparoscopy if not sure if adhesions.
  - Use 5mm scope to start.

Summary

- Do not “over-cauterize” cuff.
- Use continuous or barbed closure.
- Close from below?
- Fix from below?
- Evisceration is emergency.

Thank You

Good Luck!
A Basic but Effective Method to Suspend the Vaginal Cuff at Hysterectomy

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Director, Advanced Surgical Specialties for Women
Chief, Urogynecology and Minimally Invasive Surgery
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Objectives

• Discuss anatomy of apical support and uterosacral ligament
• Illustrate a simple technique for uterosacral ligament suspensions

Disclosures

– Consultant Speaker
  • ConMed, Teleflex
– Stockholder
  • Titan Medical
CULTURAL AND LINGUISTIC COMPETENCY

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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.