Laparoscopic Hysterectomy

Fady W. Mansour M.D.
McGill University Health Center, Montreal, Quebec.

Disclosures

• I am participating in a trial with Inovio Pharmaceuticals Inc. on HPV.
• No other disclosures to report.

Objectives

• Review the methods for hysterectomy and current trends
  • Review and illustrate the steps to a successful laparoscopic hysterectomy
• Discuss the concept of "technicity" rate as a quality improvement indicator.
Why do women get hysterectomies?

- 9 out of 10: non-oncological causes
  - 10% for recognized malignancies and rarely, post-partum
  - Most commonly: heavy/abnormal bleeding

Approach

- Abdominal
- Vaginal
- Laparoscopic
  - Laparoscopically-assisted vaginal hysterectomy
  - Laparoscopic supracervical hysterectomy
  - Laparoscopic total hysterectomy

Rates of Hysterectomies

- ~ 47,000 annually in Canada
- 346 per 100,000 women age 20 or older (2006-2007, a decrease from 2000-2001)
  - Varies across provinces (2008-2009): ranging from a high of 512 per 100,000 women in P.E.I. to a low of 185 per 100,000 in Nunavut.
  - British Columbia had the lowest rate among the provinces, at 311 per 100,000 women.
- If all provinces achieved British Columbia’s hysterectomy rate, the difference would be an estimated 11% (3,700) fewer hysterectomies performed annually—with a cost savings of more than $19 million.
Rates by Approach

- USA in 2003 - (Wu et al. 2007)
  - 538,722 hysterectomies
  - 66% completed abdominally
- France in 2008 - (Florence Fourquet, Revue Blanche, 2010)
  - 72,000 hysterectomies
  - 39% abdominally, 49% vaginally, and 5% by laparoscopy
- Québec in 2008 (AOGQ data)
  - 9,890 hysterectomies
  - 59% abdominally, 36% vaginally, and 5% by laparoscopy

Advantages and disadvantages

<table>
<thead>
<tr>
<th>Hysterectomy procedure</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal hysterectomy</td>
<td>Rarely carried out today</td>
<td>Longest length of stay, highest rate of postoperative complications, longest recovery period</td>
</tr>
<tr>
<td>Vaginal hysterectomy</td>
<td>Shortest operating time, shortest recovery phase</td>
<td>Limited by stress and service operations, highest blood loss, arterial insufficiency of the ovaries</td>
</tr>
<tr>
<td>Laparoscopic hysterectomy</td>
<td>Least complication rate, lowest blood loss, shortest length of stay</td>
<td>Minimal vaginal bleeding post-op in 3% to 17% of patients</td>
</tr>
<tr>
<td>Laparoscopic subtotal hysterectomy</td>
<td>Possible in case of large cyst and previous operations, combination with other operations or procedures (cystectomy and incontinence surgery)</td>
<td>Long operating time and complex complications in case of change of surgical route</td>
</tr>
<tr>
<td>Total laparoscopic hysterectomy</td>
<td>Least blood loss, shortest length of stay</td>
<td>None in data</td>
</tr>
</tbody>
</table>

Hysterectomy

- The symbolic operation for gynaecological surgery, total hysterectomy, was bound to be carried out sooner or later by laparoscopy.
- Harry Reich did so in August 1989.
**Technique**

- Four trocars and a uterine manipulator
  - Significantly reduces the operating time and complication rate (usually vesical and ureteral injury) and permits a more reproducible technique.
- The technique can be broken down into 10 steps:
  1. Coagulation, section of the round ligaments;
  2. Opening in the broad ligament;
  3. Fenestration of the broad ligaments;
  4. Treatment of the adnexe;
  5. Vesico-uterine and vesico-vaginal cleavage;
  6. Isolation of the uterine pedicles;
  7. Coagulation and section of the uterine pedicles;
  8. Opening the vagina;
  9. Uterine extraction; and
  10. Closure of the vagina.

---

1) Coagulation and cutting of the round ligament

![Image 1](image1.png)

2) Opening the broad ligament

![Image 2](image2.png)
3) Fenestration of the broad ligaments

Movie
Copyright Dr. K. Jardon

4) Treatment of the adnexa

Movie
Copyright Dr. K. Jardon
5) Vesico-uterine and vesico-vaginal cleavage

6) Isolation of the uterine pedicles

7) Coagulation and section of the uterine pedicles
8) Opening the vagina
9) Uterine extraction

- Remove the specimen intact (usually uterus ≤ 250 g or 12-weeks) or with vaginal morcellation (e.g. coring, corporeal bisection and wedge morcellation)

10) Closure of the vagina

- Close the vault with intra-corporeal, extra-corporeal, vaginal suture. V-lock or barbed sutures can also be used.
Evolution…

- No significant change between 1997 and 2008 whereas more than 90% while cholecystectomy is almost always performed through laparoscopic surgery (>90%).

“Technicity”

- Concept originating in France: Technicité

\[
\text{Technicity Index (\%)} = \left( \frac{\text{Vaginal + laparoscopic hysterectomies}}{\text{Total # of hysterectomies annually in one department}} \right) \times 100
\]

- Associated with case severity and rate of complications.

- Used in France to rate hospital in terms of quality of care. The results are published annually and the best hospital in France is at 90%!

“Technicity”

- The ↑ the index, the better is the care to patients. Five parameters are used to generate a score:
  1. Operating time (shorter is better)
  2. Length of stay (shorter is better)
  3. Complication rate (lower is better)
  4. Total cost (lower is better)
  5. Post-op return to activity (quicker is better)
Operating Time

- Vaginal route: shortest
- Total laparoscopic hysterectomy: longest

Length of stay (LOS)

- Laparoscopically Assisted Supra-cervical Hysterectomy (LASH):
  - Shortest hospital stay
  - Most likely to be discharged the same day
- Abdominal hysterectomy
  - Longest hospital stay

Complications

- Complex variable to evaluate
  - Cannot simply based on incidence - too many biases
  - Minor vs. major complications
  - Immediate vs. chronic
  - Complication directly related to laparoscopy (not hysterectomy)
  - Variable surgeons’ experience and skill
- Least complications = Vaginal Hysterectomy (VH)
- Most complications = Open Hysterectomy (TAH)
### Cost
- Direct costs: OR time, instruments, length of stay
- Indirect costs: off work due to recovery time (cost to society or industry)
- Least expensive = vaginal hysterectomy (VH)
- Most expensive = open hysterectomy (TAH)

The expensive OR costs associated with LASH and TLH (disposables) are balanced by short hospital stay and quicker return to work.

Elifahm et al. Obstet Gynecol 1998;91 (1)
Thiel et al. JOGC 2006;28 (9)

### Quality of Life (QoL)
- Standardized questionnaires:
  - Immediately post-op (pain, nausea)
  - At 3 & 12 months (return to activities)
- VH, LASH, and TLH essentially identical = all better than TAH

Johnson et al. Cochrane Database Syst Review 2009
Kuipers et al. JMIG 2007; 14(2)

### Technicity Score
- 1 is poor, 2 is average, and 3 is best.

<table>
<thead>
<tr>
<th></th>
<th>VH</th>
<th>TLH</th>
<th>LASH</th>
<th>TAH</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR time</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>LOS</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Complications</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Cost</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>QoL</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>SCORE</td>
<td>14</td>
<td>11</td>
<td>13</td>
<td>7</td>
</tr>
</tbody>
</table>
Based on this score:

- When medical management fails...
- First surgical option: **VAGINAL HYSTERECTOMY**
- If it can not be done this way: **Laparoscopy**
- **Laparotomy** should be the last resort!

Bias?

- Variables difficult to control for:
  1. Surgeon’s preference and expertise
  2. Availability of equipment in the OR
  3. Patient’s co-morbidities
  4. Limitations in randomization
- The goal of the “technicity” concept is to modify our practice and **reduce the rate of abdominal hysterectomies** in patient that could benefit from the vaginal or laparoscopic approach.

Improving Technicity

- Enhance surgical exposure (vaginal)
- Encourage and support uptake of new surgical techniques (laparoscopy)
  - New trainers, access to simulation labs, preceptors, telemedicine, follow-up on technically index over time and between centres, etc...
- Offer a surgical approach based on patient’s need and characteristics - NOT on surgeon's preferences!
Conclusions

- Laparoscopic hysterectomy can be done by more gynaecologists with training and preceptorship programs.

- As a community, we must increase the rates of laparoscopic hysterectomy but not at the detriment of: 1) clinically-proven medical treatments or 2) vaginal hysterectomy (the 1st option!)

- Using the concept of “technicity”, we can audit each of our centres and encourage/advocate for further investment in MIGS.
  - “Friendly” competition among centres may help improve women’s health in Canada.

Thank you! Happy Holidays 2014!!!