Route of Hysterectomy: Clinical Implications

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Objectives

1. To review the impact of route of hysterectomy on patient outcomes, cost, and conversion using MSQC data

2. To discuss clinical considerations for selecting route of hysterectomy
Background

• Why does route of hysterectomy matter?
  – Perioperative complications
  – Conversion
  – Postoperative narcotics use
  – Cost
Background

Special Article

AAGL Position Statement: Route of Hysterectomy to Treat Benign Uterine Disease

AAGL Advancing Minimally Invasive Gynecology Worldwide

The American College of Obstetricians and Gynecologists

COMMITTEE OPINION

Number 701 • June 2017 (Replaces Committee Opinion Number 444, November 2009)

Committee on Gynecologic Practice

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists’ Committee on Gynecologic Practice in collaboration with committee members Kristen A. Matteson, MD, MPH and Samantha F. Butts, MD, MSCE.

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

Choosing the Route of Hysterectomy for Benign Disease
So how are we doing?

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Michigan Medicine</th>
<th>All MSQC Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>All MIS hysterectomy</td>
<td>80.1%</td>
<td>75.7%</td>
</tr>
<tr>
<td>Robotic</td>
<td>14%</td>
<td>52.1%</td>
</tr>
<tr>
<td>Laparoscopic</td>
<td>58.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>LAVH</td>
<td>0.45%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Vaginal</td>
<td>27.3%</td>
<td>17.7%</td>
</tr>
</tbody>
</table>
Route of hysterectomy decision-making
How do you decide which route?

- Vaginal access
- Prior pelvic surgery
- Uterine size

- Favorability score
  - Parity
  - Prior pelvic surgery
  - Uterine weight < 250 g
Favorability for vaginal hysterectomy

**Fig. 2**

Frequency of surgical approaches to hysterectomy with respect to favorability score. AH = abdominal hysterectomy; LAVH = laparoscopic-assisted vaginal hysterectomy; LH = laparoscopic hysterectomy; RH = robotic hysterectomy; VH = vaginal hysterectomy.
Favorability score at Michigan Medicine
Route of hysterectomy by weight at Michigan Medicine

Hysterectomy: Uterine Weight Breakdown
Michigan Medicine

- <100 grams
- 100 to <250 grams
- 250 to <500 grams
- >=500 grams

LEGEND
- Surgical Approach: Abdominal (%)
- Surgical Approach: Laparoscopic (%)
- Surgical Approach: Vaginal (%)
- Surgical Approach: Robotic (%)

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Robotic approach across MSQC

Hysterectomy Bundle - Robotic Approach
Benign, 01/01/2013 - 12/31/2018

LEGEND
- Other Hospitals
- Michigan Medicine
- MSQC - All
95% Confidence Interval
Benefits of robotic hysterectomy
Benefits of robotic hysterectomy

- Surgeon ergonomics
- Relative ease of suturing and knot tying
- Available training courses
Lower postoperative complications

8313 hysterectomies, 4527 robotic approach

- Rate of any postop complication lower: 3.5% vs 5.6%, P = .01
- Lower superficial surgical site infection: 0.07% vs 0.7%, P = .01
- Lower rates of blood transfusion: 0.8% vs 1.9%, P = .02
- Intraoperative bowel/bladder injury, major postoperative complications, readmissions, and reoperations similar
Lower conversion rates

Risk Factors and Outcomes for Conversion to Laparotomy of Laparoscopic Hysterectomy in Benign Gynecology

Courtney S. Lim, MD, Erika L. Mowers, MD, Nichole Mahnert, MD, Bethany D. Skinner, MD, Neil Kamdar, MA, Daniel M. Morgan, MD, and Sawsan As-Sanie, MD, MPH

• Lower conversion rates with use of robotic approach
  – 6992 women undergoing attempted laparoscopic hysterectomy
  – 3.93% (n = 275) conversion
  – Robotic assistance and high surgeon volume strongly associated with decreased conversion
  – Conversion associated with increased postoperative morbidity
Cost of hysterectomy
Hospital supply costs of vaginal hysterectomy at Michigan Medicine

- **Average cost = $314**

- **Range = $197-$1362**
Hospital supply costs of laparoscopic hysterectomy at Michigan Medicine

- Average cost = $1500

- Range = $921-$1991
Hospital supply costs of robotic hysterectomy at Michigan Medicine

- Average cost = $2391
- Range = $1806-$3315
Cost of robotic hysterectomy

- Robotic hysterectomy costs more
  - Non robotic minimally invasive routes had an average net savings of $3269 per case
  - 24% lower cost
Cost of robotic hysterectomy

Health resource utilization and costs during the first 90 days following robot-assisted hysterectomy

Vani Dandolu\(^1\) • Prathamesh Pathak\(^1\)

- Average total cost for 90 days was $16,820 for robot-assisted hysterectomy vs $13,031 for non robot hysterectomy
- 8.3% vs 4.6% of patients had more than ten outpatient visits in the 90-day follow-up period following RH vs VH
Narcotics use after hysterectomy
# Narcotics use after hysterectomy

Table 2. Surgeon Prescribing Patterns and Patient Opioid Use After Hysterectomy

<table>
<thead>
<tr>
<th></th>
<th>All Patients (N=102)</th>
<th>Laparoscopic (n=44)</th>
<th>Vaginal (n=42)</th>
<th>Abdominal (n=16)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of stay (d)</td>
<td>1 (1–3)</td>
<td>1 (1–1)</td>
<td>1 (1–1)</td>
<td>2 (2–3)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>OME prescribed at discharge</td>
<td>200 (150–250)</td>
<td>200 (200–280)</td>
<td>150 (150–200)</td>
<td>200 (200–300)</td>
<td>.005</td>
</tr>
<tr>
<td>OME used by patient in first 2 wk</td>
<td>85 (14–165)</td>
<td>70 (15–202)</td>
<td>50 (5–120)</td>
<td>100 (80–150)</td>
<td>.15</td>
</tr>
<tr>
<td>No. of patients who requested refills in first 2 wk</td>
<td>10 (9.8)</td>
<td>6 (13.3)</td>
<td>4 (9.76)</td>
<td>0 (0)</td>
<td>.31</td>
</tr>
<tr>
<td>Excess OME</td>
<td>110 (40–150)</td>
<td>112 (30–200)</td>
<td>110 (40–150)</td>
<td>105 (50–170)</td>
<td>.40</td>
</tr>
<tr>
<td>Total days of opioid use</td>
<td>5 (1–10)</td>
<td>4 (2–10)</td>
<td>4 (1–8)</td>
<td>9 (5–12)</td>
<td>.43</td>
</tr>
</tbody>
</table>

OME, oral morphine equivalent.

Data are median (interquartile range) or n (%) unless otherwise specified.

* Corresponds to Kruskal-Wallis test (continuous variables) or Wald χ² test (categorical variables).
Take home points
• High use of minimally invasive approaches across MSQC

• But we may be providing low value healthcare

• Ease of use, lower conversion, and fewer minor complications

• But no difference in major complications

• Be thoughtful about approach to hysterectomy
References

Questions?