Gyn Surgery in ASC: Achieving the Triple Aim

Jon S Nielsen MD FACOG
Maple Grove Ambulatory Surgery Center
Maple Grove, Minnesota
Premier Ob-Gyn of Minnesota
October 29, 2016
Goal of Surgical Therapy

Achieve the TRIPLE AIM--

PATIENT EXPERIENCE
OUTCOME
COST
Goal of Surgical Therapy

Achieve the QUADRUPLE AIM---

PATIENT EXPERIENCE
OUTCOME
COST
SURGEON SATISFACTION
Goals of Presentation:

• Make case for gyn surgical procedures in ASC.
• Explain rationale and safety of laparoscopic hysterectomy in outpatient setting.
• Advance strategies for gyn surgeries in ASC setting.
• Discuss ASC benefits for MIS gyn surgery in this healthcare climate.
“Not a Burning Platform, but a Huge Opportunity”
Gyn Surgery in ASC—Case Volume Low

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ASC Case/Revenue Mix

Cases & Revenue by Specialty

- % Cases
- % Revenue

Orthopedics
Endoscopy
ENT
General Surgery
Ob/Gyn
Colon & Rectal Surgery
Pain Management
Urology
Plastic Surgery
Gyn Surgeons in ASC

• Increasingly specialty focused, so “many do mainly ob or gyn”.
• Group practices including more dedicated gyn surgeons.
• Quality oriented, confident, busy surgeons perfect for ASC.
• Gyn surgeons increasingly entrepreneurial
• Gyn surgeons becoming aware of their “fiscal profile”.
ASC Surgeon Benefits

- Efficiency
- Value of patient experience
- Potential ownership
- Private practice “competitive advantage”
Patient Perspective
Patient Benefits

- Convenience
- Comfort
- Efficiency
- Cost
- Outcomes
“HUMAN experience, not simply PATIENT experience”
“Director of First Impressions”
Focus on Hysterectomy

Most common gyn surgical procedure
>500,000 done per year in US
Target of cost reduction
What hysterectomy can be done in ASC?
Surgeon’s Hysterectomy Options

- TAH
- TVH
- LAVH
- Laparoscopic hysterectomy
  - LSH (Laparoscopic supracervical)
  - TLH (Laparoscopic total)
Hysterectomy Methods

A
Number of Hysterectomies

B
Distribution of Percent Frequency

Nielsen GYN Business Consulting, LLC
Advancing Minimally Invasive Gynecologic Surgery
Hysterectomy Methods

Fig. 1. A comparison of route of hysterectomies in the United States from 2005 and 2012. Data on file from Intuitive Surgical, Inc.
MAIN MANTRA
MIS Hysterectomy

- ACOG—Vaginal Hysterectomy
- AAGL—TVH, LAVH, LH(LSH or TLH)

FUTURE PREFERENCE?

LAPAROSCOPIC HYSTERECTOMY
ACOG taking steps to increase vaginal hysterectomy rates

BY THEODORE BOSWORTH

ORLANDO – The American College of Obstetricians and Gynecologists is taking steps intended to reverse the declining rates of vaginal hysterectomy, the preferred procedure for vaginal procedures. This has an adverse impact on training, she said.

“We know that vaginal hysterectomy overall is better for women.”

The decline has been especially steep over the past 10 years, residents have performed on average 8 fewer hysterectomies, but the average number of vaginal hysterectomies has been essentially preferred route of hysterectomy for benign disease because of evidence of better outcomes and fewer complications. In an ACOG committee opinion #444 entitled “Choosing the Route of Hysterectomy for Benign Disease” (reaffirmed in 2011), laparoscopic, abdominal, and robotic.
Outpatient Vaginal Hysterectomy

Optimizing Perioperative Management for Same-Day Discharge

Mark A. Zakaria, MD, and Barbara S. Levy, MD

OBJECTIVE: To present tactics for optimizing outpatient vaginal hysterectomy and describe perioperative outcomes in a large consecutive case series.

METHODS: This is a descriptive study and review of clinical outcomes in 1,071 patients selected to undergo vaginal hysterectomy for benign indications from 2000 to 2010. The setting is a single-surgeon private practice in a community hospital. Outcome measures include length of hospital stay, estimated blood loss, operative time, uterine weight, and perioperative complications, including hospital readmissions and emergency room visits.

RESULTS: One thousand seventy-one of 1,162 cases (92%, 95% confidence interval [CI] 90.5–93.7) were total

CONCLUSION: Vaginal hysterectomy can be successfully adopted as a same-day discharge procedure. In this population, regardless of previous pelvic surgery or nulliparity, good perioperative outcomes have been achieved.

(Obstet Gynecol 2012;120:1355–61)
DOI: http://10.1097/AOG.0b013e3182732ece

LEVEL OF EVIDENCE: III

Hysterectomy is a common procedure with approximately 600,000 performed annually.¹ Both the American College of Obstetricians and Gynecologists and the American Association of Gynecologic Lapa-
Vaginal Hysterectomy

- Technically difficult in several situations
- Less able to assess the intra-peritoneal location
- Comparatively more pain
- Not always less expensive if disposables used

But, YES, TVH it can be done effectively in ASC
Adoption of Laparoscopic Hysterectomy

- Slow, spotty, regional
- Doesn’t parallel the lap chole adoption curve
- Requires surgeon confidence and experience
Laparoscopic Adoption - Procedure

Sources: 2004-2007 Thomson Reuters
Interested Parties?

- ASC’s
- Hospital systems
- Health plans
- Surgeons
- Patients
“Usual” Evolution of Hysterectomy

Where?

- Inpatient
- “Overnight stay”
- Outpatient in hospital OR
- Outpatient with overnight stay in ASC
- Outpatient in ASC
Overarching Issues With Outpatient LH

- PATIENT SAFETY
- Patient satisfaction
- Efficiency/Convenience
- Facility
- Cost
- Back-up plan
Patient Selection Is Crucial (Who Not?)

- Concomitant procedures?
- Above ASA 1 or 2
- BMI > 40
- Comorbidities
- Previous abdominal surgeries
- Uterine size and mobility
- Skilled nursing needs

“Hostile Abdomen”
Same-Day Discharge After Laparoscopic Hysterectomy

- 1015 hysterectomies
  - < 4% patients returned for emergency care
  - N&V, pain, urinary retention
  - 0.06% readmission rate at 48 hours
- Median uterine weight 155 gr, EBL 70 cc, surgical time 150 minutes

Perron-Burdick; Green Journal 2011
Feasibility and economic impact of same-day discharge for women who undergo laparoscopic hysterectomy

Maria B. Schiavone, MD; Thomas J. Herzog, MD; Cande V. Ananth, PhD, MPH; Elizabeth T. Wilde, PhD; Sharyn N. Lewin, MD; William M. Burke, MD; Yu-Shiang Lu, MS; Alfred I. Neugut, MD, PhD; Dawn L. Hershman, MD; Jason D. Wright, MD

OBJECTIVE: We examined the use, safety, and economic impact of same-day discharge for women undergoing laparoscopic hysterectomy.

STUDY DESIGN: We identified women in the Perspective database who underwent laparoscopic hysterectomy from 2000 through 2010. Discharge was classified as same-day, 1 day, and $\geq 2$ days. Multivariable models were used to examine predictors of same-day discharge, reevaluation, and cost.

RESULTS: Among 128,634 women, 34,070 (26.5%) were discharged on the day of surgery. Same-day discharge increased from 11.3% in 2000 to 46.0% by 2010 ($P < .0001$). The rate of reevaluation within 60 days was 4.0% for those discharged same day, 3.6% after a 1-day stay, and 5.1% for patients whose stay was $\geq 2$ days ($P < .0001$). In a multivariable model, patients discharged on postoperative day 1 were less likely to require reevaluation (risk ratio, 0.89; 95% confidence interval, 0.82–0.96), but costs were $207 (95% confidence interval, $179–234$) greater.

CONCLUSION: Same-day discharge after laparoscopic hysterectomy is safe and associated with decreased cost.

A randomized trial of day-case vs inpatient laparoscopic supracervical hysterectomy

Jelena Kisic-Trope, MD, MSc; Erik Qvigstad, MD, PhD; Karen Ballard, BSc, MSc, PhD

OBJECTIVE: To determine whether women having day-case laparoscopic supracervical hysterectomy are more or less satisfied with the length of hospital stay compared with women who stayed overnight after the procedure.

STUDY DESIGN: A randomized control trial of 49 women randomized to day-case or overnight hospital stay after laparoscopic supracervical hysterectomy. Satisfaction with length of hospitalization and quality of life were compared using the Mann-Whitney U test.

RESULTS: No group differences were found in satisfaction with length of hospital stay ($P = .13$). There was a nonsignificant trend toward greater anxiety in the day-case group ($P = .06$ on day 1 postoperative). Quality of life was lower in the day-case group on days 2 ($P = .02$) and 4 ($P = .03$), postoperatively.

CONCLUSION: Women having a day-case hysterectomy were discharged after median of 5 hours postoperative and were similarly satisfied as women hospitalized overnight. Quality of life, however, does appear to be compromised by day-case surgery.

Cite this article as: Kisic-Trope J, Qvigstad E, Ballard K. A randomized trial of day-case vs inpatient laparoscopic supracervical hysterectomy. Am J Obstet Gynecol 2011;204:307.e1-8.
Original Article

Comparison of Perioperative Outcomes in Outpatient and Inpatient Laparoscopic Hysterectomy

Nima Khavanin, BS, Alexei Mlodinow, BA, Magdy P. Milad, MD, Karl Y. Bilimoria, MD, and John Y. S. Kim, MD*

From the Departments of Surgery (Messrs. Khavanin and Mlodinow, and Dr. Kim), Obstetrics and Gynecology (Dr. Milad), and Division of Surgical Oncology (Dr. Bilimoria), Northwestern University Feinberg School of Medicine, Chicago, Illinois.

ABSTRACT Study Objective: To compare 30-day postoperative outcomes in outpatient and inpatient laparoscopic hysterectomy procedures.

Design: Retrospective observational study (Canadian Task Force classification II-2).

Setting: More than 250 hospitals that participate in the American College of Surgeons National Surgical Quality Improvement Program.


Intervention: Of 8846 patients, 3564 underwent treatment as outpatients, as defined by hospital billing.

Measurements and Main Results: Overall morbidity was low in both cohorts; however, significantly fewer 30-day complications were observed in outpatients (4.5%) than inpatients (7.2%) (p < .001). Individual medical and wound complications were also rare and were less common in outpatients whenever a significant difference existed. After adjusting for demographic and operative variables, multivariate regression models found outpatients to be at significantly lower risk for overall perioperative morbidity (odds ratio [OR], 0.64; 95% confidence interval [CI], 0.53–0.78). Outpatients were less likely to experience wound complications (OR, 0.63; 95% CI, 0.46–0.87) and were at lower risk of medical complications (adjusted OR, 0.61; 95% CI, 0.49–0.77) and deep vein thrombosis (adjusted odds ratio, 0.61; 95% CI, 0.47–0.80). Outpatient designation was not a significant predictor for repeat operation (p = .09).

Conclusions: Outpatient laparoscopic hysterectomy procedures are not associated with increased risk of 30-day postoperative complications. Journal of Minimally Invasive Gynecology (2013) 20, 604–610 © 2013 AAGL. All rights reserved.
## Table 4

<table>
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<th>p value</th>
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<td>0.63</td>
<td>0.52–0.77</td>
<td>&lt;.001</td>
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<td>Wound complications&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.63</td>
<td>0.45–0.87</td>
<td>.005</td>
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<tr>
<td>Medical complications&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.61</td>
<td>0.49–0.77</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Urinary tract infection&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.61</td>
<td>0.47–0.79</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Repeat operation</td>
<td>0.70</td>
<td>0.46–1.05</td>
<td>.09</td>
</tr>
</tbody>
</table>

CI = confidence interval; OR = odds ratio.

<sup>a</sup> Statistical significance <.05.
Original Article

Clinical Relevance of Conversion Rate and its Evaluation in Laparoscopic Hysterectomy

Andries R. H. Twijnstra, MD, Mathijs D. Blikkendaal, MD, Erik W. van Zwet, PhD, and Frank W. Jansen, MD, PhD*

From the Departments of Gynecology (Drs. Twijnstra, Blikkendaal, and Jansen), and Medical Statistics (Dr. van Zwet), Leiden University Medical Center, Leiden, the Netherlands.

ABSTRACT  Study Objectives: To estimate the current conversion rate in laparoscopic hysterectomy (LH); to estimate the influence of patient, procedure, and performer characteristics on conversion; and to hypothesize the extent to which conversion rate can act as a means of evaluation in LH.

Design: Prospective cohort study (Canadian Task Force classification II-2).

Setting: The study included 79 gynecologists representing 42 hospitals throughout the Netherlands. This reflects 75% of all gynecologists performing LH in the Netherlands, and 68% of all hospitals.

Patients: Data from 1534 LH procedures were collected between 2008 and 2010.

Intervention: All participants in the nationwide LapTop registration study recorded each consecutive LH they performed during 1 year.

Measurements and Main Results: Conversion rate and odds ratios (OR) of risk factors for conversion were calculated. Conversions were described as reactive or strategic. The literature reported a conversion rate for LH of 0% to 19% (mean, 3.5%). In our cohort, 70 LH procedures (4.6%) were converted. Using a mixed-effects logistic regression model, we estimated independent risk factors for conversion. Body mass index (BMI) (p = .002), uterus weight (p < .001), type of LH (p = .004), and age (p = .02) had a significant influence on conversion. The risk of conversion was increased at BMI >35 (OR, 6.53; p < .001), age >65 years (OR, 6.97; p = .007), and uterus weight 200 to 500 g (OR, 4.05; p < .001) and especially >500 g (OR, 30.90; p < .001). A variation that was not explained by the covariates included in our model was identified and referred to as the “surgical skills factor” (average OR, 2.79; p = .001).

Conclusion: Use of estimated risk factors (BMI, age, uterus weight, and surgical skills) provides better insight into the risk of conversion. Conversion rate can be used as a means of evaluation to ensure better outcomes of LH in future patients. Journal of Minimally Invasive Gynecology (2013) 20, 64–72 © 2013 AAGL. All rights reserved.

Keywords: Conversion; Evaluation tool; Hysterectomy; Laparoscopy

DISCUSS  You can discuss this article with its authors and with other AAGL members at http://www.AAGL.org/jmig-20-1-12-00275
Conversion Rate? Hospital Admission Rate?

- Reactive or Strategic
- Risk factors:
  - BMI > 35
  - Uterus > 200 gms
  - Type of LH: LAVH > TLH > LSH
  - Age > 65 yo

Twinstra: JMIG 2013
Adverse Events
Requiring Hospitalization

- LSH—myomatous uterus—600 grams
  Required open procedure for bleeding
  EBL 1500 cc
- LSH—myomatous uterus
  Required open procedure for bleeding
  EBL 400 cc
- LSH—myomatous uterus—622 grams
  Required open procedure for bleeding
  EBL 1300 cc
- LSH—myomatous uterus
  Required admission for trocar site hematoma

4 cases/455 cases = 0.088%
Outpatient Surgery Back-up Plan

- Inpatient facility in proximity
- Transfer protocol
- Emergency laparotomy instruments/setup
- Overnight stay capability
“Return within 72 hours”

2011 to Present---- none
The Paradigm has changed for the “H word”

Jon Nielsen MD
10/29/16
ASC Hysterectomy

Why?
Who?
When?
How?
Why Do It?

- Patient satisfaction
- Patient preference
- Patient convenience/comfort
Why Do It?

Patient Outcomes
- Decreased nosocomial infections
- Decreased “overmedication”
- Earlier return to normal activities
Why Do It?

Value/Cost Analysis
Why Do It?

Surgeon efficiency/convenience
Gyn Surgeons in ASC

• Increasingly specialty focused, so “many do mainly ob or gyn”.
• Group practices including more dedicated gyn surgeons.
• Quality oriented, confident, busy surgeons perfect for ASC.
• Gyn surgeons increasingly entrepreneurial
• Becoming aware of their “fiscal profile”.

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Opportunity: “Occupy a Niche”

Patients Who---

• Don’t need or want to be in hospital
• Low risk
• “Well capitalized”
• “Situation aware”
How?

• Committed patient
• Appropriate facility
• “Team commitment” of personnel
• Focus
“Strategy for Success”

- Discuss options at length.
- “Ask the patient”
- “Set expectations”
- Use “see how you do” philosophy
- “Manage family”
- Don’t give the patient a “comfortable bed”.
- Stress “peri-operative team” same messages
Patient Pathway

- Consultation
- Decision making
- Scheduling
- Pre-op preparation before center
- Pre-op preparation at center
- Procedure
- Aftercare in center
- Post op cares and follow-up
Game Plan

• Concept--- OP hysterectomy
• Management--- SMP
• Appropriate Surgeons
• Dedicated humanistic staff
• Financial acumen
Post-operative cares

• Ascertain home support and phone contact
• Stay local hotel if > 1-1 ½ hours from ASC
• Instruction sheet
• Narcotic prescription if desired
• Phone call follow-up post op day #1
Anesthesia

- ASA 1 or 2
- Patient and family history
- Manage nausea prospectively—“Scop Patch” or Zofran
- Hydration
- Oro-gastric tube
- Shorter acting drugs-- if appropriate
- “Know their surgeons”
Success With Pain Management

- Appropriate setting of expectations
- Toradol
- Local anesthetic in trocar sites
- Energy instruments that create less tissue damage
- “Knotless” suture technique
- Incision number and size
- Management of pneumoperitoneum
- Avoidance of “reflex medicating” by staff
- Consistent message concerning pain management
Post-operative cares

- Ascertain home support and phone contact
- Stay local at contiguous hotel if > 1-1 ½ hours from ASC
- Instruction sheet
- Narcotic prescription if desired
- Phone call follow up first post op day
Which Procedure?

LSH or TLH?
LSH or TLH?

- LSH
  - Easier
  - Shorter
  - Less pelvic floor issues
  - No sexuality issues
  - Earlier return to sex
  - Less operative complications

- TLH
  - More complete
  - Manages cervical path problems
  - No post op vaginal bleeding issues
  - Possibility of vault dehiscence
LSH

• Generally easiest
• Best with no fibroids– morcellation without bag may be acceptable
• Contained bag morcellation with fibroids and post menopausal status
Procedure

- **SURGICAL ASSISTANCE**
- Patient positioning
- Port sites location and number
- Tools
Tools

- **Energy**
  - Monopolar electricity
  - Bipolar electricity
  - Harmonic Energy

- **Staplers**
  - Morcellators

- **Sutures**
  - Traditional
  - Barbed sutures

- **Uterine manipulator**
Nielsen 2012—Present Hysterectomy Data

- MGASC  All 246 done as Same day surgery
- Hospitals--- 93.1% as outpatient
- MIS--- 97.3% done Laparoscopically
“Laparoscopic Hysterectomy: The Harmonic and Barbed Suture Technique”

Jon Nielsen MD FACOG
Cost Variables

- Inpatient
- Outpatient
- Overnight stay (23:59)
- “Outpatient in a bed”
Operations Cost Variables

- Length of surgery (15 minute increments)
- Disposable instruments
- Surgical Assistant factor
- HR cost based on operational efficiencies
  - Room turnover
  - Cross training
Business Intelligence

- Constructive use of clinical, operational, and cost data to improve performance of ASC
- “Reporting to Analytics”
  - Turnover data
  - Material management
  - Time Attendance
  - Block utilization
  - Case selection
  - Surgeon selection
Cost Variables

- Profit margins favorable for both LSH and TLH
- Expenses usually higher with LSH (disposables vs. time considerations), but profit margins similar
Cost of OR Time

- The length of case has great impact on total cost of procedure.
- AAGL 2011 presentation of 1066 consecutive hysterectomies in 2009 by Wright et al:

92% of total operative charges were based on OR time of procedure

Only 6% derived from disposable equipment.
Room Turnover

Jawari: Analytics at Surgical Information Systems 2015
Daily Room Turnover

Jawari: Analytics at Surgical Information Systems
2015
Turnover

Figure 1: Graph displays average room turnover minutes trended by month for multiple years. This representation of average turnover minutes displays performance gaps and how this metric is changing over time. However, it does not present a clear action for change to improve turnover.
### EdgePerception Performance Analysis Report, Jun2016

**NIELSEN, JON S., MD - Scores for 5 Survey[s] Returned This Period**

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<td>96.8</td>
<td>97.2</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>P13</td>
<td>Nursing care prior to surgery</td>
<td>100.0</td>
<td>96.3</td>
<td>97.2</td>
<td>2.8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Personal</th>
<th>Provider's Name</th>
<th>Current Qtr Score</th>
<th>Facility's Overall Score</th>
<th>Prior Qtr Score</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>A02</td>
<td>Pain level control</td>
<td>95.0</td>
<td>94.0</td>
<td>86.1</td>
<td>8.9</td>
<td></td>
</tr>
<tr>
<td>A03</td>
<td>Adequacy of recovery time in facility</td>
<td>95.0</td>
<td>92.7</td>
<td>93.3</td>
<td>11.7</td>
<td></td>
</tr>
<tr>
<td>D09</td>
<td>Respect for privacy</td>
<td>100.0</td>
<td>95.8</td>
<td>98.9</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>D10</td>
<td>Confidence in care received</td>
<td>100.0</td>
<td>95.3</td>
<td>97.2</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>D02</td>
<td>Recommend facility</td>
<td>100.0</td>
<td>95.0</td>
<td>94.4</td>
<td>0.6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Process</th>
<th>Provider's Name</th>
<th>Current Qtr Score</th>
<th>Facility's Overall Score</th>
<th>Prior Qtr Score</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>A04</td>
<td>Understood discharge instructions</td>
<td>95.0</td>
<td>92.6</td>
<td>92.6</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>D08</td>
<td>Family information during the visit</td>
<td>100.0</td>
<td>94.6</td>
<td>94.4</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>L99</td>
<td>Delay notification</td>
<td>100.0</td>
<td>93.2</td>
<td>91.7</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>P03</td>
<td>Instructions prior to surgery</td>
<td>100.0</td>
<td>91.5</td>
<td>91.7</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>P08</td>
<td>Wait time</td>
<td>100.0</td>
<td>93.6</td>
<td>94.4</td>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>
Q3: I was pleased with the overall outcome of my surgery.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSH</td>
<td>97.25</td>
<td>2.75</td>
</tr>
<tr>
<td>TLH</td>
<td>96.25</td>
<td>3.75</td>
</tr>
</tbody>
</table>
Costing Factors

• Total cost?
• Include staff costs?
• Include fixed overhead?
• Include measure of OR procedure duration?
MGASC Hysterectomy
Finance

• Profit margin– 40-50%
• Avg cost (w/o anesthesia, path, or fixed OR expenses)
  LSH $1650
  TLH $1200

• Hospital cost average: ???
Costs and reimbursement vary tremendously by site of service.

Hospital IP
HOPD
ASC
Cost of Laparoscopic Hysterectomy

- Same day surgery group -- $5236
- One day stay -- $5642
- Two or more day stay -- $7021

Schiavone: Am J Obstet-Gynecol; Nov 2012
HOPD vs. ASC Reimbursement

- HOPD rates are used to set ASC allowables
- CMS is basically endorsing hysterectomy safety as outpatient procedure, so—

- Will HOPD go down, or ASC rates go up?
### ASC vs. HOPD Statistics

<table>
<thead>
<tr>
<th>Procedure Description</th>
<th>2015 HOPD</th>
<th>2016 HOPD</th>
<th>ASC</th>
<th>ASC % of HOPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure of vagina</td>
<td>$3660.20</td>
<td>$3660.20</td>
<td>$1809.89</td>
<td>49.45%</td>
</tr>
<tr>
<td>Urethrovaginal lesion repair</td>
<td>$5113</td>
<td>$5698.95</td>
<td>$2476.18</td>
<td>43.45%</td>
</tr>
<tr>
<td>Vag hyst</td>
<td>$3995</td>
<td>$3660.20</td>
<td>$1809.89</td>
<td>49.45%</td>
</tr>
<tr>
<td>Vag hyst with t/o</td>
<td>$4524</td>
<td>$3660.30</td>
<td>$1809.89</td>
<td>49.45%</td>
</tr>
<tr>
<td>LSH uterus &gt; 250g</td>
<td>$6478</td>
<td>$6860.91</td>
<td>$3277.62</td>
<td>47.77%</td>
</tr>
<tr>
<td>LSH uterus &gt; 250g with t/o</td>
<td>$7164</td>
<td>$6860.91</td>
<td>$3277.62</td>
<td>47.77%</td>
</tr>
<tr>
<td>LAVH complex</td>
<td>$6600</td>
<td>$6860.91</td>
<td>$3277.62</td>
<td>47.77%</td>
</tr>
<tr>
<td>LAVH complex</td>
<td>$6254</td>
<td>$6860.91</td>
<td>$3277.62</td>
<td>47.77%</td>
</tr>
</tbody>
</table>
Medicare (CMS) rates

- 2014—Reimbursement 81% higher in HOPD than ASC
- OIG recommended that CMS lower HOPD rates to level of ASC rates
- 2% decrease in annual payment if don’t report quality statistics
Finance

Payor awareness can drive business
Less cost
Better outcomes
Satisfied patients
Finance

• Operational efficiencies can drive business
  Less infrastructure
  Less “paperwork”
  Faster “turnover”
  Efficiency by repetition
  Easier to standardize instruments and devices

• Leads to:
  Surgeon recruitment
  “Center of Excellence” by default
DaVinci vs “Straight stick” LH

- Cost
- Complications/Adverse events
- Surgical time
- Port size, location, hernias, and closure
- Public/Media opinions

- Feasible in an ASC?
Hysterectomy Cost Savings

- Laparoscopic hysterectomy vs. Robotic hysterectomy
  - Less cost for laparoscopic procedure:
    - shorter operative time
    - shorter length of stay

Wright: AJOG 2014
Impact of Individual surgeon volume on hysterectomy cost

<table>
<thead>
<tr>
<th>Laparoscopic hysterectomy</th>
<th>Robotic hysterectomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Decreased 0-22</td>
<td>• Increased 0-18</td>
</tr>
<tr>
<td>• Increased 22-74</td>
<td>• Decreased 18-73</td>
</tr>
<tr>
<td>• Decreased &gt;74</td>
<td>• Increased &gt;74</td>
</tr>
</tbody>
</table>

Shepherd: JMI G 2015
Robotic and Laparoscopic Hysterectomy Cost by Surgeon Case Volume
Other Appropriate Gyn Procedures in ASC

- Urogynecology
  - Slings
  - Interstim
- Benign Gyn Procedures
  - Laparoscopy
  - Hysteroscopy
  - Vacuum curettage
  - Vaginal procedures
Interstim Profitability in ASC

- Peripheral Nerve Evaluation (PNE)
  - Reimbursement: $19,915
  - Cost: $16,190
  - Profit: $3,725
  - Margin: 18.7%

- Stage 1 and 2
  - Reimbursement: $
  - Cost
  - Profit
  - Margin
Mid Urethral Sling at MGASC

“Profit margin” 57%
USI and POP

• Mid urethral sling
• Cystocele
• Rectocele
MGASC TLH Profit Margin 2011-2013

- 76 consecutive TLH patients
- Not including fixed expenses, path, and anesthesia services
- $3,152 average revenue/case
- $1,155 average cost/case

Profit margin 63.3%
TLH at MGASC

2014-2016

“Profit margin” 72%
ASC vs. HOPD
Reimbursement

<table>
<thead>
<tr>
<th>Year</th>
<th>ASC Reimbursement as a Percentage of HOPD Reimbursement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>87 percent</td>
</tr>
<tr>
<td>2008</td>
<td>63 percent</td>
</tr>
<tr>
<td>2009</td>
<td>59 percent</td>
</tr>
<tr>
<td>2010</td>
<td>58 percent</td>
</tr>
<tr>
<td>2011</td>
<td>56 percent</td>
</tr>
</tbody>
</table>
## 4.10 Revenue per Case

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Gross Charges</th>
<th>Net Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT</td>
<td>$7,847</td>
<td>$1,849</td>
</tr>
<tr>
<td>GI / Endoscopy</td>
<td>$3,610</td>
<td>$788</td>
</tr>
<tr>
<td>General Surgery</td>
<td>$6,152</td>
<td>$1,795</td>
</tr>
<tr>
<td>OB/GYN</td>
<td>$7,001</td>
<td>$2,081</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>$6,097</td>
<td>$1,273</td>
</tr>
<tr>
<td>Oral Surgery</td>
<td>$3,194</td>
<td>$1,026</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>$9,874</td>
<td>$2,618</td>
</tr>
<tr>
<td>Pain Management</td>
<td>$4,106</td>
<td>$840</td>
</tr>
<tr>
<td>Plastic</td>
<td>$7,419</td>
<td>$1,696</td>
</tr>
<tr>
<td>Podiatry</td>
<td>$7,969</td>
<td>$1,893</td>
</tr>
<tr>
<td>Urology</td>
<td>$7,498</td>
<td>$1,788</td>
</tr>
<tr>
<td>Other</td>
<td>$5,853</td>
<td>$1,582</td>
</tr>
</tbody>
</table>

- **Net Revenue**
- **Gross Charges**
4.9 Payor Mix as a Percent of Gross Charges

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Dev.</th>
<th>25%</th>
<th>Median</th>
<th>50%</th>
<th>75%</th>
<th>90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>24%</td>
<td>13%</td>
<td>14%</td>
<td>24%</td>
<td>34%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>6%</td>
<td>7%</td>
<td>1%</td>
<td>3%</td>
<td>7%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>57%</td>
<td>15%</td>
<td>48%</td>
<td>58%</td>
<td>67%</td>
<td>76%</td>
<td></td>
</tr>
<tr>
<td>Worker’s Comp</td>
<td>5%</td>
<td>6%</td>
<td>1%</td>
<td>4%</td>
<td>7%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Self Pay</td>
<td>3%</td>
<td>5%</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Other Pay</td>
<td>8%</td>
<td>11%</td>
<td>1%</td>
<td>4%</td>
<td>10%</td>
<td>22%</td>
<td></td>
</tr>
</tbody>
</table>

Average Payor Mix

- Medicare
- Medicaid
- Commercial
- Worker’s Comp
- Self Pay
- Other Pay

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>57%</td>
<td>15%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>Commercial</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Worker’s Comp</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Self Pay</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>Other Pay</td>
<td>22%</td>
<td>10%</td>
</tr>
</tbody>
</table>

- **Mean**
- **Standard Dev.**
### Revenue per Case

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Gross Charges</th>
<th>Net Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT</td>
<td>$7,433</td>
<td>$1,761</td>
</tr>
<tr>
<td>GI / Endoscopy</td>
<td>$3,517</td>
<td>$778</td>
</tr>
<tr>
<td>General Surgery</td>
<td>$6,058</td>
<td>$1,689</td>
</tr>
<tr>
<td>OB / GYN</td>
<td>$6,788</td>
<td>$1,953</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>$5,708</td>
<td>$1,267</td>
</tr>
<tr>
<td>Oral Surgery</td>
<td>$3,464</td>
<td>$1,078</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>$9,398</td>
<td>$2,585</td>
</tr>
<tr>
<td>Pain Management</td>
<td>$4,103</td>
<td>$955</td>
</tr>
<tr>
<td>Plastic</td>
<td>$6,738</td>
<td>$1,516</td>
</tr>
<tr>
<td>Podiatry</td>
<td>$7,574</td>
<td>$1,871</td>
</tr>
<tr>
<td>Urology</td>
<td>$6,484</td>
<td>$1,639</td>
</tr>
<tr>
<td>Other</td>
<td>$6,688</td>
<td>$1,718</td>
</tr>
</tbody>
</table>

*Source: VMG Health 2011 Intellimarker*
9. **ASC specialty revenues.** Specialty net revenues per case, according to the VMG Health's *2012 Intellimarker Ambulatory Surgical Center Financial & Operational Benchmarking Study*, can be seen for several specialties in the following chart:

Net revenue by specialty

- ENT: $1,849
- GI/endoscopy: $788
- General surgery: $1,795
- OB/GYN: $2,081
- Ophthalmology: $1,273
- Oral surgery: $1,026
- Orthopedics: $2,618
- Pain management: $840
- Plastic surgery: $1,696
- Podiatry: $1,893
- Urology: $1,788

The number can be heavily influenced by sample size, and several factors such as out-of-network considerations.
### RVU’s for Laparoscopic Hysterectomy

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>RVU's 2011</th>
<th>RVU's 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>58541</td>
<td>LSH &lt;250gms</td>
<td>23.26 RVU’s</td>
<td>20.30 RVU’s</td>
</tr>
<tr>
<td>58543</td>
<td>LSH &gt;250gms</td>
<td>26.43 RVU’s</td>
<td>23.48 RVU’s</td>
</tr>
<tr>
<td>58570</td>
<td>TLH &lt;250gms</td>
<td>25.02 RVU’s</td>
<td>22.08 RVU’s</td>
</tr>
<tr>
<td>58572</td>
<td>TLH &gt;250gms</td>
<td>31.06 RVU’s</td>
<td>28.96 RVU’s</td>
</tr>
<tr>
<td>58150</td>
<td>TAH</td>
<td>26.91 RVU’s</td>
<td>28.86 RVU’s</td>
</tr>
<tr>
<td>58263</td>
<td>TVH</td>
<td>26.96 RVU’s</td>
<td>28.01 RVU’s</td>
</tr>
</tbody>
</table>
Cost Variables– Patient Perspective

- Procedure
- Location
- Hospital
- Surgeon
- Insurance
- Copay
- Deductible
Price Transparency

• Valuable innovation in healthcare finance.
• Patients “shopping”
• Health plans “shopping”.

Should benefit ASC
Patient Savings with ASC

- Blue Cross Blue Shield Analysis 2014
- Savings of $483 by being in ASC instead of hospital
“You are being bundled already whether you know it or not”

Jon Nielsen MD

10/29/16
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilation and curettage</td>
<td>$1,600</td>
</tr>
<tr>
<td>Hysterectomy, laparoscopic</td>
<td>$8,000</td>
</tr>
<tr>
<td>Hysteroscopy</td>
<td>$2,500</td>
</tr>
<tr>
<td>Lysis of adhesions during laparoscopy</td>
<td>$5,865</td>
</tr>
<tr>
<td>Ovarian cystectomy</td>
<td>$5,100</td>
</tr>
<tr>
<td>Ovary lesion removal, laparoscopic</td>
<td>$5,865</td>
</tr>
<tr>
<td>Ovary removal</td>
<td>$5,865</td>
</tr>
<tr>
<td>Uterine hysteroscopy / ablation</td>
<td>$3,800</td>
</tr>
</tbody>
</table>
Bundled Payments

- “Episode based payments”
- “Packaged pricing”
- Single payment based on expected costs for clinically-defined episodes of care
- To achieve economies of scale
- Two models: Cash pay or third party payers
“Hypothetical”

- Cost Inpatient: $8,000
- Cost ASC: $2,000

- What would payer do if you could agree to move more cases to ASC?
- Why wouldn’t payer agree to send more cases to you in ASC setting?
- Why wouldn’t you want to work/own in an ASC?
“Technological advances, which are followed by long periods of catch-up while clinicians learn how to use the new techniques appropriately, often precede true medical progress”

Nezhat; NEJM 1988
Hysterectomy Metrics

Achieve the TRIPLE AIM--

PATIENT EXPERIENCE
OUTCOME
COST
“Technological advances, which are followed by long periods of catch-up while clinicians learn how to use the new techniques appropriately, often precede true medical progress”

Nezhat; NEJM 1988
Suggestions

- Prepare ASC for addition of gyn surgeries
- Recruit skilled, interested, entrepreneurial surgeons
- When more mature, consider bundling initiatives
Advice for Surgeons

• Standardize
• Be predictable
• Have good help, pay for efficiency
• Be a cost steward
• Help with efficiency
• Give tutorials.
Why Aren’t We Doing More Gynecologic Surgery in the ASC Setting?

“We Should Be”
Nielsen GYN Business Consulting, LLC
Advancing Minimally Invasive Gynecologic Surgery

Jon Nielsen, MD, FACOG
President
3245 Carman Rd.
Excelsior, MN 55331 612-309-7957
JonNielsen@gmail.com
jonnielsenmd.com
Reflections?, Questions?, Criticisms?

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Nielsen Gyn Business Consulting LLC