Robotic Surgery in Gynecology: After the Learning Curve (Didactic)

PROGRAM CHAIR
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John P. Lenihan, MD  Thomas N. Payne, MD  Charbel G. Salamon, MD
Professional Education Information

Target Audience
Educational activities are developed to meet the needs of surgical gynecologists in practice and in training, as well as, other allied healthcare professionals in the field of gynecology.

Accreditation
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PG 203
Robotic Surgery in Gynecology: After the Learning Curve (Didactic)

Michael C. Pitter, Chair
Faculty: John P. Lenihan, Thomas N. Payne, Charbel G. Salamon

Course Description

This course provides a detailed review of the implementation of robotic-assisted laparoscopy using the da Vinci surgical system pertinent for surgeons who now are using or planning to use this technology. Lectures will follow a surgical tutorial based format by way of extensive surgical videos and possibly a 3-D projection system with a strong focus on robot-assisted hysterectomy, myomectomy, reproductive surgery and pelvic reconstructive as well as radical pelvic surgery. Techniques as well as clinical outcomes will be presented by experts in the field.

The course will be divided into a half-day morning session with the option of an additional afternoon half-day, hands-on cadaveric experience for a limited number of participants on a first come, first served basis. Experienced faculty will provide additional procedure based instruction. Participants are encouraged to list their surgical experience with robotic surgery so that they may be grouped appropriately to optimize this hands-on practicum. Pre-recorded videos of unedited robotic surgical cases will also be incorporated in the afternoon session.

Learning Objectives

At the conclusion of the course, the clinician will be able to: 1) Identify algorithms for OR efficiency when incorporating new technology; 2) assess the surgical techniques and challenges associated with operating in the frozen pelvis without haptics; 3) review pertinent clinical case scenarios and outcomes in order to avoid and manage complications; 4) apply the skills necessary to perform robotic assisted hysterectomy, myomectomy and pelvic reconstructive surgery while minimizing conversions; 5) assess the role of virtual reality simulation as a training tool; and 6) identify patients who would most likely benefit from robotic-assisted gynecologic surgery.

8:00 Welcome, Introduction and Course Overview M.C. Pitter
8:05 Tips and Tricks for OR Efficiency T.N. Payne
8:30 Navigating the Frozen Pelvis without Haptics M.C. Pitter
8:55 How to Manage Complications with Robotic Surgery T.N. Payne
9:20 Where Does Robotics Fit into the Algorithm for Management of Pelvic Organ Prolapse? C.G. Salamon
9:45 Questions & Answers All Faculty
9:55 Break
10:10 Robotic Laparoscopic Hysterectomy: Managing the Complex Cases and Avoiding Conversions J.P. Lenihan
10:35 Pregnancy Outcomes after Robotic Myomectomy M.C. Pitter
11:00 Maintenance of Credentials in Gynecologic Robotic Surgery; Minimizing Complication Rates
J.P. Lenihan

11:25 The Rose of Simulation as a Training
C.G. Salamon

11:50 Questions & Answers
All Faculty

12:00 Course Evaluation
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).
Art Arellano, Professional Education Manager, AAGL*
Viviane F. Connor
Consultant: Conceptus Incorporated
Frank D. Loffer, Executive Vice President/Medical Director, AAGL*
Linda Michels, Executive Director, AAGL*
Jonathan Solnik
Other: Lecturer - Olympus, Lecturer - Karl Storz Endoscopy-America

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Consultant: Bayer Healthcare Corp., Conceptus Incorporated, Ferring Pharmaceuticals
Speaker’s Bureau: Bayer Healthcare Corp., Conceptus Incorporated, Ferring Pharm
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Stock Shareholder: TransEnterix
Speaker’s Bureau: Covidien, Abbott Laboratories
Other: Proctor - Intuitve Surgical

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The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
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John P. Lenihan
Grants/Research Support: Teva Pharmaceuticals
Consultant: Ethicon Women’s Health & Urology
Speaker’s Bureau: Intuitve Surgical, Ethicon Women's Health & Urology
Other: Proctor - Intuitive Surgical
Thomas N. Payne
Consultant: Intuitive Surgical
Speaker's Bureau: CooperSurgical, Intuitive Surgical
Charbel G. Salamon
Grants/Research Support: American Medical Systems
Consultant: American Medical Systems, Intuitive Surgical
Antonio Rosario Gargiulo*

Asterisk (*) denotes no financial relationships to disclose.
**Robotic Operating Room Efficiency**

Tips and Tricks

- Thomas H Payne, MD
  Medical Director
  Texas Institute for Robotic Surgery

- Consultant: Intuitive Surgical
- Speaker’s Bureau: CooperSurgical, Intuitive Surgical

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**3 Objectives**

- Train administrative & clinical teams how to succeed in robotics
- Improve operating room efficiency through standardization
- Maintain patient safety while building robotic excellence

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**Champions...of the World!**

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**Disclosure**

- Consultant: Intuitive Surgical
- Speaker’s Bureau: CooperSurgical, Intuitive Surgical

---

**Mission**

- Collective Intelligence
- Best Practices in the robotic environment
- Utilized to launch and develop success
• Create Leadership Team
• Define Roles and Responsibilities
• Align goals

Core Structure

Leadership

Communication

Standardization

Cross-functional
• Pre-, intra- and post-operative

• Create Pick lists
• Outline daVinci System
• Determine location of ancillary procedure products

Pick Lists-Standardized

Ancillary Equipment-Standardized

Robotic Instruments-Standardized

Room Setup-Standardized

OR 8

OR 11 & 12

Genesis Core Principles
Dedicated Operating Room Efficiency Model

- Parallel Tasking (Task Overlap)
- Internal (Pt out) → External (Pt in)
- Trigger Points

Dedicated Efficiency Model

Maximizing Workflow

Thomas N. Payne, MD
Medical Director
Texas Institute for Robotic Surgery

History Of Workflow

- Henry Ford
  - 1913 - “Flow Production”
  - First Integrated Production Process
  - Lacked Variety
  - Excess Inventory

History Of Workflow

- Kiichiro Toyoda
  - 1930 - “Continuous Workflow”
  - Increased Variety
  - Decreased Excess Inventory
  - Toyota Production System
History Of Workflow

- 1980's
  - Motorola
  - Defects 3.4/Million
  - 16 Billion Saved
- 1990's
  - Toyota Prod System
  - Manufacturing
  - Healthcare

SIX SIGMA LEAN

Bad News

WORKFLOW IS A UNIVERSAL PROBLEM 😞

Good News

TALENT IS THE UNIVERSAL SOLUTION 😊

Solutions!

Kaiser Permanente-OR Benchmarking

"Instead of giving perioperative managers sole responsibility for improving OR efficiency...we encouraged collaboration among surgeons, anesthesia and OR staff...a multidisciplinary problem solving approach.....which has led to successful clinical and economic benefits."

Kaiser Permanente-OR Best Practices

- Multidisciplinary Collaboration
- On Time Starts
- Overlapping Turnover Times
- Accurate Procedure Cards
- Routine Block Reallocation
- Scheduling Guidelines
- Streamlined Preop Process
- All Day Block Time
- OR Committee
- OR Director-Physician
Multidisciplinary Collaboration

- Robotic Steering Committee
- Core Anesthesia Group
- First Assist-Scrub Tech Group
- Circulator Group
- Preop Group

On Time Start Plateau

Turnover Time Plateau

Circulator – Room 11

Circulator – Room 8

CRNA

CRNA #1

CRNA #2
Summary: CST/CRNA/CIRCULATOR

- Streamlined Per Specialty
- Streamlined Per Surgeon
- Surgeon Involvement
- “Everything You Need”
- Avg Case Savings: 18%
- Est Total Savings: 500K

Surgeon Procedure Cards

Ditto...

Block Time Reallocation

Utilization Trends
Scheduling Guidelines

- One Call... That's All!
- Scheduler FAQ's
- Office – Surgeon Notification

Simplify

ONE CALL THAT'S ALL
AVOID DELAYS • AVOID HASSLE

Office – Surgeon Notification

Update

Frequently Asked Questions When Scheduling

- Time
- Money ($100/min)

Variability: 

Standardization:

Win-Win-Win

- Time – Money ($100/min)
- Variability: Time
- Cost
- Pt Safety
- Standardization: Time
- Cost
- Pt Safety
Win-Win-Win

- Culture: Respect & Accountability
- Improved Work Environment
- Improved Patient Care
- Improved OR Income

Summary

- On Time Starts
- Overlapping Turnover Times
- Accurate Procedure Cards
- Routine Block Reallocation
- Scheduling Guidelines
- Streamlined Preop Process
- All Day Block Time
- OR Committee
- OR Director-Physician
- Multidisciplinary Collaboration

SOLUTION

PROCESS

THANKYOU

Jezy’s ongoing struggle with obsessive-compulsive disorder
Navigating the Frozen Pelvis without Haptics

Michael C Pitter, MD, FACOG
Director of Minimally Invasive and Gyn Robotic Surgery
Newark Beth Israel Medical Center
Newark, New Jersey

Objectives

• Discuss the limitations of robotic surgery.
• Review strategies for overcoming those limitations.
• Demonstrate the benefit of the 4th arm for managing complex pathology.

Disclosures

• Speaker’s Bureau: Intuitive Surgical

Obstacles to MIS

• Surgical Field
  • Distorted Anatomy
  • Complex Pathology
  • Large Uterus
• Obesity
• Instrumentation
• Learning Curves
• Surgeon Experience/ Comfort Level
• Training

Port Placement
Knowledge of Pelvic Anatomy

How is it Done?

- Try to set the camera 10 cm above fundus.
- Game plan for delivering the uterus.
- Side Docking.
- Think out of the box.

Optimizing the use of the da Vinci 4 arm System

- Place the 4th arm on your dominant side.
- Try to keep all instruments in view but avoid tunnel vision.
- You are your best assistant (but don’t get in your way).
- Think open surgery not rigid straight stick laparoscopy.
- When swapping, move the other instruments out of the way.
- Clutch and swap as often as necessary.
- 4th instrument arm is primarily used for retraction and exposure
- 4th instrument is your suturing assistant.

Summary

- Da Vinci platform is merely a tool...a means to an end.
- Robotic surgery does not create a skilled surgeon or guarantee better outcomes.
- May allow surgeons to address more complicated pathology in a minimally invasive fashion.
- When using the 4th arm don’t just use the robot - Be The Robot
Complications and Management

Objectives

- Identify steps to correct cystotomy
- Identify steps to correct bowel injury
- Identify steps to correct vascular injury

Complication ≠ Conversion

- Cystotomy
- Bowel Injury
- Intraop Bleed

Cystotomy

- Indigo Carmine
- Intraoperative Cystoscopy
- Ureter Efflux
- Two Layer Closure
- Water Test
- Foley Plus Antibiotics
**Bowel Injury**

- Perpendicular Closure
- Imbricating Suture
  - 3-0 Vicryl
  - 3-0 Silk

**Intraoperative Bleed**

- Local Pressure
- Clip Applier
- Floseal-Evicel
- Vascular Surgery Consult

**Easy, man!!!**
Where does robotics fit into the algorithm for management of pelvic organ prolapse?

Charbel G Salamon, MD, MS, FACOG
Urogynecology & Pelvic Reconstructive Surgery
Director of Gynecologic Robotic Surgery
Atlantic Health System, Morristown & Summit, NJ

Grants/Research Support: American Medical Systems
Consultant: American Medical Systems, Intuitive Surgical

OBJECTIVE

• At the conclusion of this activity, the participant will be able to:
  – List the indications for robotics in the surgical repair of pelvic floor disorders
  – Identify the key steps of a robotic sacrocolpopexy
  – List the various applications of robotics for the surgical repair of pelvic floor defects

Lifetime Risk of a Single prolapse or incontinence Operation by Age Group

Lifetime Risk of a Single prolapse Operation by Age Group in Australia 2005

PELVIC ORGAN PROLAPSE

APICAL DEFECT (Uterus or vaginal vault)
ANTERIOR DEFECT (Bladder)
POSTERIOR DEFECT (Rectum)
The problem is at the Apex!

In 58% of anterior defects

Up to 30% of posterior defects

The apical component of prolapse explains the shortcomings of traditional repairs

- 29-40% of reconstructive procedures require surgical re-intervention for failure within 3 years
  - 60% of recurrences are at the same site
  - “Cystocele” most frequent recurrent site 72%
  - 32.5% occur at a different site due to unmasking of an occult support defect

1. Olson AL et al, Obstetrics and Gynecology 1997; 89:501-6

Robotic Apical Support Procedures

Sacrocolpopexy

Uterosacral ligament suspension

Sacrocolpopexy

- Proximal aspect of mesh sutured to anterior longitudinal ligament at sacral promontory
- Anterior portion of mesh down to within 1 cm from trigone
- Posterior portion of mesh to within 1 cm from perineal body

Sacrocolpopexy

Comprehensive literature review (38 years) of Abdominal Sacrocolpopexy
- “Success” 78-100%
- Poor outcomes with endogenous, donor fascia and xenografts
- Overall synthetic mesh erosion rates:
  - Polytetrafluoroethylene PTFE (Teflon) 3.4%
  - Polyethylene (Marlex) 5.0%
  - Expanded PTFE (Gore-Tex) 3.4%
  - Polypropylene 0.5%
  - Newer lighter polypropylene structure ??

Sacrocolpopexy: our results

2 prospective studies: a total of 270 patients

- Restoille Y mesh: 120 patients with 12 months follow up
- Alyte Y mesh: 150 patients with 12 months follow up

Combined clinical cure 94 to 98%.

Conclusions

- Robotic Sacrocolpopexy is the go to procedure
- Robotic Uterosacral suspension is an acceptable alternative in select patients
- The pelvic surgeon should be well versed in multiple approaches to prolapse repair

References

Robotic Hysterectomy: Managing the Complex Cases and Avoiding Conversions

John P. Lenihan Jr., MD
Medical Director for Robotics and MIS
MultiCare Health Systems, Tacoma WA
Clinical Assistant Professor, OB-GYN
University of Washington School of Medicine

Disclosure

- Grants/Research Support: Teva Pharmaceuticals
- Consultant: Ethicon Women’s Health & Urology
- Speaker’s Bureau: Intuitive Surgical, Ethicon Women’s Health & Urology
- Other: Proctor - Intuitive Surgical

My Toughest Robotic Hysterectomy Ever

- 44YO, BMI: 48
- Prior Abd. Myomectomy, Gastric Bypass, C-Sections x’s 2, Ectopic
- 488 Gram uterus

Outcome:

- 4 hours
- Overnight Stay
- 2 weeks: cuff seroma
- 4 weeks: RTW as bus driver
- 8 weeks: 😊

How to Prepare???

- Pre-op Planning is crucial!
- Know when to refer
  - Can’t sleep
  - Worried beyond normal
  - Previous surgery
  - Many risk factors
  - Anticipate likely conversion

Most Common Reasons to Convert

- More difficult than anticipated
- Too Large
- Too many Adhesions
- Unsure of anatomy
- Poor trocar placement
- Poor assistance
- Anesthesia issues
- Being uncomfortable with a retroperitoneal dissection
- Intraoperative fear of causing injury
- Frustration with exposure
- Intraoperative fear of causing injury
Primary Issue Is Usually: Poor Exposure

Morbid Obesity: What is the Concern?

- Many studies have quantified increased difficulties and poor outcomes with surgery performed on obese women when compared to normal weight women.

1. Vaginal Hysterectomy in Obese Women, Pitkin RM, Obstet Gynecol May 1977 49(5)

What are the attributes of the ideal surgical technique for an obese patient?

- It would allow excellent access to and visualization of the surgical field
- It would be physically easy for the surgeon to operate resulting in low stress for the surgeon
- It would be minimally invasive so that obese patients could expect the same outcomes as normal weight patients
- SOUNDS LIKE A ROBOT...

OBSESE Patients Tips

- Positioning is critical
  - Shoulder braces
  - Uterine manipulator: consider 4th arm
- Entry Tricks
  - Increase initial insufflation pressure – 20 mm Hg
  - Use long trocars
  - Test Trendelenburg vs. ability to ventilate
  - Can decrease IAP to 8-10 mm Hg

Steep Trendelenburg Position?

- 30-35 degrees
  - Max T-Burg: 40*
  - Most OR Tables: 26-30*
  - Acceptable exposure: 20-24*
  - When surgeons select: 16*

We beat anorexia” support group

Baseline Analysis of Outcome Variables: Robotic Hyst: 2007-2008

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Median</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>44.65</td>
<td>10.37</td>
<td>44.00</td>
<td>27-70</td>
</tr>
<tr>
<td>BMI</td>
<td>28.50</td>
<td>6.27</td>
<td>27.00</td>
<td>15-51</td>
</tr>
<tr>
<td>TOT</td>
<td>91.96 min</td>
<td>25.57 min</td>
<td>89.0 min</td>
<td>60-170 min</td>
</tr>
<tr>
<td>RCT</td>
<td>51.79 min</td>
<td>20.48 min</td>
<td>50.0 min</td>
<td>25-108 min</td>
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<tr>
<td>EBL</td>
<td>43.11 cc's</td>
<td>25.72 cc's</td>
<td>35.0 cc's</td>
<td>10-150 cc's</td>
</tr>
<tr>
<td>LOS</td>
<td>25 hrs</td>
<td>6 hrs</td>
<td>26 hrs</td>
<td>10-84 hrs</td>
</tr>
<tr>
<td>Ut Weight</td>
<td>189.91 gms</td>
<td>160.34 gms</td>
<td>141 gms</td>
<td>46-1306 gms</td>
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</table>

TOT: Total Op Time, RCT: Robot Console Time, EBL: Estimated Blood Loss
Analysis of BMI vs. Outcomes (n=147)

<table>
<thead>
<tr>
<th>Variable</th>
<th>TOT</th>
<th>RCT</th>
<th>EBL</th>
<th>LOS</th>
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</thead>
<tbody>
<tr>
<td>Normal &lt;25</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
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<tr>
<td>Overweight 25-29</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Obese 30-34</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Morbid Obese &gt;35</td>
<td>NS</td>
<td>NS</td>
<td>Sig</td>
<td>NS</td>
</tr>
</tbody>
</table>

p values: P=.142 P=.918 P=.010 P=.850

The Outcome of Robotic Hysterectomies in Obese Women Compared to Normal Weight Women. Lenihan JP, Kovanda C, Cammarano C. PCOGS Presentation Sep 2009

Complications

- No complications in any BMI group
  - Fever, excess Blood Loss, Cuff breakdown or infection, return to OR or ER, injury to other structures or wound complications

- One patient was converted to an open TAH for a uterus that weighed 1306 grams. Her LOS was 72 hours. Her BMI was 23.

- One patient with a BMI of 43 couldn’t tolerate steep Trendelenberg. She was done robotically in partial Trendelenberg to maintain O2 Sats.

RESULTS

- Outcomes in Obese and Morbidly Obese patients were clinically equivalent to outcomes in normal weight patients.

- The only significant difference was in log-EBL. The actual mean EBL for Group 1 (Normal BMI) was 38.52 cc's (Std Dev: 26.32 cc's). The actual mean EBL for Group 4 (Morbid Obesity) was 55 cc's (Std dev 33.54 cc's). This is not clinically significant.

Lenihan J, Kovanda C. Comparison of Outcomes in Normal Weight, Obese and Morbidly Obese Patients Utilizing Robotic Hysterectomy. PCOGS, Oct 2010, Kona Hawaii

Robotic vs. Laparotomy ECS in Obese Women

<table>
<thead>
<tr>
<th>Author</th>
<th>n EBL (mL)</th>
<th>MC (%)</th>
<th>LOS (d)</th>
<th>Total OT (min)</th>
</tr>
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<tbody>
<tr>
<td>Winter</td>
<td>Rob 129</td>
<td>160*</td>
<td>13.9%</td>
<td>1.5*</td>
</tr>
<tr>
<td></td>
<td>Lap 110</td>
<td>292</td>
<td>32.7%</td>
<td>4.1</td>
</tr>
<tr>
<td>Paley*</td>
<td>Rob 169</td>
<td>59.8*</td>
<td>5.8%</td>
<td>1.4*</td>
</tr>
<tr>
<td></td>
<td>Lap 70</td>
<td>197.8</td>
<td>36%</td>
<td>5.3</td>
</tr>
<tr>
<td>Seamon*</td>
<td>Rob 62</td>
<td>109*</td>
<td>13%</td>
<td>1*</td>
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<tr>
<td></td>
<td>Lap 162</td>
<td>394</td>
<td>44%</td>
<td>3</td>
</tr>
<tr>
<td>Subramaniam*</td>
<td>Rob 73</td>
<td>95.9*</td>
<td>13.7%</td>
<td>2.73*</td>
</tr>
<tr>
<td></td>
<td>Lap 104</td>
<td>408.9</td>
<td>50%</td>
<td>5.07</td>
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</table>

* Gynecol Oncol 2011; 122: 604-607.

What about conversion rates in obese women? Endometrial Cancer Staging

<table>
<thead>
<tr>
<th>Author</th>
<th>Surgical Approach</th>
<th>N EBL (mL)</th>
<th>Conversion Rate</th>
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<tbody>
<tr>
<td>Walker</td>
<td>Laparoscopy</td>
<td>- EBL 160</td>
<td>26.6% (BMI 34-35) 57.1% MO</td>
</tr>
<tr>
<td>Winter</td>
<td>Robotic</td>
<td>129 160</td>
<td>10.9%</td>
</tr>
<tr>
<td>Gehrig</td>
<td>Robotic</td>
<td>49 27% MO</td>
<td>50 0</td>
</tr>
<tr>
<td>Paley*</td>
<td>Robotic</td>
<td>190 27% MO</td>
<td>59 3.6%</td>
</tr>
<tr>
<td>Paley*</td>
<td>Am J Obst Gyn 2011</td>
<td>Robotic 109</td>
<td>32% MO 109 15.6%</td>
</tr>
<tr>
<td>Seamon*</td>
<td>Obstet Gynecol 2009</td>
<td>Robotic 73</td>
<td>95.9% 11%</td>
</tr>
<tr>
<td>Subramaniam*</td>
<td>Gynecol Oncol 2011</td>
<td>Robotic 73</td>
<td>95.9% 11%</td>
</tr>
</tbody>
</table>

*Morbidly obese

Adhesions / Previous Surgery?

- LUQ entry (5 mm scope)
- Use Laparoscope to lyse adhesions
- Go from “known to unknown”
- Sharp Dissection preferred
Simple Bladder Flap
- Sharp Dissection, Don’t tear!
- Push with back curve of scissors

Complex Bladder Flap
- Three Way Foley
- Do posterior colpotomy first, then follow Koh Ring
- Sharp Dissection always, don’t try and tear or wipe bladder off uterus

Large Specimen

Pre-op Planning is Critical
- If > 250 Grams:
  - 4th Arm, Two-way Foley, OG Tubes
- If > 500 grams:
  - Consider referral or experienced surgeon to mentor/assist
  - Pre-op Lupron?
  - Morcellator practice
  - Requires 4th arm
  - Be cautious of instruments out of view
  - Be cautious of energy usage
  - Requires dissection of ureter

Large Specimens

Large Specimens Steps
- ID Ureters
- Release Upper Pedicles
- Rotate-Twist uterus
  - Get Camera in close
  - Keep track of ureter
  - 30° for bladder flap
Handling Large Specimens

If too large to remove through the vagina:

- **< 300 gm:** Flap the uterus and remove vaginally
- **300-450 gm:** UnDock the robot, Morcellate vaginally, then re-dock to close the cuff
  - Side-Docking facilitates this step
  - Avoid the temptation of trying to close from below...
- **> 450 gm:** Morcellate from above after closing the cuff.
- **> 1000 gm:** Small Mini-Lap, “Slash Technique”

---

Finish flap and remove

- > 450 grams
  - 1. Do supracervical
  - 2. Remove cervix and close cuff
  - 3. Undock and morcellate

---

MultiCenter Study of Robotic Hyst with Large Uteri – March 2010

- 5 Epicenter Surgeons in Community based hospitals, mostly on obese patients
- Techniques similar for all surgeons
- Two conversions out of 256 cases (1.6%)
- Uterine size: 250 – 3020 grams
- Average Op Times: 126 min (if >500 grams = 167 min)
- EBL: 50 cc if < 500, 100 cc if > 500 gram
- LOS: 1+ days
- Major complications: 2.0%
- CONCLUSIONS: Outcomes reproducible in different centers using robotics


---

Complications

- Bladder injury
- Bowel injury
- Bleeding & vascular injury
Common Causes of Robotic Complications

- Inexperience controlling the robot
- Not keeping instruments in view – blunt trauma
- Poor port placement
- Rapid jerky movements
- Not understanding anatomy
- Inadequate uterine elevation
- Improper use of energy
  - Wrong foot pedal
  - Capacitive coupling
- Morcellator trauma

Summary of Key Tips

- **PRE-OP Planning is critical**
  - Consider referral if case is clearly over your skill set
  - (Having sleepless nights, concern and worry, anxious?)
- Get good help for tougher cases (Another experienced robotic surgeon is best)
- Consider port placement carefully, use 4th arm
- Always go from “Known to Unknown”
- Learn to morcellate (have a good assistant!)

Thank You
Surgical Options in Treatment of Infertility Patients with Myomas

Michael C. Pitter, MD, FACOG
Chief, Minimally Invasive & Gyn Robotic Surgery
Newark Beth Israel Medical Center
Newark, New Jersey

Objectives

- To review the types of myomas and their impact on quality of life.
- To review the indication for myomectomy procedures.
- To discuss the potential impact of myomectomy on fertility outcomes.
- To outline the pregnancy outcomes following minimally invasive and robotic myomectomy.

Types of Myomas

Submucosal
- Type - 0
- Type - 1
- Type - 2

Intramural

Subserosal

Pedunculated

Incidence of Occurrence & Symptoms

- 30% of women between the ages of 30 - 60 yo
- 70% - white women/80% - women of african descent by age 50 yo
- Symptoms present in 20%-50% cases
  - Menorrhagia (29 - 59%)
  - Pelvic Pain & Pressure (34%)
  - Most are asymptomatic (50%)

Conservative Treatment Options

- Non-Surgical
  - Hormone Therapy
  - Expectant Management
  - Uterine Fibroid Embolization
  - MRgFUS
- Surgical
  - Myomectomy
    - Hysteroscopic
    - Laparoscopic
    - Vaginal
    - Abdominal
    - Robot Assisted

Conservative Treatment Option - Myomectomy

- Resolution of symptoms in 81% of patients.¹
- An option whether or not fertility sparing is an issue.
- Re-growth depends on the initial number of myomas removed.
  - Single = 27% re-growth, 11% required hysterectomy.² ⁴
  - Multiple = 59% or more, 26% repeat myomectomy.³ ⁴

References
2) Obstet & Gynecol, 104(2): 393-406
4) ACOG Practice Bulletin August, 2008

Abdominal Myomectomy preferable for very large fibroids

Hysteroscopic Myomectomy

- Indicated for submucous myomas < 5 cm
- Surgical Complications (1-2%) may include:
  - Fluid overload with/without pulmonary/cerebral edema
  - Hypernatremia
  - Bleeding
  - Perforation
  - Infection
- Submucous myomas are implicated as a cause of 5-10% cases of AUB, subfertility and infertility.
- Success rates up to 94% at 1 yr, 76% at 5 yrs.
- Source = TeLinde Operative Gynecology

Laparoscopic Myomectomy

- Less blood loss
- Quicker recovery
- Special Training/expertise required
- Longer operative times
- Equal fertility benefits
- Criteria for case selection

Source = Te Linde Operative Gynecology
Impact on Fertility with Myomectomy

- Still controversial ?
- Increase in pregnancy rates with hysteroscopic myomectomy - Type 0 and Type 1 myomas.
- Limitations with Hysteroscopic Myomectomy.
- Limitations with Laparoscopic Myomectomy.

References:
1) Pritts et al 2009

Open Surgery Through Laparoscopic Access

CONVENTIONAL LAPAROSCOPY

- 2 D Image
- 4 – 6 fold magnification
- Rigid straight sticks
- Counter-intuitive
- Haptics

ROBOTIC ASSISTED LAPAROSCOPY

- 3 D Image
- 10 fold magnification
- Wristed instruments
- Intuitive
- "Visual" Haptics

Who is a candidate for robotic Myomectomy?

- Anyone who is a candidate for laparoscopy
- Must see a clear cleavage plane between myomas on MRI
- Total number of myomas - operator experience
- Uterus should be movable (not fixed) on pelvic exam
- Prior operations not a contraindication but exercise caution with port placements
- Do not pre-treat with GnRH Analogs

- MRI highly recommended
- Elevated Serum LDH and necrosis = high PPV leiomyosarcoma (rare event – data based on well done study)
- Adenomyosis
- Pelvic exam
- Beware of "miliary disease"
- Pre-op endometrial biopsy
- Avoid Pre-treatment with GnRH analogs


dr. vinc I Myomectomy

- MRI highly recommended
- Elevated Serum LDH and necrosis = high PPV leiomyosarcoma (rare event – data based on well done study)
- Adenomyosis
- Pelvic exam
- Beware of "miliary disease"
- Pre-op endometrial biopsy
- Avoid Pre-treatment with GnRH analogs

Step By Step da Vinci Myomectomy

- Hysterotomy
  - The Serosal Incision – getting into the proper plane, vertical vs horizontal vs elliptical.
- Enucleation – Push spread technique (limit the use of thermal energy).
- Multi-Layer Closure – Choice of suture material, adequate purchase of tissue.
- Extraction – Morcellation vs the mini lap
Published Articles on Pregnancy Outcomes Following Robotic Myomectomy

- Lonnefers et al.,
- Patel et al.,
- Pitter et al.,

Demographics and Pre-operative Characteristics at Time of Myomectomy

<table>
<thead>
<tr>
<th>Patient Demographics</th>
<th>N=107</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (year)</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Gravidity</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>56 (52.8%)</td>
</tr>
<tr>
<td>&gt;1</td>
<td>51 (47.2%)</td>
</tr>
<tr>
<td>Parity</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>92 (88.5%)</td>
</tr>
<tr>
<td>&gt;1</td>
<td>15 (11.5%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>57%</td>
</tr>
<tr>
<td>African American</td>
<td>38%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
<tr>
<td>Previous C/sec (%)</td>
<td></td>
</tr>
<tr>
<td>Myomas</td>
<td></td>
</tr>
</tbody>
</table>

Myomas

<table>
<thead>
<tr>
<th>Myoma Description</th>
<th>N=108</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Myomas</td>
<td>3.9 ± 3.2</td>
</tr>
<tr>
<td>Myoma size (greatest dimension, cm)</td>
<td>7.5 ± 3.0</td>
</tr>
<tr>
<td>Location of largest bulge (%)</td>
<td></td>
</tr>
<tr>
<td>Posterior</td>
<td>33%</td>
</tr>
<tr>
<td>Anterior</td>
<td>39%</td>
</tr>
<tr>
<td>Posterior &amp; Anterior</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>20%</td>
</tr>
<tr>
<td>Entry into Endometrial Cavity (%)</td>
<td>20.6%</td>
</tr>
<tr>
<td>Myoma weight (g)</td>
<td>191.1 ± 145.4</td>
</tr>
</tbody>
</table>

Pregnancy Outcome

<table>
<thead>
<tr>
<th>Total Number of Pregnancies</th>
<th>N=127</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of Conception</td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>69.6%</td>
</tr>
<tr>
<td>ART</td>
<td>30.4%</td>
</tr>
<tr>
<td>Average time to conception (months)</td>
<td>12.9 ± 11.5</td>
</tr>
<tr>
<td>Spontaneous or elective abortions (%)</td>
<td></td>
</tr>
<tr>
<td>&lt; 14 weeks</td>
<td>25 (18.5%)</td>
</tr>
<tr>
<td>14 – 20 weeks</td>
<td>4 (2.4%)</td>
</tr>
<tr>
<td>Ectopic pregnancy</td>
<td>2 (1.4%)</td>
</tr>
<tr>
<td>Unexplained stillbirth at 14wks</td>
<td>7 (5.5%)</td>
</tr>
</tbody>
</table>

Risk Factors among those who Deliver

<table>
<thead>
<tr>
<th>N=92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
</tr>
<tr>
<td>Placenta previa</td>
</tr>
<tr>
<td>Placental previa</td>
</tr>
<tr>
<td>Alectasis</td>
</tr>
</tbody>
</table>
Pregnancy Outcome

<table>
<thead>
<tr>
<th>Total Number of Deliveries</th>
<th>N=92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Age at Delivery</td>
<td>35.8 ± 4.4</td>
</tr>
<tr>
<td>Gestational Age at Delivery</td>
<td>36.6 ± 2.6</td>
</tr>
<tr>
<td>Malpresentation of Fetus</td>
<td>8 (8.8%)</td>
</tr>
<tr>
<td>Mode of Delivery</td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>4 (4.4%)</td>
</tr>
<tr>
<td>Cesarean</td>
<td>88 (95.6%)</td>
</tr>
<tr>
<td>PPROM</td>
<td>7 (7.7%)</td>
</tr>
<tr>
<td>Preterm (&lt;35 weeks)</td>
<td>15 (16.5%)</td>
</tr>
</tbody>
</table>

Delivery Outcome

<table>
<thead>
<tr>
<th>Total Number of Deliveries</th>
<th>N=91</th>
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</thead>
<tbody>
<tr>
<td>Complications</td>
<td></td>
</tr>
<tr>
<td>Uterine dehiscence</td>
<td>1 (1.1%)</td>
</tr>
<tr>
<td>Uterine rupture</td>
<td>1 (1.1%)</td>
</tr>
<tr>
<td>Estimated Blood Loss at Delivery (ml)</td>
<td>736.7 (223.7)</td>
</tr>
<tr>
<td>Average Birth weight (g)</td>
<td>3036.1 ± 669.4</td>
</tr>
<tr>
<td>Apgar at 1 minute</td>
<td>8.1 ± 0.8</td>
</tr>
<tr>
<td>Apgar at 5 minutes</td>
<td>8.9 ± 0.4</td>
</tr>
</tbody>
</table>

References

- Obstet Gynecol. 1982; 50:373-375
- ACOG Practice Bulletin August, 2008
- Pritts et al 2009
Implementing Robotic Surgery: Training, Simulation and Credentialing

John P. Lenihan Jr., MD
Medical Director of Robotics and MIS
MultiCare Health Systems, Tacoma WA

Disclosure

- Grants/Research Support: Teva Pharmaceuticals
- Consultant: Ethicon Women's Health & Urology
- Speaker's Bureau: Intuitive Surgical, Ethicon Women's Health & Urology
- Other: Proctor - Intuitive Surgical

Why Robotics?

- It’s Expensive
- It’s Complicated
- It’s Time Consuming
- It’s too Difficult
- But, It’s Cool
- Patients and Surgeons prefer it!

So, now that we have a robot, how do we start a program?

Basic Elements of a Robotics Program

- Training
  - Who? How Much? Ongoing?
  - Who pays for it?
- Credentialing
  - Proctoring?
  - Basic vs Advanced?
  - Currency? Competency?
  - Role of Simulation?

New Concerns with Credentialing

- Medicolegal Review of Liability Risks for Gynecologists Stemming from Lack of Training in Robot-Assisted Surgery
- Hospitals are now being sued for negligence regarding credentialing policies
- Surgeons are being sued for lack of informed consent regarding their skill and experience level
High Volume Surgeons Have Better Outcomes

New York State Data: 2001-2006
- 146,494 Hysts
- 70.4% TAH, 18.2% TVH, 11.4% Lap
- 26% performed by surgeons doing less than 10 Hysts per year


<table>
<thead>
<tr>
<th>High Volume Surgeons Have Better Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low Volume Surgeons (≤ 10/yr)</strong></td>
</tr>
<tr>
<td>TAH Rate</td>
</tr>
<tr>
<td>Serious Complications</td>
</tr>
<tr>
<td>Mortality</td>
</tr>
<tr>
<td>LOS TAH</td>
</tr>
</tbody>
</table>

(*LOS for Surgeons > 20 cases /yr (Lap): 1.86 days)


Outcomes for GYN robotic surgeons trained in 2006: Data for 2007-2008

<table>
<thead>
<tr>
<th>&gt; 40 cases (4)</th>
<th>&lt; 20 cases (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average No cases/year</td>
<td>52</td>
</tr>
<tr>
<td>Total Op Times</td>
<td>92 min (56-170)</td>
</tr>
<tr>
<td>EBL</td>
<td>43 cc's (10-150 cc's)</td>
</tr>
<tr>
<td>Sig. Complications</td>
<td>2/150 cases (1.3%)</td>
</tr>
</tbody>
</table>

MultiCare Tacoma General Hospital data

What happens to robotic skills if not used?

<table>
<thead>
<tr>
<th>Dots and numbers</th>
<th>Reached Proficiency</th>
<th>12 weeks inactivity</th>
<th>Post-pig lab retraining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dots and numbers</td>
<td>126 +/- 3 (102-150)</td>
<td>154 +/- 10 (79-236)</td>
<td>132 +/- 11 (74-315)</td>
</tr>
<tr>
<td>Peg board</td>
<td>256 +/- 3 (229-285)</td>
<td>356 +/- 10 (203-477)</td>
<td>316 +/- 10 (252-472)</td>
</tr>
<tr>
<td>Suture Pod</td>
<td>95 +/- 3 (78-129)</td>
<td>174 +/- 10 (125-282)</td>
<td>157 +/- 9 (90-231)</td>
</tr>
</tbody>
</table>

Adjusted time to complete trial ... Mean +/- (range)

N=22 PG-2 to PG-5   Jennison E et al. Skills Degredation after Robotic Skills Training, Akron General Hospital 2010

Who Should Train To Do Robotics?

- Surgeons who want to excel at Minimally Invasive Surgery
- Surgeons who do a lot of major surgeries
  - > 4 per month
- Surgeons who are comfortable with complex problems in the O.R.
- “The DaVinci Robot won’t make a poor surgeon a great surgeon.”
  A. Advincula MD

New 4 Step Approach to Initial Credentialing and Privileging

1. Select surgeons likely to be successful for training
2. Establish Initial training and proctoring guidelines
3. Establish “Currency” guidelines: the minimum number of procedures required to maintain proficiency
4. Establish metrics to monitor “Competency”
5. Consider simulation as a means to insure proficiency
Establish Standards to Comply with published Learning Curves

Studies
- Lenihan & Kovanda, JMIG 2007: 50 - 75 Cases
- Payne & Dauterie, JMIG 2007: 50 cases, >100 to excel
- Kho, Hilger et al., AOG 2007: Docking times – 20 cases
- Chong, Park et al. Int J Gyn Ca 2009: 50 - 80 cases

Therefore, consider
- Simple (Basic) cases for first 15 – 30.
- Then evaluate outcomes to see if surgeon qualifies for advanced case status
- Complications
- Compliance with guidelines
- Outcomes based on Standard Deviations of normal

What about competency?
- A surgeon who meets the Minimum Standards for currency may not be competent
- Many centers are now experiencing issues with "part time" robotic surgeons that don't necessarily trigger typical QA reviews.
- Many program directors are looking for ways to insure surgeon competency and patient safety as well as insure efficient OR’s.

The Future is Competency based Credentialing

- Establish Metrics for Operative Standards
  - Op Times, EBL, Complications rates, etc.
  - Triggers should be determined locally or based on National Data Bases (> 2 SD’s from normal?)
- Consider retraining or mentoring if a surgeon consistently falls outside standards
  - Use of Simulators
  - Use of Mentor Surgeons as assistants/proctors
- Include CME component
  - Require Advanced courses, national or local meetings, etc.

MultiCare Health Systems RTLH Standards: 2009

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Dev.</th>
<th>Median</th>
<th>Sample Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>44.85</td>
<td>10.37</td>
<td>44.00</td>
<td>27 – 70</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>28.50</td>
<td>6.27</td>
<td>27.00</td>
<td>18 – 51</td>
</tr>
<tr>
<td>Total Op Time (TOT)</td>
<td>91.95 min</td>
<td>25.57 min</td>
<td>89.00 min</td>
<td>60 – 170 min</td>
</tr>
<tr>
<td>Robotic Console Time (RCT)</td>
<td>51.79 min</td>
<td>20.48 min</td>
<td>50.00 min</td>
<td>25 – 108 min</td>
</tr>
<tr>
<td>Estimated Blood Loss (EBL)</td>
<td>43.11 cc's</td>
<td>25.72 cc's</td>
<td>35.00 cc's</td>
<td>10 – 150 cc's</td>
</tr>
<tr>
<td>LOS</td>
<td>25 hours</td>
<td>6 hours</td>
<td>26 hours</td>
<td>10 – 84 hours</td>
</tr>
<tr>
<td>Uterine Weights</td>
<td>189.91 grams</td>
<td>160.34 grams</td>
<td>141 grams</td>
<td>46–1306 grams</td>
</tr>
</tbody>
</table>

Benefits of Simulation

- Long known in Aviation Industry
- Can practice basics as well as emergencies
- Current Simulators cover only basic skills
  - Actual DaVinci Robot – dry lab
  - Mimic Simulator dV Trainer (stand alone)
  - DaVinci Backpack Simulator (Si)
  - Ross Simulator
- Current work on Procedures based trainers
  - Mimic, Red Llama, Lap Sim and others
- Can be factored into "Currency" for surgeons
- Recent studies show pre-op benefit for experienced surgeons

And What About Simulators?
Why Simulation?
- Practice and rehearsal without clinical consequences
- Reduces reliance on animal models
- Provides standardized experience
- Reduces costs: independently led, less OR resources to practice
- Enables efficient skill development through new surgeon learning curve

Dry Lab Simulation

Alternatives
- Virtual reality simulator training equals mechanical robotic training in improving robotic-assisted suturing skills. Halvorson FH, Elle OJ, Dalmin VV et al. Surg Endosc, 2006;20:1565-69

Current Robotic Clinical Training Pathway
- Dry run
- Proctored cases
- Initial case series
- Advanced course
- Pig Lab
- Onsite system orientation
- Off-site training
- Complete online modules
- Connect online to virtual trainer

Proposed clinical pathway with simulation
- Dry run
- Proctored cases
- Initial case series
- Advanced course
- Pig Lab
- Onsite system orientation
- Off-site training
- Complete online modules
- Connect online to virtual trainer
- Onsite simulator practice with metrics and feedback
- Onsite simulator test
- Not proficient
- Onsite simulator practice
- Onsite simulator test
- Not proficient
- Onsite simulator practice
- Onsite simulator test
- Proficient
Skills Simulator for the da Vinci Si

Simulation Drills

Simulation – Tracking Progress

NEW PARADIGM

- SEE ONE
- DO ONE
- TEACH ONE

What if a surgeon doesn’t meet Competency or Currency?

OPTIONS

- Go through basic retraining
  - Pig lab?
  - Proctor (Their expense)
  - and
- Work with Mentor Surgeon
  - Assist/partial case
  - OR
- Achieve passing scores (85%) on selected simulation exercises
What are we doing at MHS Hospitals in Jan 2012?

- **Initial training** pathway requires simulation
  - Basic Cases only until ≥ 15, Surgeon Assist
- **Proctoring**: Two cases
- Moving to **Advanced Cases**:
  - More Simulation, An Advanced Course. Mentor Surgeons helps with new types of cases, (Giant Uteri, Myomas, SCP’s, etc.)
- **ANNUAL Currency**: 20 Cases
  - At least one case every two months

Simulation at MHS Hospitals in Jan 2012

- **INITIAL**:
  - Achieve scores > 90% on designated level 1 simulator exercises, Surgeon 1st assist while in basic
- **ADVANCED**:
  - Achieve scores > 90% on designated level 2 & 3 simulator exercises
  - Attend an Advanced Course
  - Scrub with advanced level surgeon on first two cases
- **ALL SURGEONS, Annual Requirement**:
  - Achieve a score of > 85% on designated level 2 simulator exercises annually

Simulation Training Pathways

<table>
<thead>
<tr>
<th>New Surgeon</th>
<th>Returning Surgeon</th>
<th>Advanced Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Basic Skills Drill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Camera targeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Ring Walk 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Energy Use - 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pig Board - 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Basic Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Advanced Skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Energy use 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Three arm drills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Needle driving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Knot tying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dual Console</td>
<td></td>
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<tr>
<td>• Level 3 skills</td>
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<td></td>
</tr>
<tr>
<td>• Three arm skills</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Validation Studies in progress

Other Credentialing Considerations

- New surgeons coming to your hospital previously “trained”
- New surgeons “trained” in their residency

**SOLUTION?**

Establish checklists and insure all new surgeons meet those requirements

New Surgeon Checklist

<table>
<thead>
<tr>
<th>Yes No</th>
<th>CBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Docking practice</td>
<td></td>
</tr>
<tr>
<td>• Case Observation</td>
<td></td>
</tr>
<tr>
<td>• Simulator/console practice</td>
<td></td>
</tr>
<tr>
<td>• Pig Lab/primary surgeon (5)</td>
<td></td>
</tr>
<tr>
<td>• Proctored cases (2)</td>
<td></td>
</tr>
</tbody>
</table>

Must Complete All
Repeat Simulator-console practice if > 4 months
Re-Proctor if > 12 months

Product pillars of simulation

- Help surgeons get through the learning curve faster
- Help surgeons maintain proficiency throughout their careers

| Everyone: benefits users at all levels of the surgical experience |
| Self-Directed: unsupervised learning experience |
| Quantitative: measured and tracked assessment of module data results |
| Representative Experience: set up that emulates what it is like to use da Vinci |
Future Simulation Development

- BASIC SKILLS
- Procedures
- Complications

SUMMARY of Suggested Guidelines

- Only train surgeons who can do > 20 cases per year
- Suggest at least 15 basic cases without problems or concerns before being privileged to perform more complex cases. Also:
  - Get ADVANCED TRAINING
  - Encourage skills demonstration on simulator
  - Require >20 cases per year to maintain skills
  - Establish competency metrics using Std Deviations of normal and annual simulation proficiency
  - Develop policy for residents and surgeons trained elsewhere

Where Can I find This Information?

- Clinical Obstetrics and Gynecology, Sep 2011: Robotics
  A. Advincula, Editor


  www.clinicalobgyn.com

Conclusions

- Most all surgeons who learn robotics don’t wish to return to normal abdominal, vaginal or laparoscopic surgeries
- Most all patients feel better faster after robotic surgery especially if compared to abdominal surgery
- This is how future surgeons will be trained!
- You can build a collaborative program: Training, Simulation and Credentialing

Thank You, DISCUSSION

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The Role of simulation as a training tool in robotic surgery

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Atlantic Health System, Morristown & Summit, NJ

OBJECTIVE

• At the conclusion of this activity, the participant will be able to:
  – list the important features of an effective simulation program
  – List the various applications of simulation into robotic training

Simulation plays a role in solving most surgical training challenges

1. Demographic shifts creating shortages in qualified healthcare practitioners
2. Need for training on more sophisticated medical devices and procedures
3. Points of delivery of care vary in standards and type of care delivered
4. Risk-management demands for high safety/quality standards
5. Patient groups demanding enhanced services and improved safety

Pillars of a good simulator

- Consistent and frequent use is equally important
- Quantitative benefits users at all levels
- Self-directed
- Open

SUCCESSFUL SIMULATION TRAINING

- Frequent use
- Useful feedback

DISCLOSURE

• Grants/Research Support: American Medical Systems
• Consultant: American Medical Systems, Intuitive Surgical

**Present**
- Objective scores and metrics on current attempt
- Comparison to peers and experts
- Comparison to personal averages

**Past**
- Personal historical scores and data
- Learning curve relative to a validated ideal learning curve

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**Skills degrade over time if not exercised.**

Simulation increases touch points to help maintain skills.

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**Successful simulation training**

- Frequent use

**Work toward expert benchmarks**

- The Morristown Protocol

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Validation of a Robotic Surgery Simulator Protocol – Transfer of Simulator Skills to the Operating Room.
Patrick Culligan, MD ... Charbel Salamon, MS, MD
Atlantic Health System, Morristown, NJ

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Study Groups

- **Expert**
  - n=5
- **Novice**
  - n=14
- **Control**
  - n=5

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Presented at the International Gynecologic Society annual meeting, ASCO-Gynecology.
Sample size estimate called for 11 “study surgeons” in order to have 90% power to detect a two minute difference between expert and “study surgeons” mean operative times (α = 0.05).

The novices had to spend an average of 20 hours (range 9.7 to 38.2) on the simulator to pass the protocol.

The future of simulation is here!

- Take advantage of simulation in its current form for:
  - resident training
  - robot naive physician training
  - maintenance of skills and privileges
  - pre operative warm-up

- Encourage the development of procedure specific simulation

REFERENCES

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.