Why are we here?

To learn about:
- A virtually scarless surgery for benign gynecologic surgery
- Potential benefits and risks
- Patient selection: how it differs between single site and multi site robotic cases

Common Benign GYN Conditions

- Benign Issues (non-cancerous)
  - Abnormal Uterine Bleeding
  - Menorrhagia
  - Fibroids
  - Endometriosis
  - Adenomyosis
  - Pelvic Organ Prolapse
  - Ovarian cysts
  - Pelvic adhesions
  - Menstrual migraines

Advancement Towards Less Invasive Surgery

Robotic surgery overcomes the limitations of open and traditional laparoscopic surgery.
Robotics: Endowrist Instrumentation

DaVinci “SI” System
3rd Generation
(3 components)

DaVinci “XI” System
4th Generation

Advantages to DaVinci Robotic Surgery
• Minimal blood loss
• Shorter hospital stay
• 3D/HD Vision
• Wristed instrumentation
• 3rd arm capability
• Less post operative pain
• Faster recovery time
• Patient satisfaction
• Complication rate minimized compared to TAH

Complications Specific to Robotic Surgery
• Temporary pain or nerve injury associated with positioning
• Gas pain/shoulder strap pain related to steep Trendelenburg positioning
• Longer anesthetic time
• Possible conversion to an open procedure including a larger incision
• Cost

Impact of Robotics on Hysterectomy Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Robotic-assisted (n = 601)</th>
<th>Laparoscopic (n = 427)</th>
<th>Abdominal (Open) (n = 1,194)</th>
<th>Vaginal (n = 332)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Readmissions &lt;30 days (Total No.)</td>
<td>1.00% (6)</td>
<td>2.58% (11)*</td>
<td>3.52% (42)*</td>
<td>2.41% (8)*</td>
</tr>
<tr>
<td>Mean Estimated Blood Loss (mL)</td>
<td>108.2</td>
<td>315.08*</td>
<td>318.8*</td>
<td>340.8*</td>
</tr>
<tr>
<td>Mean Length of Stay (min)</td>
<td>1570.3</td>
<td>3038.5*</td>
<td>3440.5*</td>
<td>3789.2*</td>
</tr>
<tr>
<td>Total Readmission Cost (adjusted for inflation to 2012)</td>
<td>$32,946</td>
<td>$50,290</td>
<td>$328,230</td>
<td>$51,264</td>
</tr>
</tbody>
</table>

*p < 0.05 versus robotic-assisted, achieving statistical significance

"Robotic-assisted hysterectomy was associated with the lowest rates of readmission at <30 days... Computer-assisted surgery provides a significant benefit to our patients as our surgical techniques have allowed our team to complete most complex gynecologic conditions with few conversions."


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Study Limitations
Martino et al 2014

- Retrospective data review from a single institution
- Inability to account for patients who were readmitted to outside hospitals (though the authors state that this finding was expected to be similar for all 4 cohorts).

Where are the incisions (cuts)?

- One Large Incision
- Multiple Small Incisions
- One Small Incision in the Belly Button

- Open Hysterectomy
- Traditional Laparoscopic Hysterectomy
- da Vinci Hysterectomy: Multi-port
- da Vinci® Single-Site® Hysterectomy
- Traditional Laparoscopic Single Incision Hysterectomy

*Traditional laparoscopic single incision hysterectomy is not a widely available surgical procedure.

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Potential Benefits of da Vinci® Single-Site® Hysterectomy (Benign)

- Low rate of complications
- Low blood loss
- Low rate of conversion to traditional laparoscopy and open surgery
- Same day hospital stay
- Small incision for virtually scarless results

Potential Risks of da Vinci® Hysterectomy

Related to Hysterectomy\(^1\)-\(^4\), incl. da Vinci® Hysterectomy:

- Blocked lung artery
- Urinary tract injury
- Blocked bowel
- Pelvic abscess
- Wound infection
- Increased risk of incision-site hernia with any single incision surgery


**Port Selection Recommendations**

- **5 Port**
  - Hysterectomy for Large Uterus (>500 g)
  - Sacrocolpopexy
  - Myomectomy

- **4 Port**
  - Hysterectomy (Uterus 250 – 500 g)
  - Endometriosis Resection (Stage III & IV)
  - Pelvic Adhesive Disease

- **3 Port**
  - Hysterectomy (Uterus <250 g)
  - Endometriosis Resection (Stage I & II)

- **Single Site**
  - Left Adnexal Disease
  - Initial case series with Single Site

- **Single Site + 1**
  - Myomectomy
  - Patient desires cosmesis

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**Case Study: Benign Hysterectomy**

- 48 yr old
- G2P2
- Menorrhagia, failed ablation
- 7:30 case, home about 3 pm
- Pathology: Adenomyosis

**Case Study: Endometrioma**

- 20 yr old, G0
- 8 cm rt ovarian complex cyst, dysmenorrhea
- Home same day by noon
- Results: Stage 2 Endometriosis
- Path: Endometrioma

**Surgery Day: Single Site**

- **Pre-Op:**
  - 1000 mg Tylenol
  - Antibiotics
  - SCDs
- **Post-Op:**
  - Toradol 30 mg IV
  - 20 cc Exparel
  - Remove Foley in OR
  - IV narcotics x 1
  - PO Emetics x 1
  - Home in 4-6 hrs

Call with Pathology in 2 days. Off narcotics in 4-5 days. 2 and 6 week follow up visits. No lifting x 6 weeks. No work restrictions. About 50% patients back to work in 2 weeks following hysterectomy.

**Recovery Period: Single Site**

- Off narcotics in -4-5 days
- -50% return to work in 2 weeks
- Lifting restriction x 6 weeks
- We call with pathology results
- Follow up appts:
  - 2 weeks with CNP/PA
  - 6 weeks with myself to evaluate cuff

**Surgical Risks**

All surgery presents risk, including da Vinci® Surgery.

- Serious complications may occur with da Vinci Surgery, up to and including death. Examples of serious and life-threatening complications, which may require hospitalization, include:
  - Injury to tissues or organs
  - Bleeding
  - Infection
  - Internal scarring that can cause long-lasting dysfunction or pain
  - Temporary pain or nerve injury has been linked to the inverted position often used during abdominal and pelvic surgery

Patients should consider that risks of surgery include:

- Potential for human error
- Risk specific to minimally invasive surgery may include:
  - A longer operative time
  - The need to convert the procedure to an open approach
  - The need for additional or larger incision sites
  - Converting the procedure could mean a longer operative time, a longer time under anesthesia, and could lead to increased complications
  - Temporary pain or discomfort may result from pneumoperitoneum, the presence of air or gas in the abdominal cavity used by surgeons in minimally invasive surgery.

Results, including cosmetic results, may vary.
Indications & Contraindications for da Vinci® Single-Site®:

Single-Site® Instruments for the da Vinci® Si® System bear the CE mark. This device is cleared for commercial distribution in the U.S. for laparoscopic cholecystectomy, and for hysterectomy and salpingo-oophorectomy for benign conditions.

The Intuitive Surgical® da Vinci® Single-Site® Instruments and Accessories used with the da Vinci® Si® Surgical System are indicated for use by trained physicians in an operating room environment for endoscopic manipulation of tissue, grasping, cutting, blunt and sharp dissection, approximation, clip-ligation, electrocautery and suturing during single-incision laparoscopic cholecystectomy, benign hysterectomy and salpingo-oophorectomy with the da Vinci® Single-Site® Instruments and Accessories, including graspers, dissectors, needle drivers, scissors, suction irrigators, monopolar cautery, bipolar cautery, 5 mm curved cannula, 5 mm and 10 mm straight cannula, flexible blunt obturators, and the Single-Site® Port. The safety and effectiveness of Single-Site® Instrumentation for use in the performance of general laparoscopic abdominal and pelvic surgery procedures have not been established. Research suggests that there may be an increased risk of incision-site hernia with single-incision surgery.

Thank You!

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