Treinamento em Cirurgia Robotica
William Stewart Halsted

- Gentle handling of tissue
- Meticulous haemostasis
- Preservation of blood supply
- Strict aseptic technique
- Minimum tension on tissues
- Accurate tissue apposition
- Obliteration of deadspace
William Stewart Halsted

1890 Chief of Surgery at Johns Hopkins

“See One, Do One, Teach One.”

“Experience, Observation, Thinking and Action”

Change 2003 by the Accreditation Council for Graduate Medical Education
Suggested learning pathway for minimally invasive surgery

Visual - See it
Auditory - Hear/Say it
Read/Write - It
Kinesthetic - Do it
1. **Demonstration**: The teacher performs the skill in real time without comment. This step is taken to provide a benchmark.
2. **Deconstruction**: The teacher performs every step slowly with an added explanation. The skill should be divided into smaller subsections.
3. **Comprehension**: The student describes every step of the skill whereupon the teacher performs on instruction. The description and execution do not occur simultaneously.
4. **Execution**: The student simultaneously narrates and executes step by step.
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da Vinci® Training Passport
Technology Training Pathway: Surgeon
### PHASE I  Introduction to *da Vinci* Technology

<table>
<thead>
<tr>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test drive the <em>da Vinci</em> Surgical System</td>
</tr>
<tr>
<td>Review procedure video relevant to your planned <em>da Vinci</em> procedures</td>
</tr>
<tr>
<td>Complete live epicenter and/or standard case observation</td>
</tr>
<tr>
<td>Complete live standard case observation</td>
</tr>
</tbody>
</table>

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Technology Training Pathway: Surgeon
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### PHASE II  da Vinci Technology Training

<table>
<thead>
<tr>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete <em>da Vinci</em> Technology online training (recommended)</td>
</tr>
<tr>
<td>Complete <em>da Vinci</em> Technology In-Service with <em>da Vinci</em> representative</td>
</tr>
<tr>
<td>Complete <em>da Vinci</em> Technology online assessment</td>
</tr>
<tr>
<td>Perform <em>da Vinci</em> Technology Skills Drills</td>
</tr>
<tr>
<td>- Skills Drills</td>
</tr>
<tr>
<td>- Skills Simulator™(if available)</td>
</tr>
<tr>
<td>Review two full-length procedure videos relevant to your planned <em>da Vinci</em> procedures on <em>da Vinci</em> Online Community</td>
</tr>
<tr>
<td>Complete preparation for <em>da Vinci</em> Technology Training (All above prerequisites must be complete prior to attendance)</td>
</tr>
</tbody>
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Commitment to Evidence-Based Medicine

As new technologies continue to impact healthcare outcomes and costs, evidence-based medicine and peer-reviewed clinical publications have become increasingly important. Evidence-based medicine relies on the results of clinical trials that study treatment options on a sampling of patients. The results or evidence help doctors, hospitals and governments to decide how to best care for patients. At Intuitive Surgical, our highest priority is and always has been to provide patient benefit by creating products that in a surgeon’s hands are safe, effective and minimally invasive.

- See more at: https://www.davincisurgerycommunity.com/evidence
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**da Vinci® Si™ Surgical System**
System Overview In-Service Guide: *Surgeon*

### Docking the Patient Cart

#### Cannulae & Trocars

- **Cannula**
  - 8 mm: reusable, 11 cm and 16 cm lengths
  - 8 mm with outlet: reusable, 11 cm and 16 cm lengths
  - 5 mm: reusable, 11 cm length
  - Remote center markings
  - Cannula mount rods cannula type
- **Obturator**
  - 8 mm blunt: reusable
  - 8 mm bladeless: disposable
  - 5 mm blunt: reusable
- **Cannula seals**
  - Green cannula seal: disposable, for 8 mm cannula, provided in drape kit
  - White cannula seal: disposable, for 5 mm cannula

#### Camera arm

1. 3rd party 12 mm and 8.5 mm trocars
2. Intuitive reusable 8.5 mm camera cannula
   - **NOTE:** Cannula mount must match brand of camera arm cannula. For additional information refer to the 3rd party products list (PN B77770)
3. Assistant ports: 3rd party cannula selected by the surgeon

### Basic Port Placement

**Only basic port placement philosophy and a straight-line docking approach are covered here.**

1. Camera arm placement: place the camera port 10-20 cm from target anatomy (closer to 20 cm when possible)
2. Instrument arm placement:
   - For arms 1 and 2, measure 8-10 cm from the camera port, perpendicular to the axis of the target anatomy and camera port
   - For arm 3, measure an additional 8-10 cm from the closest da Vinci port
   - Triangulate as needed
   - Instrument arms should be at least 10 cm from target anatomy
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da Vinci Si™ Surgical System
System Overview In-Service Guide: Surgeon

Dock the Patient Cart

1. Dock camera arm
   a. Confirm molding is properly seated and cannula mount wings are open
   b. With one hand, hold back the drape with thumb above mount while pressing and holding port clucth behind the cannula mount
   c. With opposite hand, insert cannula into mount and pinch mount closed in front
   d. Once properly seated, close quick-click cannula mount wings
   e. Position Insufflation outlet to the side

2. Dock instrument arms
   a. Confirm molding is properly seated and cannula mount wings open
   b. With outside hand, hold back drape above mount with thumb while pressing and holding port clucth behind the cannula mount
   c. With opposite hand, insert cannula into mount and pinch mount closed in front
   d. Once properly seated, close quick-click cannula mount wings

3. Check system setup
   a. Check camera arm alignment
   b. Ensure that numbers on Instrument arms are facing forward, and that telescoping axes are ~45° from one another
   c. Reposition instrument arms if necessary
     - Stabilize cannula at level of the skin and reposition utilizing arm port clucth and/or clucth button
   d. Release tension on tissue if needed
     - Use one hand to stabilize cannula while the other pushes and holds the upper port clucth button to allow the tension to release
     - Attach insufflation to the assistant port (avoid connecting to the camera port to reduce potential for fogging)

4. Insert the camera
   a. Place the endoscope in the cannula and attach the camera assembly to the camera arm sterile adapter (with the buttons on the camera facing the center column)
   b. Twist camera assembly gently to ensure engagement with the camera arm CAUTION: If not fully engaged, the endoscope may fall out
   c. Insert the camera cables into the strain relief support on the camera arm

5. Under direct visualization, check position of remote centers. When repositioning remote center, stabilize cannula at the level of the skin.

6. Remove camera
   a. Release the camera head cables from the strain relief support.
   b. Squeeze the release levers on either side of the camera arm sterile adapter and gently pull the endoscope straight up and out of the cannula.
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1.1 Exercise Tray Setup & Exchange

a. Rotate the thumb screw one half turn to loosen it slightly
b. Slide the locking plate away from the tray

c. Remove exercise tray from skills model base

d. Position the exercise mount and insert pegs into exercise tray wells as shown (in the standard position)
e. Push down on the mount until you hear a click

f. Slide the exercise tray with mount back into the skills model base
g. Slide the locking plate into place & tighten the thumb screw
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1.3 da Vinci SI System Patient Cart Setup & Docking

Setup
a. da Vinci Skills Model with ports placed for target anatomy as shown
b. Place the skills model on a table or cart oriented with the open end facing away from the Patient Cart as shown at right

Exercise
c. Position Patient Cart for straight-line docking (pelvic procedure)
   ▶ Camera arm aligned, in sweet spot and with 2nd setup joint opposite 3rd arm
   ▶ Instrument arm numbers and sterile adapters facing forward
d. Direct assistant or trainer to drive Patient Cart to skills model
e. Dock the camera and instrument arms to the skills model
f. Verify camera and instrument arm alignment, correctly adjusting as necessary
g. Simulate releasing tissue tension and placement by “burping” the surgical arms
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**da Vinci** Surgeon Skills Drills Practicum & Setup Guide

### 5.3 Level 3: Around-the-World - Advanced Suture Pad

**Setup**

a. Same as exercise 5.2
b. Pass the D-Vicryl CT-1 suture, cut to 15 cm to the surgeon with laparoscopic grasper. This can be done through the open end of the model.

c. Place another D-Vicryl CT-1 suture cut to 20 cm

d. Place another D-Vicryl CT-1 suture, cut to 15 cm. Repeat the previous step until you reach the first dots and tie an anchor knot and cut the suture.

**Exercise**

a. Grasp the CT needle with the Mega Needle Driver in the dominant hand, two thirds of the way from the tip of the needle.

b. Following the numbered pathway shown, drive the needle from the center of the first dot to the center of the next dot.

c. Tie an anchor knot at the first set of dots and continue driving the needle from “out” to “in” in a clockwise fashion until you run out of suture. Tie another anchor knot here and cut the suture.

d. Pass another D-Vicryl CT-1 suture, cut to 20 cm

e. Tie an anchor knot at the next set of dots and continue driving the needle from “out” to “in” in a clockwise fashion until you run out of suture. Tie another anchor knot here and cut the suture.

**Suggestions for proper suture management:**

- Use the pulley method for pulling the excess suture out (using both the needle drivers alternatingly to pull)
- Pull the excessive suture alternating needle drivers using the hand over hand method
- Make sure to keep the instrument tips in view. The suture should not be pulled out completely.

**Pay special attention to:**

a. Keeping needle driver tips in view at all times
b. Keeping the suture intact
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Technology Training Pathway: Surgeon

<table>
<thead>
<tr>
<th>PHASE III</th>
<th>Initial Case Series Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Complete initial case series</td>
</tr>
</tbody>
</table>
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Technology Training Pathway: Surgeon

### PHASE IV: Continuing Development

- Attend surgeon-led course(s) (Course details available in the *da Vinci* Training Passport brochure and course catalog. If not available in your market, please check with your *da Vinci* representative for course details.)
- Complete at least two additional activities after initial case series:
  - Surgeon lecture program
  - Complex *da Vinci* procedure observation
  - Complex *da Vinci* procedure video review
  - *da Vinci* surgery webinar
  - Peer-to-Peer consultation via Surgical Congress
Certificação

On Line  Simulação  In Service  Animal Lab
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Proficiência em Cirurgia

Proctor

CASOS ?
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Validity evidence for procedural competency in virtual reality robotic simulation, establishing a credible pass/fail standard for the vaginal cuff closure procedure.

Table 4: The composite scores of the novice and experienced surgeons for each repetition and average for all six repetition

<table>
<thead>
<tr>
<th>Repetition number</th>
<th>Novice surgeons’ composite score Mean (SD)</th>
<th>Experienced surgeons’ composite score Mean (SD)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetition 1</td>
<td>52.8 (21.0)</td>
<td>62.9 (18.4)</td>
<td>0.244</td>
</tr>
<tr>
<td>Repetition 2</td>
<td>54.4 (24.9)</td>
<td>74.8 (21.8)</td>
<td>0.055</td>
</tr>
<tr>
<td>Repetition 3</td>
<td>62.9 (24.3)</td>
<td>71.6 (23.7)</td>
<td>0.406</td>
</tr>
<tr>
<td>Repetition 4</td>
<td>72.3 (14.9)</td>
<td>80.1 (6.0)</td>
<td>0.122</td>
</tr>
<tr>
<td>Repetition 5</td>
<td>65.1 (15.6)</td>
<td>84.1 (8.1)</td>
<td>0.002</td>
</tr>
<tr>
<td>Repetition 6</td>
<td>70.6 (9.7)</td>
<td>83.1 (6.3)</td>
<td>0.002</td>
</tr>
<tr>
<td>All six repetitions</td>
<td>63.0 (19.9)</td>
<td>76.1 (17.0)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Fig. 2: Screenshot from the simulator of the ‘Guided Vaginal Cuff Closure with a Barbed Suture’ procedure.
Single Session of Robotic Human Cadaver Training: The Immediate Impact on Urology Residents in a Teaching Hospital
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How to Standardize?

“How do you choose your port sites for a laparoscopic rectosigmoidectomy?”
Future of the Surgery

PRE DEFINED MANOUVERS

- Acesso à retrocavidade (bolsa omental)
- Dissecção da artéria MI
- Dissecção pancreática
- Liberação da goteira parieto-cólica
- Acesso ao retroperitônio alto
- Liberação do ang. esplênico
EndoNet: A Deep Architecture for Recognition Tasks on Laparoscopic Videos

Andru P. Twinanda, Sherif Shehata, Didier Mutter, Jacques Marescaux, Michel de Mathelin, and Nicolas Padoy

Research Group CAMMA: Computational Analysis and Modeling of Medical Activities
Future of the Surgery

- medineering
- SURGICAL ROBOTICS
- TITAN MEDICAL
- INTUITIVE SURGICAL
- TransEnterix
- Medtronic
- Google
- OUR HISTORY
- VERB SURGICAL
- Americas Servicios Médicos
- ircad America Latina
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