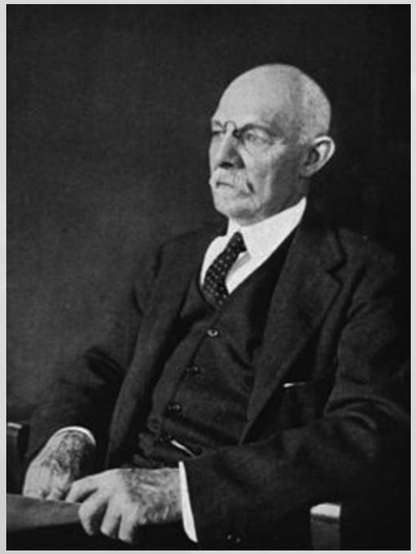
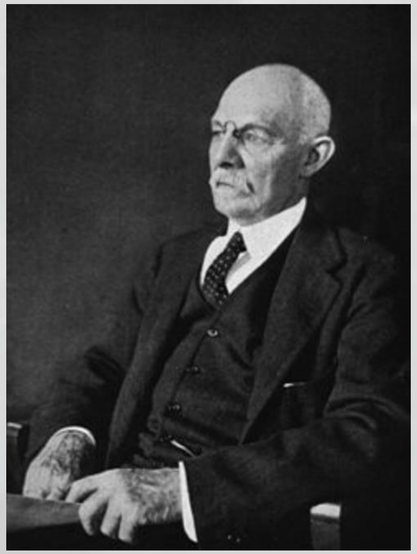
Treinamento em Cirurgia Robotica



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 Medica

Suggested learning pathway for minimally invasive surgery

Visual - See it

Auditory - Hear/Say it

Read/Write - It

Kinesthetic - Do it

Treinamento em Cirurgia Robotica

ASiT The Association of Surgeons in Training
www.asit.org

Editorial

Undermining and bullying in surgical training: A review and recommendations by the Association of Surgeons in Training

CrossMark

Peyton's 4-Steps-Approach

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.

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

PHASE I	Introduction to *da Vinci* Technology
Test drive the *da Vinci* Surgical System	
Review procedure video relevant to your planned *da Vinci* procedures	
Complete live epicenter and/or standard case observation	
Complete live standard case observation	

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

Americas
Serviços Médicos

ircad
América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

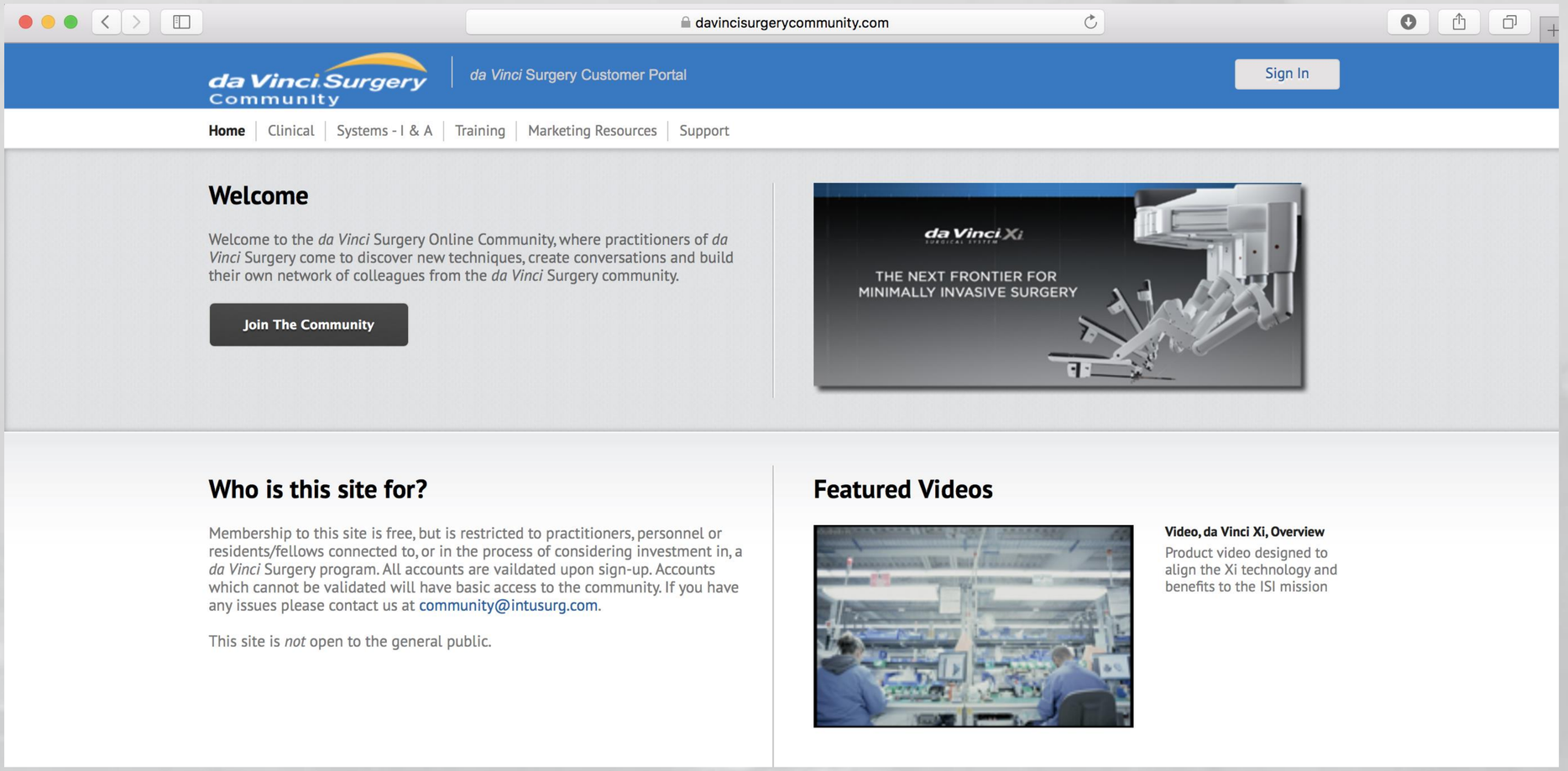
da Vinci Surgery

PHASE II	***da Vinci* Technology Training**
Complete *da Vinci* Technology online training (recommended)	
Complete *da Vinci* Technology In-Service with *da Vinci* representative	
Complete *da Vinci* Technology online assessment	
Perform *da Vinci* Technology Skills Drills	
• Skills Drills • *Skills Simulator*™(if available)	
Review two full-length procedure videos relevant to your planned *da Vinci* procedures on *da Vinci* Online Community	
Complete preparation for *da Vinci* Technology Training (All above prerequisites must be complete prior to attendance)	

Americas Serviços Médicos

ircad América Latina

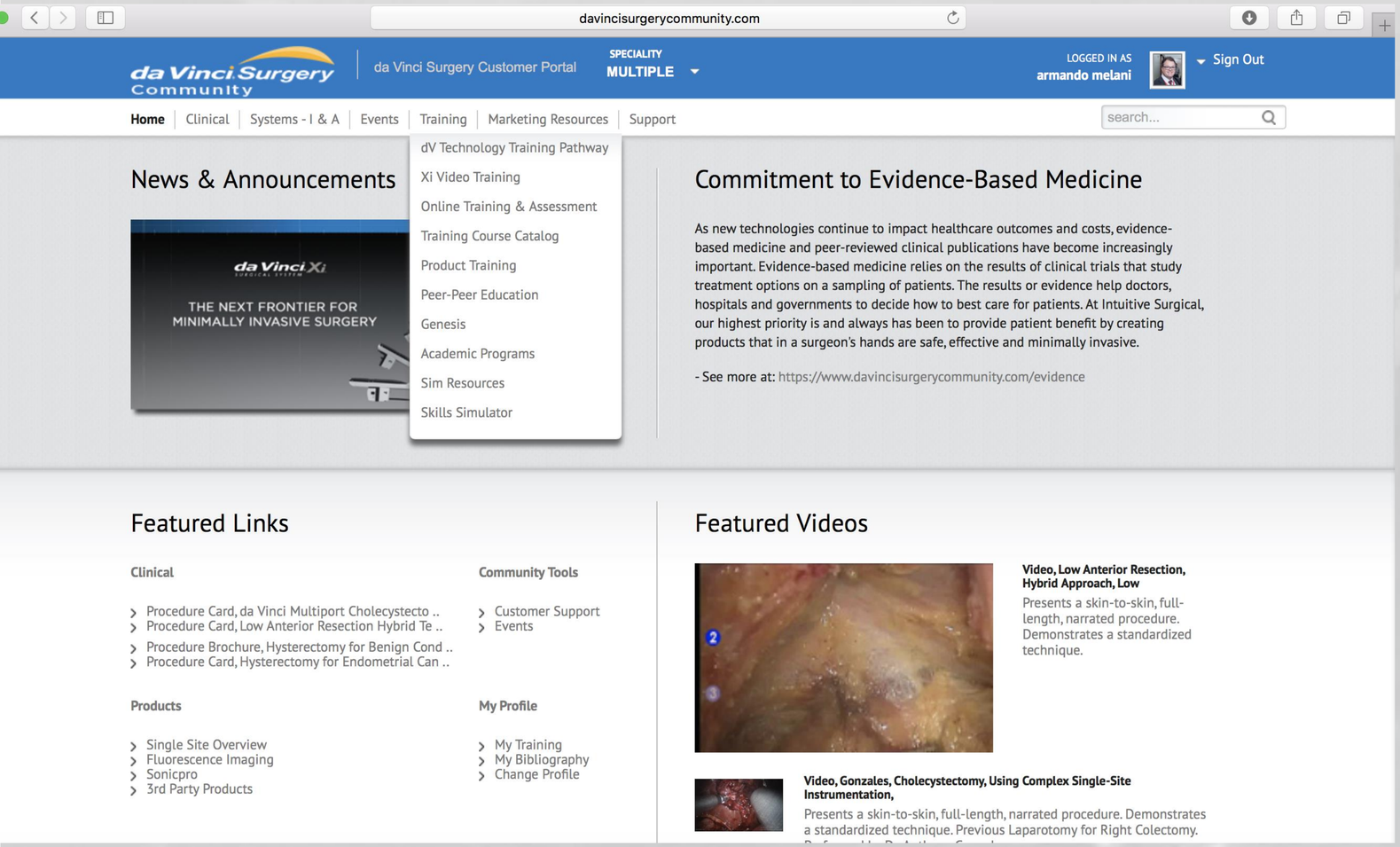
Treinamento em Cirurgia Robotica

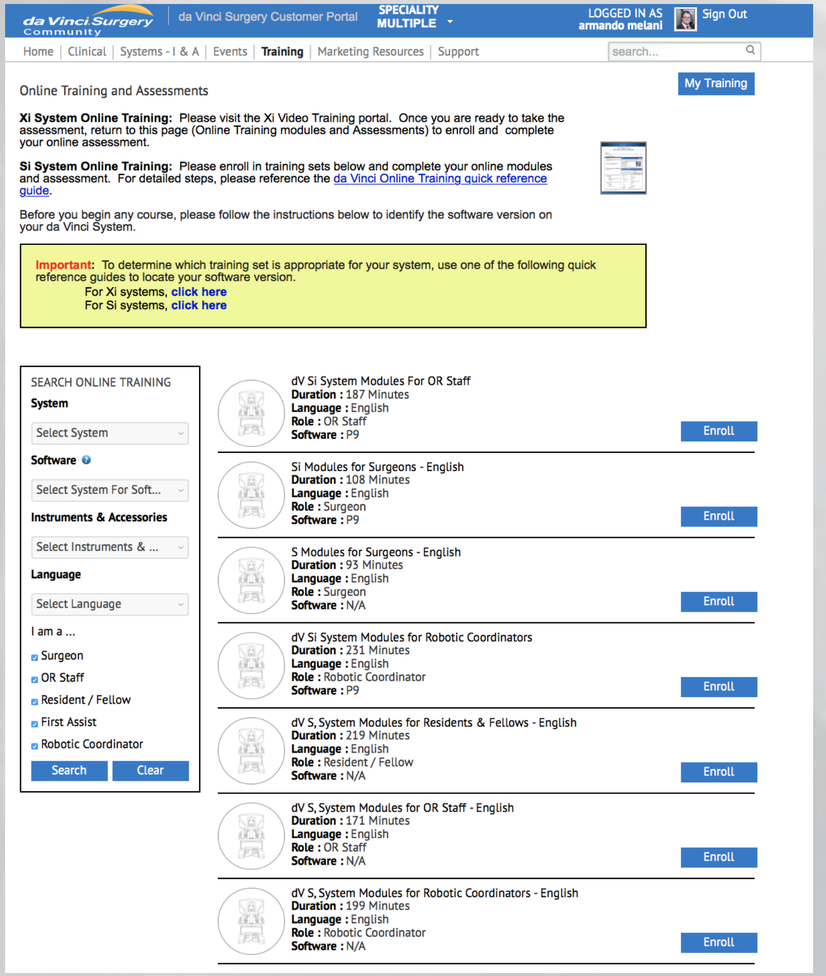


Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica





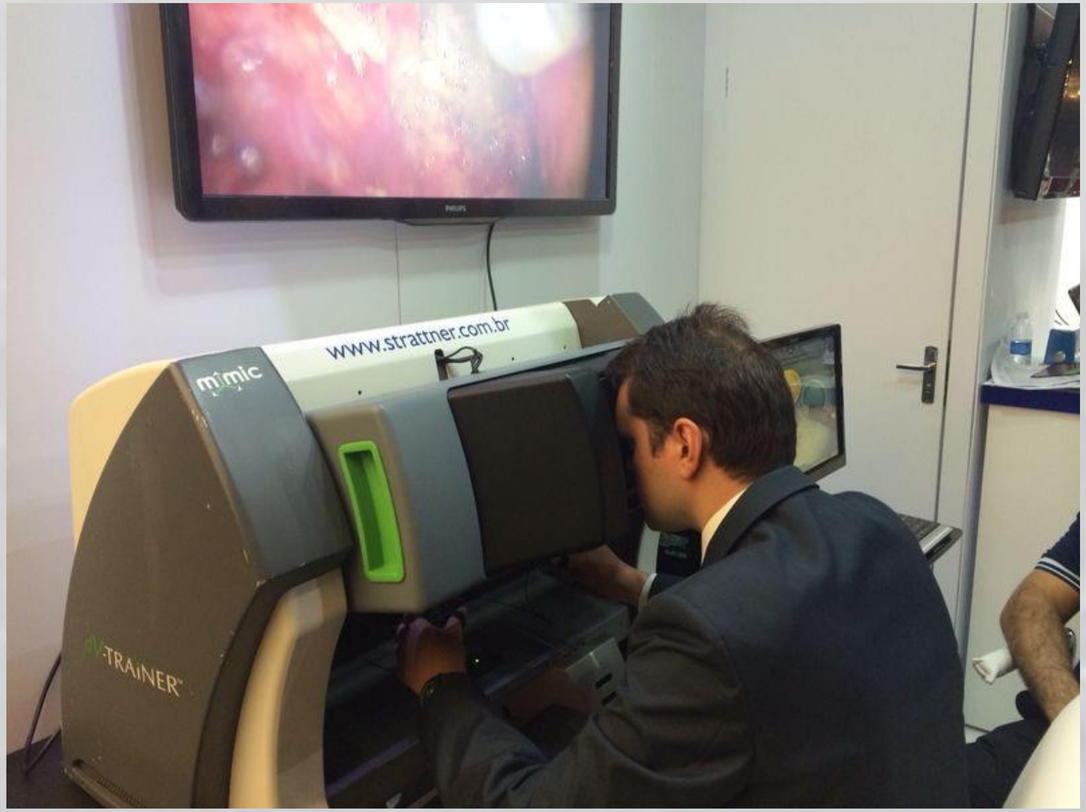
Americas Serviços Médicos

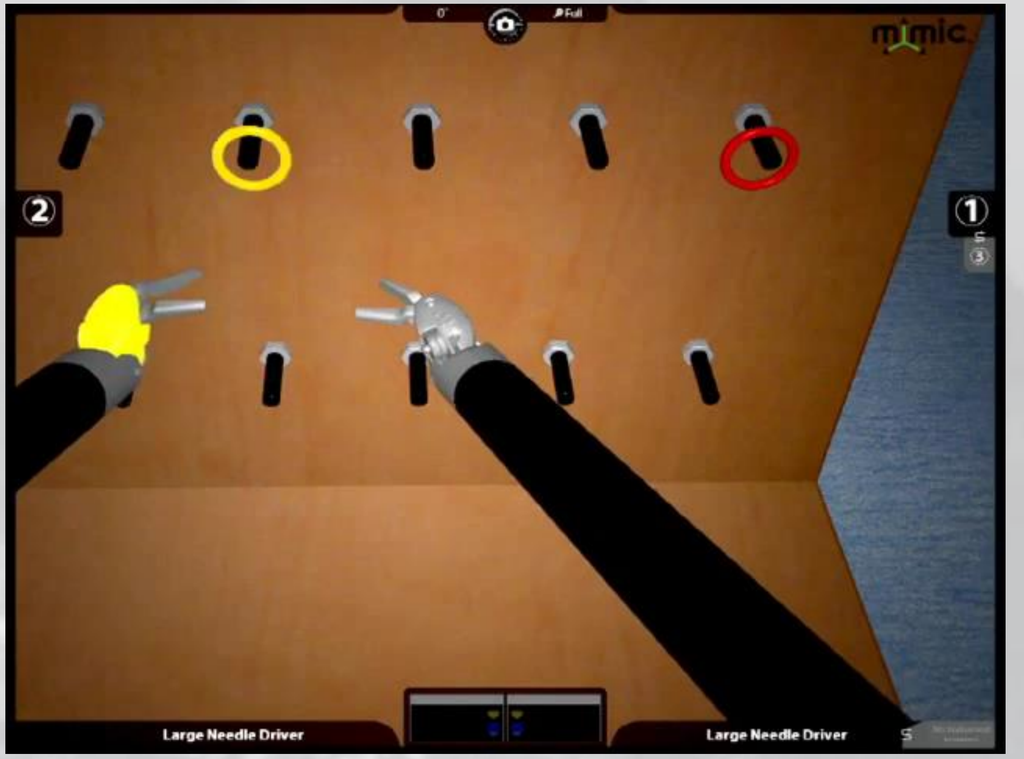
ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery





Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

Americas
Serviços Médicos

ircad
América Latina

Treinamento em Cirurgia Robotica

da Vinci® *Si*™ Surgical System
System Overview In-Service Guide: *Surgeon*

3 Docking the Patient Cart

Cannulae & Trocars

Demonstrate remote center and remote center boundaries and assemble the *da Vinci* cannula, cannula seal and obturator during the discussion

1. Instrument arm
   a. 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 reads cannula type
   b. Obturator
      - 8 mm blunt: reusable
      - 8 mm bladeless: disposable
      - 5 mm blunt: reusable
   c. Cannula seals
      - Green cannula seal: disposable, for 8 mm cannula, provided in drape kit
      - White cannula seal: disposable, for 5 mm cannula
2. Camera arm
   a. 3rd party 12 mm and 8.5 mm trocars
   b. 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 871770)
3. Assistant ports: 3rd party cannula selected by the surgeon

16 cm 11 cm
8 mm Reusable Cannulae

8 mm Disposable Cannula Seal

Basic Port Placement

Only basic port placement philosophy and a straight-line docking approach are covered here.
Insufflate prior to marking out port placement. Refer to procedure card/procedure guide for port placement and patient positioning recommendations.

1. Camera arm placement: place the camera port 10-20 cm from target anatomy (closer to 20 cm when possible)
2. Instrument arm placement:
   a. For arms 1 and 2, measure 8-10 cm from the camera port, perpendicular to the axis between the target anatomy and camera port
   b. For arm 3, measure an additional 8-10 cm from the closest *da Vinci* port
   c. Triangulate as needed
   d. Instrument arms should be at least 10 cm from target anatomy

da Vinci Skills Model

Americas Serviços Médicos

ircad América Latina

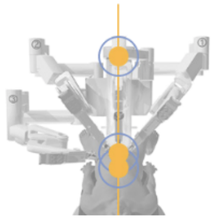
Treinamento em Cirurgia Robotica

da Vinci® Si™ Surgical System
System Overview In-Service Guide: *Surgeon*

Dock the Patient Cart	Complete (✓)

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 clutch 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 clutch 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 clutch and/or clutch button
   d. Release tension on tissue if needed
      - Use one hand to stabilize cannula while the other pushes and holds the upper port clutch 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.

Cannula Installed



Straight-Line Docking

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Surgeon Skills Drills Practicum & Setup Guide

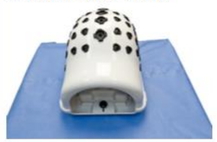
da Vinci Surgery

1 *da Vinci* Training Exercise Setup

▲ Exercises

da Vinci Skills Model Components

Skills Model Shell



The shell has ports for camera and instrument insertion.

Skills Model Base

The locking plate and thumb screw secure the exercise tray to the base. Grooves along the side of the base attach to the shell.

Exercise Tray

The exercise tray is a connective surface for exercise mounts. It attaches securely to the base with a thumb screw and locking plate.

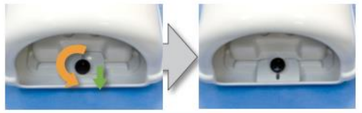
Exercise Mounts

For easy exercise mount exchange, attach pegs on exercise mounts to wells in the exercise tray. Be sure to push down firmly.

1.1 Exercise Tray Setup & Exchange

a. Rotate the thumb screw one half turn to loosen it slightly

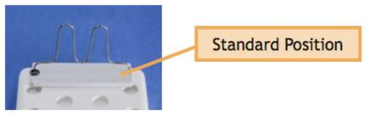
b. Slide the locking plate away from the tray



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

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Surgeon Skills Drills Practicum & Setup Guide

da Vinci Surgery

1.3 *da Vinci Si* System Patient Cart Setup & Docking

Setup

a. *da Vinci* Skills Model with ports placed for tartget anatomy 1 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)

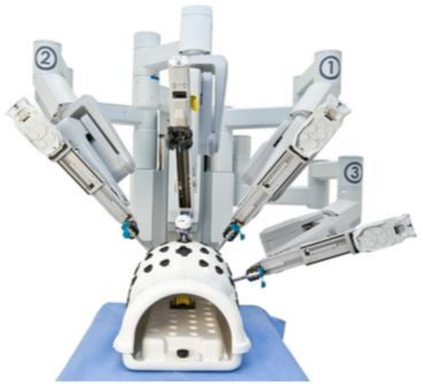
- Camera arm aligned, in sweet spot and with 2nd setup joint opposite 3rd arm
- Instrument arm numbers and sterile adapters facing forward

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



Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Surgeon Skills Drills Practicum & Setup Guide

da Vinci Surgery

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

Setup

a. Same as exercise 5.2

b. Pass the 0-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.

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 0-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.

f. Pass another 0-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.

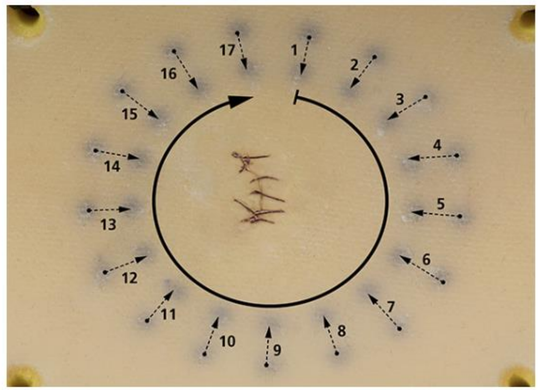
Suggestions for proper suture management:

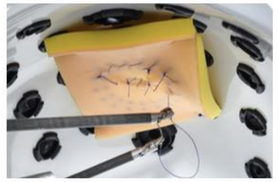
- Use the pulley method for pulling the excess suture out (using both the needle drivers alternately to pull)
- Pull the excessive suture alternating needle drivers using the hand over hand method
- Make sure to keep the instrument tips in view. The suture should not be pulled out completely.

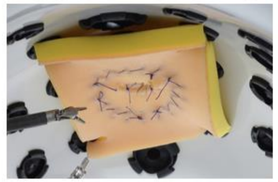
Pay special attention to:

a. Keeping needle driver tips in view at all times

b. Keeping the suture intact







Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

PHASE III	Initial Case Series Plan
Complete initial case series	

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

da Vinci® Training Passport
Technology Training Pathway: Surgeon

da Vinci Surgery

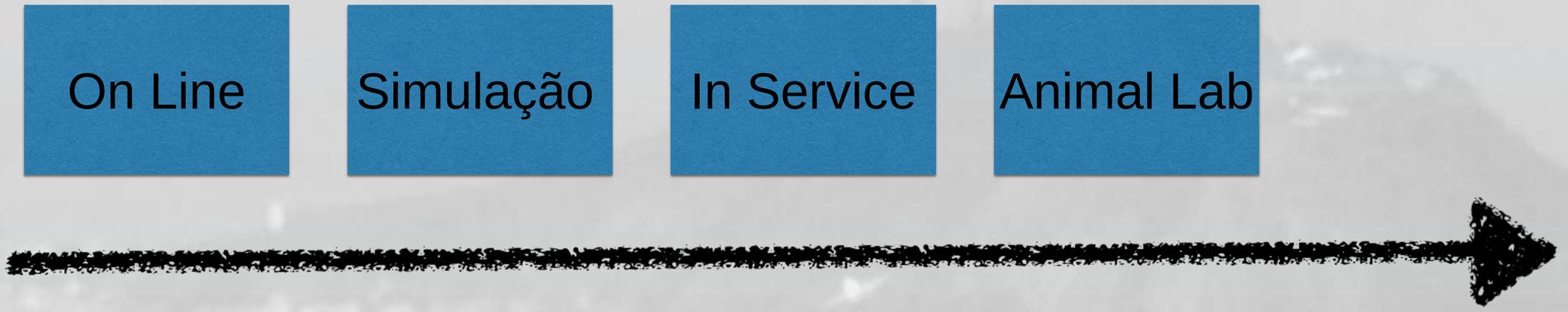
PHASE IV	Continuing Development
Attend surgeon-led course(s) (Course details available in the *da Vinci* Training Passport brochure and course catalog. If not available in your market, please check with your *da Vinci* representative for course details.)	
Complete at least two additional activities after 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	

Americas Serviços Médicos

ircad América Latina

Treinamento em Cirurgia Robotica

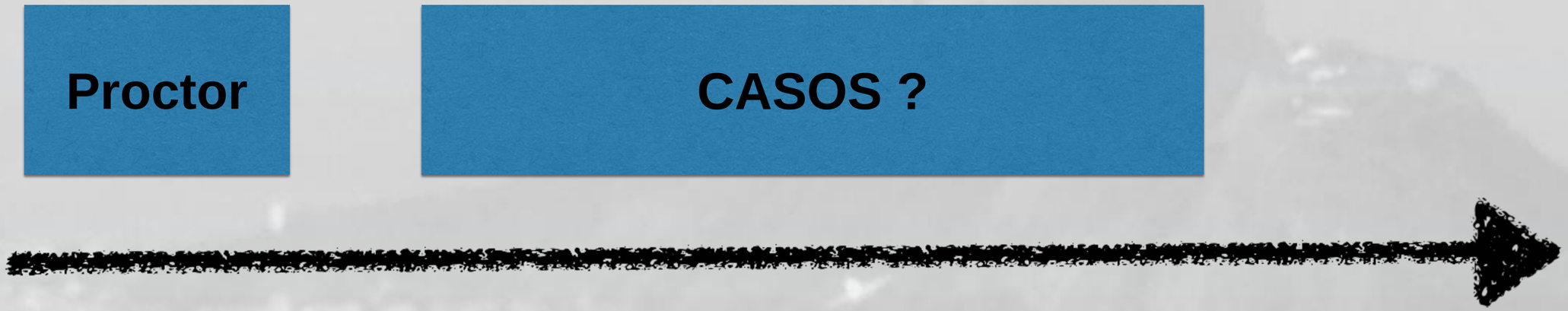
Certificação



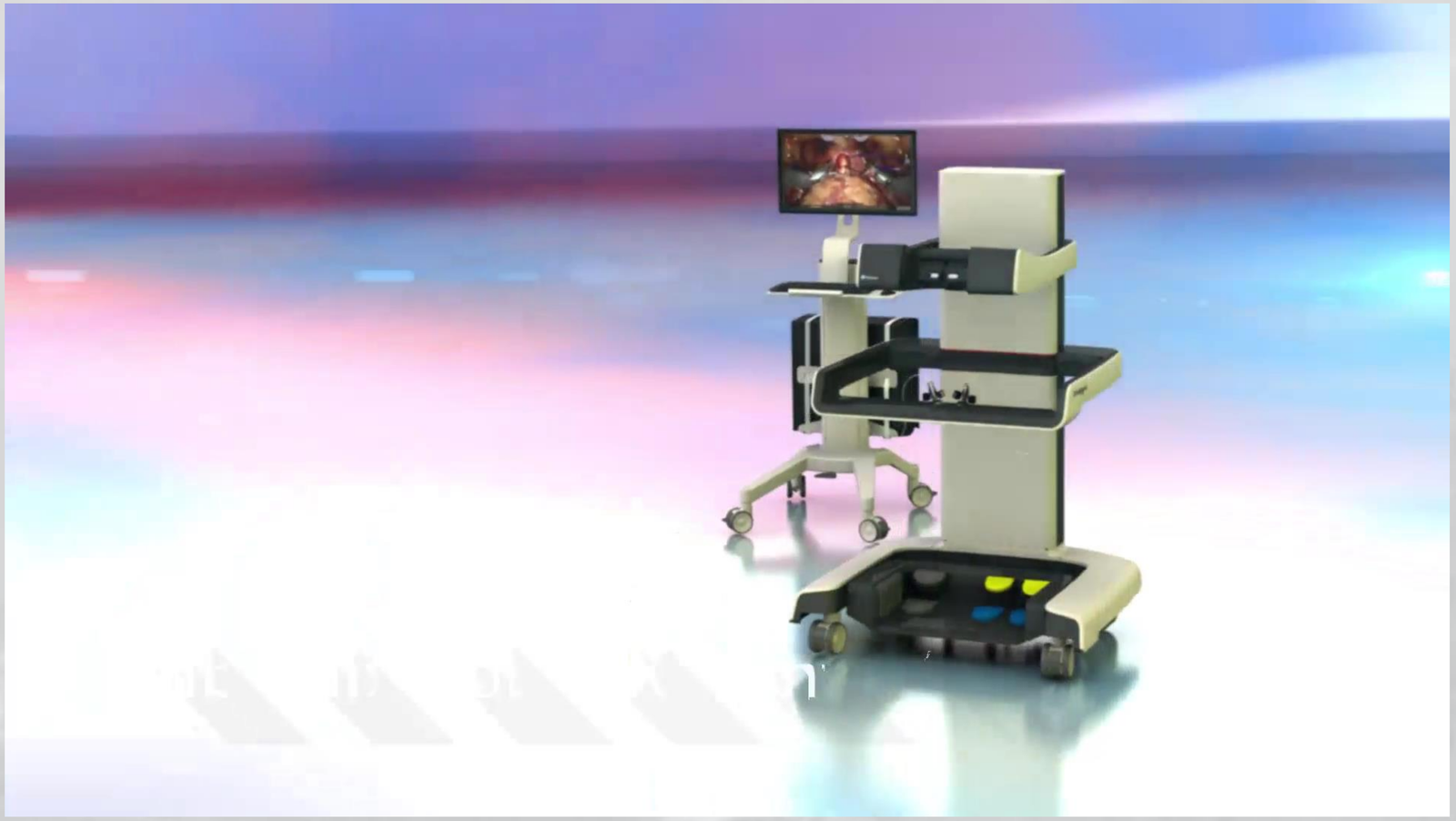
Americas Serviços Médicos

ircad América Latina

Proficiência em Cirurgia



Treinamento em Cirurgia Robotica



Americas
Serviços Médicos

ircad
América Latina

Treinamento em Cirurgia Robotica

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

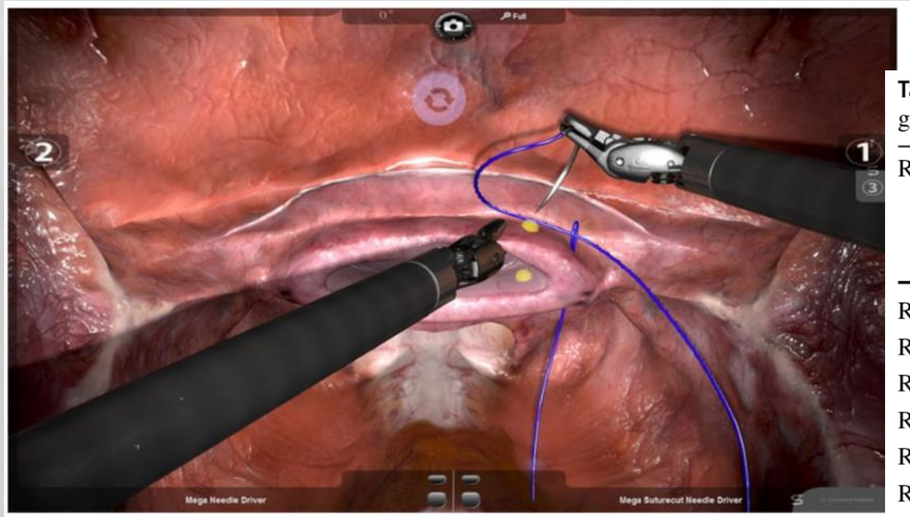
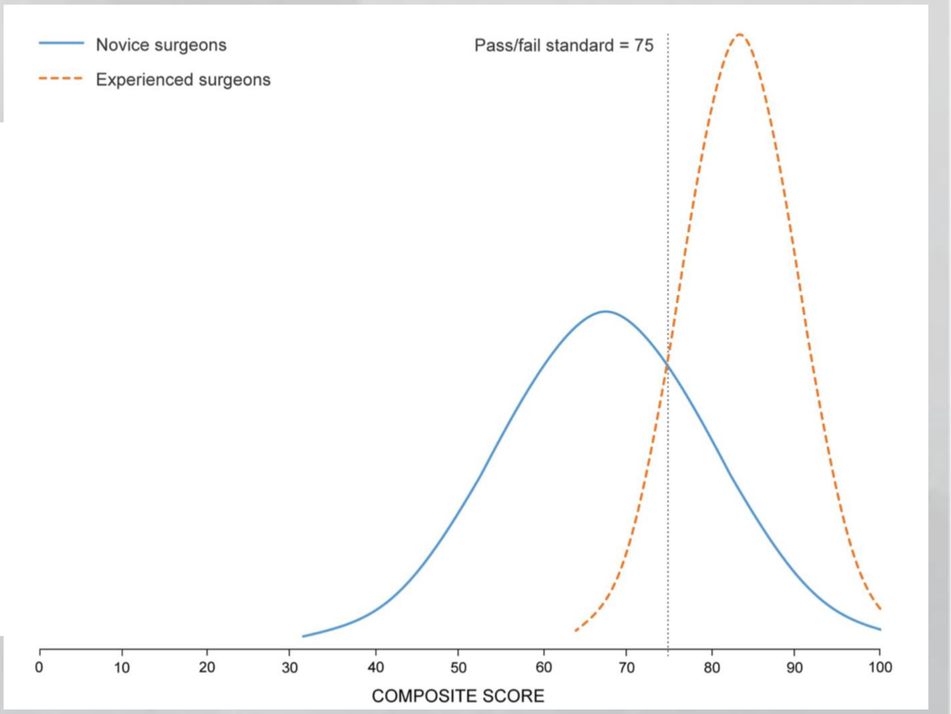


Fig. 2 Screenshot from the simulator of the 'Guided Vaginal Cuff Closure with a Barbed Suture' procedure

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

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



Single Session of Robotic Human Cadaver Training: The Immediate Impact on Urology Residents in a Teaching Hospital

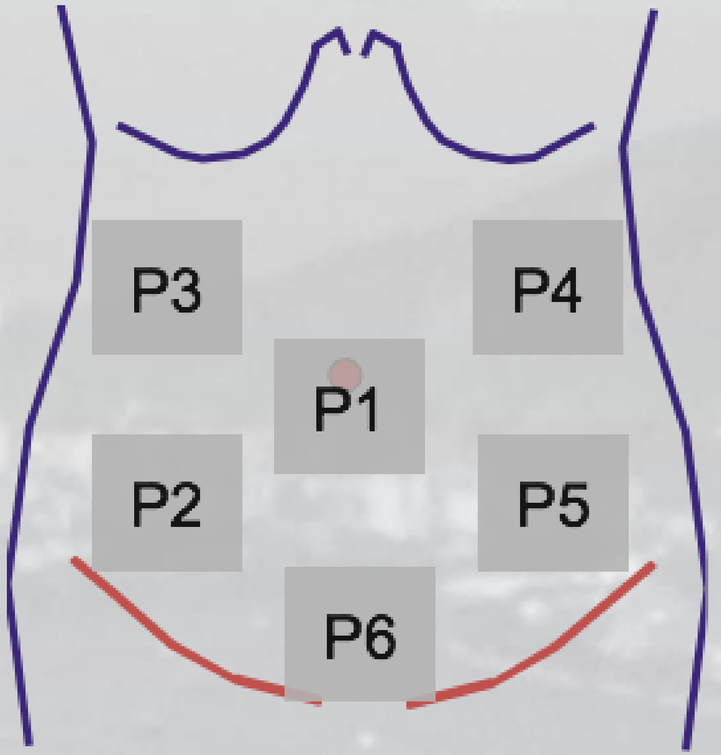
Treinamento em Cirurgia Robotica

Americas
Serviços Médicos

ircad
América Latina

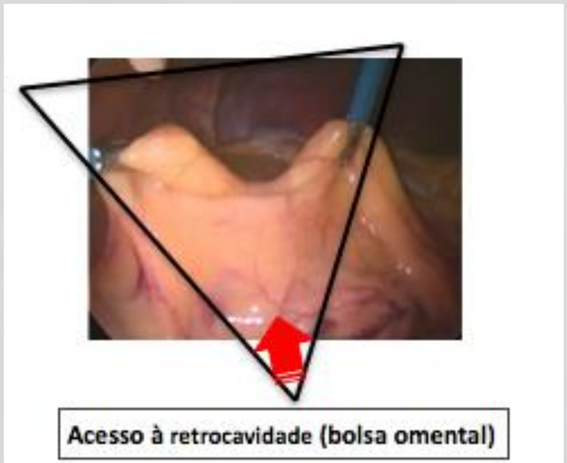
How to Stardartize ?

"How do you choose your port sites for a laparoscopic rectosigmoidectomy?"



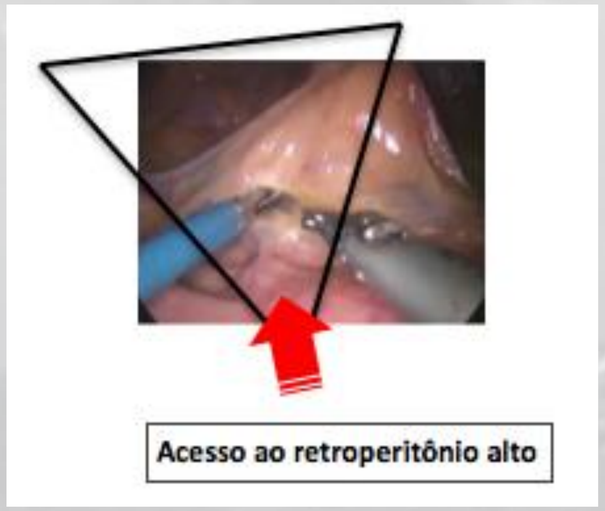
Future of the Surgery

PRE DEFINED MANOUVERS



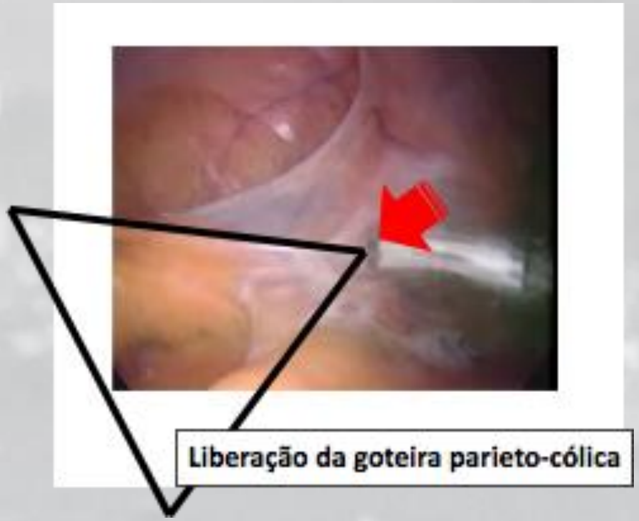
Acesso à retrocavidade (bolsa omental)

Dissecção da artéria MI

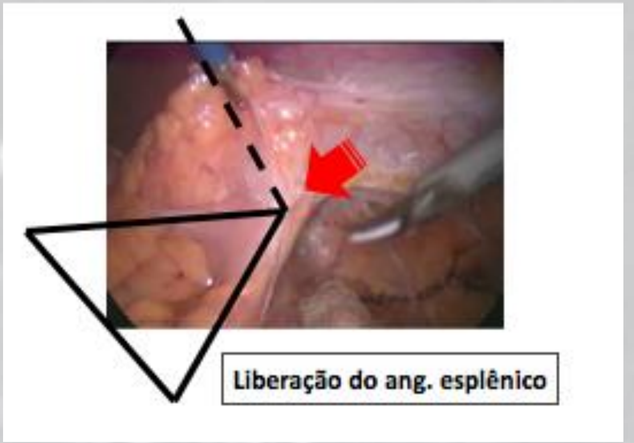


Acesso ao retroperitônio alto

Dissecção pancreática

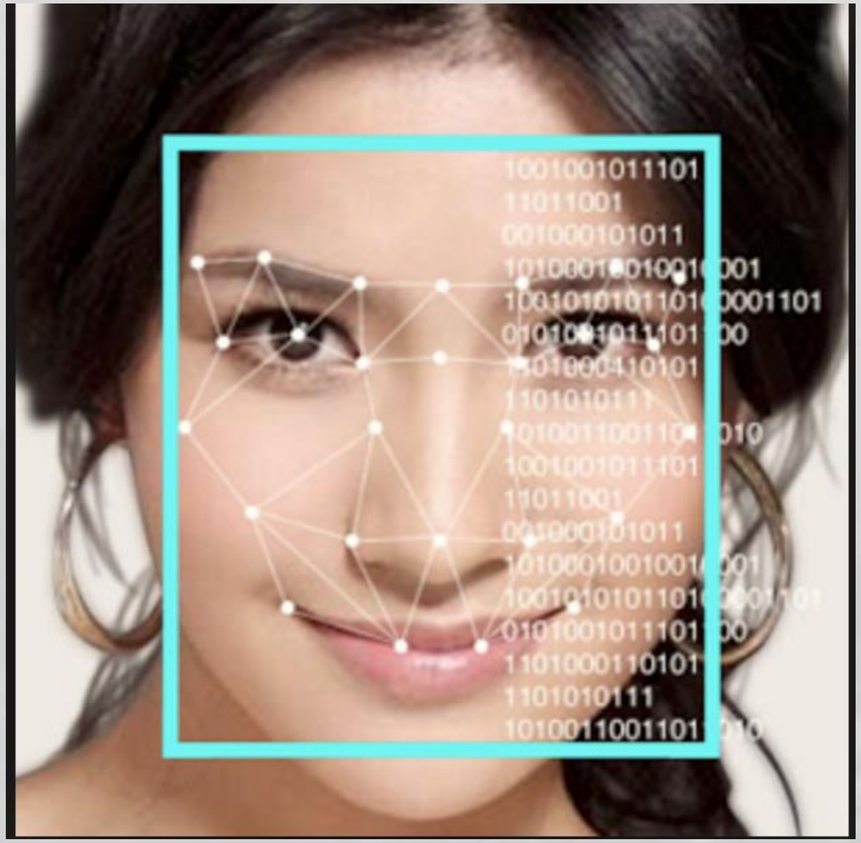


Liberação da goteira parieto-cólica



Liberação do ang. esplênico

Future of the Surgery



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

CAMMA ICUBE UNIVERSITÉ DE STRASBOURG ircad France Les Hôpitaux Universitaires de STRASBOURG ihu STRASBOURG CAMI

Americas Serviços Médicos

ircad América Latina

Future of the Surgery

medineering
surgical robotics

TITAN MEDICAL™

TransEnterix®

INTUITIVE
SURGICAL®

Medtronic

Americas
Serviços Médicos

ircad
América Latina

Treinamento em Cirurgia Robotica

Americas
Serviços Médicos

ircad
América Latina