Workshop: How to do laparoscopic and robotic promontofixation: theoretical and practical skills.
Workshop Chairs: Andrea Minervini, Florence, Italy
Domenico Veneziano, Reggio Calabria, Italy

Friday, 15 September 09:30-11:00

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**Speaker Powerpoint Slides**
Please note that where authorised by the speaker all PowerPoint slides presented at the workshop will be made available after the meeting via the ICS website [www.ics.org/2017/programme](http://www.ics.org/2017/programme) Please do not film or photograph the slides during the workshop as this is distracting for the speakers.

**Aims of Workshop**
This workshop is procedure-focused, and will boost and refine delegates theoretical and practical skills and knowledge on laparoscopic and robotic promontofixation. It will provide state-of-the-art Hands-on Training (HoT) courses using pelvic trainer stations and robotic simulators with specific exercises. It will allow the participants to optimize their skills on custom-made models with focus on the main steps of the procedure. Training will be tailored according to their level of expertise in a one to one learning experience.

**Learning Objectives**
1. Defining the correct indications for minimally invasive promontofixation.
2. Learning standardized laparoscopic and robotic promontofixation techniques.
3. Improving the participants’ laparoscopic and robotic surgical skills using specific simulated tasks, with the main goal of mastering endoscopic promontofixation.

**Learning Outcomes**
At the end of the workshop delegates will feel more confident in their practice of laparoscopic and robotic promontofixation.

**Target Audience**
Urologist and Gynaecologist wishing to learn the more about the minimally invasive treatment of pelvic organ prolapse.

**Course Requirements**
Basic laparoscopic surgical skills
Robotic console mastering skills

**Hands-on Training session management:**
- Each participant will be provided with a mesh at the beginning of the course. They will prepare their mesh during the theory part. 8 scissors + sutures (3-0) will be needed.
- Laparoscopic HoT: 10 minutes for running suture rehearsal + 20 minutes for simulated promontofixation
- Robotic HoT: instrument handling + suturing exercises

**Suggested Learning before Workshop Attendance**
- Practice in Pelvic Organ Prolapse (POP) management
- Basic Robotic console management.

**Suggested Reading**


WORKSHOP 36

HOW TO DO LAPAROSCOPIC AND ROBOTIC COLPOSACROPEXY: THEORETICAL AND PRACTICAL SKILLS

Chair: Andrea Minervini, MD, PhD; *Domenico Veneziano, MD
Dept. of Urology, University of Florence, Careggi Hospital, Florence, Italy
* Ospedale Reggio Calabria, Italy

Wednesday 13th September 2017

Andrea Minervini MD, PhD

1. Careggi University Hospital certified as ERUS Robotic Training Centre in 2015

2. Proctor for Intuitive Surgical / AB Medica

Domenico Veneziano MD

Affiliations to disclose†:

INTECH innovative training technologies / consultant

Funding for speaker to attend:

☐ Self-funded
☐ Institution (non-industry) funded
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† All financial ties (over the last year) that you may have with any business organisation with respect to the subject matter mentioned in your presentation.

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Simulation is the imitation of the operation of a real-world process or system over time.

Wikipedia

Surgical simulation is a complex science:
- Cognitive task analysis
- Simulator design
- Training curriculum design
- Simulator validation
- Performance assessment
- Clinical proficiency assessment
- Non-technical skills evaluation and training
- Surgical instrument development and testing
- Surgical procedure evaluation
- Training the trainer

E-FLS/FLS

Cadaver

Modular hands-on training - Laparoscopic surgery:
- Complete procedure
- Complex tasks
- Basic skills

Specialty related Simulator fidelity

Basic skills
- Bi-manual dexterity
- Clutch control
- Needle handling
- Cauterization
- Tissue sparing

Time: 30 mins (7 mins per task)
How to do laparoscopic and robotic promontofixation: theoretical and practical skills.

laparoscopic promontofixation: complex task on INTECH colposacropexy model, custom made for ICS 2017
- Vaginal manipulation
- Suturing
- Mesh preparation
- Mesh placement

Time: 30 mins

How to do laparoscopic and robotic promontofixation: theoretical and practical skills.

Sacral promontory

How to do laparoscopic and robotic promontofixation: theoretical and practical skills.

Tiltable manipulator

How to do laparoscopic and robotic promontofixation: theoretical and practical skills.

Vagina
PLANNING AND PREPARATION

• INDICATIONS
  – Treatment of choice for women with female genital organ prolapse associated with symptoms of descent or stress/mixed urinary incontinence.
  – Demonstrated success in the settings of vaginal vault prolapse as well as multi-compartment POP
  – Subjective success 74-98% (short FU)

• SPECIFIC MATERIALS
  – High-definition laparoscopic stack
  – 10mm 0° laparoscope
  – 2 x 5mm Johann graspers
  – 5mm Maryland dissector
  – 5mm diathermy scissor
  – 5mm bipolar diathermy grasber
  – 5mm needle holder
  – 3 x 5mm laparoscopic trocars
  – 12mm camera port
  – Polypropylene mesh
  – 0 nylon sutures
  – 2/0 Vicryl
Patient Positioning
- Legs fully abducted
- Steep Trendelenburg
- Lap. Stack between legs

Port Placement
- 10-12mm camera port at the umbilicus level (Hasson technique)
- 2 x 5mm on each side at 2/3 distance between umbilicus and anti-sup-iliac spine
- 5mm midway umb-pubis
- 12mmHg Pneumo

Pelvic Exposure
- Mobilise both ascendent and descendent colon as far as the pelvic brim
- Hold line incised by monopolar scissor on both side
- This will allow to leave in place only the bladder, uterus and rectum
- A percutaneous suture on a straight needle will secure the uterus to the abdominal wall

Identification of sacral promontory
- Normally easily identified on the right side
- Accurate position confirmed by tactile feedback
- The peritoneum is incised over the bony prominence taking care of:
  - Ant. Sacral artery (below)
  - Ureter (lateral)

N.B. this maneuver may be very difficoult for obese patients because of fat tissue covering the promontory.... TAKE CARE!!!!!!! No during learning curve.....

Perirectal Dissection
- The peritoneal incision is continued lateral to the rectum until the pelvic floor muscles become visible deep in the pelvis.
- Care is taken to preserve perirectal fat, thus minimising risk of iatrogenic bowel injury or neurovascular damage.

Posterior Mesh placement
- We use a two-part mesh set with pre-cut posterior and anterior components (polypropylene).
- The broad end of the posterior mesh is anchored to the levator ani bilaterally as well as to the vaginal vault in the midline.
- A nonabsorbable monofilament should be used. Intracorporeal suturing is essential at this stage.
- The long tongue of the posterior mesh is left long at this stage and will be trimmed later after fixation to the sacral promontory.
- The posterior element of the procedure is now complete and the suture placed earlier to retract the uterus can be removed.
Fenestration of the broad ligaments
• To allow the anterior mesh to be fixed to the sacral promontory, it will later need to be passed through windows in the broad ligaments.
• The peritoneum on either side is incised taking care to avoid damage to the uterine arteries and fallopian tubes.

Anterior dissection
• Ventral deflection of the malleable retractor is used to show the anterior limit of the vaginal vault and to guide dissection of the bladder from the vagina using a combination of monopolar and bipolar diathermy.
• The dissection is continued until the outline of the catheter balloon can be discerned.

Anterior dissection
• The anterior mesh is now secured to the vaginal vault with nonabsorbable sutures at the apex and along the lateral aspects (†-malleable retractor).
• The two ‘tails’ of the mesh can be seen here lying anterior to the uterus and fallopian tubes.

Anterior dissection
• The three mesh limbs are then secured to the fascia overlying the sacral promontory using a nonabsorbable suture.
• An extracorporeal knot is tied whilst the assistant applies strong retraction to the three limbs of the mesh.
• The knot is then slid down via the 5-mm suprapubic port and two further throws applied intracorporeally.

Anterior dissection
• The two tails of the anterior mesh are pulled through the windows in the broad ligaments and brought together with the posterior mesh.

Finally, any excess mesh is trimmed and the peritoneum is closed so that no mesh is left exposed.
From Surgeo to Surgeon

- Sacrocolpopexy should be a relatively straightforward procedure for the experienced laparoscopist.

**PITFALLS**

- Identifying the correct planes is essential for:
  - a bloodless dissection
  - mesh free from haematoma
  - avoid the risk of neurovascular damage to the rectum

Vaginal wall necrosis can occur many years after surgery, typically 3 or 4 years after. The risk of this can be minimised by ensuring that any sutures placed in the vaginal wall are as superficial as possible, particularly on the posterior wall that has a less reliable blood supply.

Finally, the surgeon (and patient) should always be aware of a risk of postoperative incontinence which may be unmasked by correcting the prolapse.

**LAPAROSCOPIC & ROBOTIC PROMONTOFIXATION: INDICATIONS**

It is a grade A recommendation procedure for vaginal vault prolapse (VVP). Further indications include multicomartment POP and recurrent prolapse after failed vaginal repair.

For younger (≤40 years old) and sexually active women with symptomatic POP, SC with mesh provides anatomic pelvic restoration, durable results, less dyspareunia by maintaining vaginal length and axis, and allowing for aseptic mesh placement, thus reducing the risk of mesh infection and erosion.

SC can be performed laparoscopically with or without robotic assistance. At present, the laparoscopic SC (LSC) is widely adopted and there are many reports showing durable results (Grade B recommendation). However, indications and technical aspects are not standardised and vary from country to country [3].

Robotic technology has been marketed based on several possible advantages, including better visualisation, extreme manoeuvrability and greater efficiency and the use of robotic SC (RASC) in the management of female POP appears to be increasing.

**Patient Position**

The patient is placed in a *supine position* on a padded vacuum mattress, with open legs. Once the patient is positioned, the perineum should be at the edge of the operating bed to facilitate the use of the vaginal manipulator or of the malleable vaginal retractor. Legs should be abducted to help positioning the Da Vinci robot.

The operating bed must provide a Trendelenburg position and in case of a planned contemporary stress incontinence surgery, the legs of the patient should be movable to a lithotomic position at the end of the procedure.

**Port Placement**

The ports are placed in a "W"-shaped configuration or in an arch configuration as for pelvic floor surgery, i.e. robotic assisted laparoscopic proctectomy.

The camera trocar can be placed at the level of the umbilicus. The operating table is positioned into a moderate Trendelenburg position around 20°-25° head down, helping to keep the intestine away the surgical field.
Surgical Instruments

Four robotic arms are generally used, utilizing the camera (with a 0° or a 30° down scope). The robotic instruments employed for the procedure include one Maryland bipolar forceps, a fenestrated Grasper (ProGrasp or Cadure forceps), robotic monopolar curved scissors (Hot Shears scissors) and one large needle driver. Furthermore, a vaginal manipulator or a malleable vaginal retractor is used to manipulate the vagina during the procedure.

A non-absorbable (polypropylene or soft prolene), 15x10 cm wide mesh is normally used and it is advisable to have it prepared beforehand. The mesh is cut into two pieces: the anterior and the posterior mesh. The total length of both meshes should be approximately 15 cm, any extra length of the tails it is of no importance.

Sacrocolpopexy for POP – Potential (current) Downsides of RASC

Port Placement

Douglas Exposure

Promontory Exposure

Lack of tactile Feed-back

Posterior Dissection

Posterior mesh fixation to the endopelvic fascia and promontory Douglas closure

Vesico-vaginal dissection and mesh fixation to the vaginal wall

Anterior mesh fixation to the promontory

Peritoneization

Costs of RASC were significantly higher than LSC, although, operational costs collapses when excluding purchase and maintenance of the robotic system getting costs of RASC and LSC comparable

After port placement and docking of the robot, right iliac vessels, the right ureter, the uterus along with right ovary and tube, the vaginal stump, the Douglas pouch and the rectum are identified as the most important landmarks

If present, to gain a better exposure of the Douglas pouch, the uterus is lifted upwards with either a transcutaneous nylon 0 or 2-0 stitch or with a uterine manipulator. Alternatively, to have a dynamic exposition and traction a ProGrasp forceps can be used.

The peritoneum overlies the promontory is then incised on the right side of the sigmoid colon, care is taken to avoid damage to the iliac vessels and the right ureter. Once the peritoneum is opened, the sacrum and the anterior longitudinal ligament are identified.

The peritoneal incision is extended caudally till the Douglas pouch, on the right side

Colposacropexy: Anterior mesh fixation

RASC potential downside: Lack of tactile feedback

Lack of tactile feedback to warrant adequate traction, especially when uterus is in place

Akl et al. reported an overall fast learning curve. Operative time decreased of 25% after performing the first 10 cases of sacrocolpopexy.

Geller et Al. reported a learning curve of 20 cases in order to reduce significantly surgical complications, operative time, open conversions.
LAPAROSCOPIC & ROBOTIC PROMONTOFIXATION: INDICATIONS AND STEP BY STEP TECHNIQUE

THANK YOU FOR YOUR ATTENTION!

Uterus preservation

1. Uterus is a "central" element in pelvic statics. Preserving the uterus means preserving normal pelvic anatomy and function
2. Surgery:
   - Easier technique (Less blood loss)
   - Shorter operating time and hospital stay
   - Fewer post-operative complications (less erosions)
   - Major considerations in elderly women or patients with concomitant pathologies
3. Because we must take the woman’s point of view into account

Hysterectomy and the associated pelvic floor dissection may increase the risk of pelvic neuropathy and disrupt natural support structures such as the uterosacral cardinal ligament complex. Nesbitt 1989