Operative Hysteroscopy with 5 French Instruments

ESGE Intermediate and advanced level

Rudi Campo, MD
Leuven Institute for Fertility and Embryology
LIFE
Leuven - Belgium

Important conditions

Ambulatory or office endoscopic unit
Watery (Saline) distension medium
New generation operative hysteroscope with small diameter and high optical quality
Mechanical and Bipolar Surgery with atraumatic technique
Patient selection, anaesthesia, post operative care

Ambulatory endoscopic – IVF unit

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Watery (Saline) distension medium
New generation operative hysteroscope with small diameter and high optical quality
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Ambulatory endoscopic – IVF unit

OR 1
For IVF and ambulatory surgery

Watery distension medium

Grade A evidence
Less painful than CO₂

Hydro-flotation
subtle lesions !!

Saline for bipolar surgery

Prevention Fluid Overload

- Pressure and flow controlled pump system with continuous control of fluid balance to work at minimal necessary pressure
Small diameter instrumentation with high optical quality

Grade A evidence
3 mm Instruments significant less painful than 5 mm

Best optical quality with 30° rod lens
Smallest possible diameter with continuous flow and 5 french instrument access

New generation of operative hysteroscopes

Trophy Scope a new generation

This hysteroscope has been named after the multicentre study TROPHY "Trial of Outpatient Hysteroscopy" for which it was designed.


Interesting Characteristics
Gliding system that provides Diagnostic (2.9 mm) and Operative (4.4 mm) possibilities in one instrument.

Trophy Scope
2.9 mm single flow compact hysteroscope

• 2.0 mm lens system in single flow compact hysteroscope does not require assembling...

• Can be loaded with an accessory sheet which can be activated in case of necessity by gently push on the bottom and forward movement till locking in the active position. Supplementary functions are available without the need to remove the hysteroscope.
Trophy Scope loaded with 3.7 mm continuous flow sheath

Passive
Active

Operative sheet in passive position does not interfere the diagnostic phase (2.9 mm).

Trophy Scope loaded with 4.4 mm operative continuous flow sheath

With a simple push on the bottom the sheet can be locked in the active position without the need to remove the hysteroscope.

Trophy Scope: Fast reuse of instrument possible

For the ambulatory use the compatibility of this instrument with a biodegradable high level disinfection agent like Tristel Fuse® offers the possibility to reuse the Trophy hysteroscope within 10 minutes and improves the efficiency and cost benefit of the ambulatory surgery.
5 French Instruments

Mechanical probes

5 French Instruments

Bipolar probes

5 French Instruments

VERSAPoint

Vaporisation
Ambulatory operative Hysteroscopy

Important conditions

Ambulatory or office endoscopic unit
Watery (Saline) distension medium
Small diameter instrumentation with high optical quality
Mechanical and Bipolar Surgery
Patient selection, anaesthesia, post operative care

Patient selection

Minimal invasive anaesthesia:
Sedation with or without para cervical block only for patients with ASA score less than 2
Pathology
Resections of polyps, Fibroids, Uterusplasty
Asherman’s syndrome, endometrial resection
Endo- myometrial exploration.
Post operative care
No conventional OR recovery room.
Patient has to be able to leave facilities within one hour.

Limiting factor for ambulatory surgery?

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Ambulatory OR</th>
<th>Conventional OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyp resection</td>
<td>183</td>
<td>27</td>
</tr>
<tr>
<td>Necrotic tissue</td>
<td>45</td>
<td>05</td>
</tr>
<tr>
<td>Uterusplasty</td>
<td>41</td>
<td>04</td>
</tr>
<tr>
<td>Endometrial resection</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>Myomectomy</td>
<td>41</td>
<td>36</td>
</tr>
<tr>
<td>Total</td>
<td>353</td>
<td>119</td>
</tr>
<tr>
<td>Total %</td>
<td>75 %</td>
<td>25 %</td>
</tr>
</tbody>
</table>

Instrumentation
Prefer smaller operative hysteroscope than large Resectoscope.
Patient ASA score
Operation Time
Myomectomy
Ambulatory versus Conventional OR

<table>
<thead>
<tr>
<th>Type</th>
<th>Ambulant</th>
<th>Conventional OR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Typ 0</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>Typ 1</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Typ 2</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>&gt; 2 cm</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>Mean diam. in cm</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

Complications Ambulatory Surgery

- Interventions with operative hysteroscope
  - 0 complications
- Interventions with the bipolar resectoscope
  - 3 complications
    - In 2 Myomectomy surgeries the operation time of 30 min. was exceeded and patient was transferred to the conventional OR recovery unit.
    - 1 Perforation with resectoscope during removal of placenta remnants.

Hysteroscopic surgery with 5 French Instruments?

- Uterusplasty
- Polyp – Myomectomy
- Ashermann syndrome
- Endo myometrial exploration
Congenital anomalies of the uterus

Incidence

- Overall: 5%
- Fertile women: 2-3%
- Infertile women: 3%
- Women with recurrent miscarriage: 5-10%
- Women with late miscarriages and preterm deliveries: >25%

Prospective multi-centre randomized clinical trial

Incidence of congenital malformation in infertility patients is significantly higher than in patients with AUB

<table>
<thead>
<tr>
<th>Malformation</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterus septus</td>
<td>44</td>
<td>63</td>
</tr>
<tr>
<td>T-Shaped</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Uterus unicornis</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>100</td>
</tr>
</tbody>
</table>

Incidence of congenital anomalies in 530 consecutive HSC in the LIFE institute
Uterine Septum

- Lack of resorption of the midline septum. no major vascularisation should be expected
- Insufficient fusion of the ducts. possible strong vascularisation Uterine outer anatomy ?

Possible clinical manifestation ?
- Reduced implantation rate
- Recurrent abortion
- Late abortion
- Partus prematurus
- Dystocia

Uterine Septum and implantation after IVF

<table>
<thead>
<tr>
<th></th>
<th>uteroplasty</th>
<th>control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregn. rate</td>
<td>20%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Impl. Rate</td>
<td>10.5%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>
Metroplasty significantly increases live birth rate in patients with recurrent miscarriage

<table>
<thead>
<tr>
<th></th>
<th>Pre-operative</th>
<th>Post-operative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>Pregnancies</td>
<td>117</td>
<td>37</td>
</tr>
<tr>
<td>• abortions</td>
<td>*104 (88.9%)</td>
<td>*5 (13.5%)</td>
</tr>
<tr>
<td>• premature</td>
<td>6 (5.1%)</td>
<td>5 (13.5%)</td>
</tr>
<tr>
<td>• at term</td>
<td>7 (6.0%)</td>
<td>27 (73%)</td>
</tr>
<tr>
<td>• children alive</td>
<td>*12 (10.2%)</td>
<td>*32 (86.5%)</td>
</tr>
</tbody>
</table>

Uterine Septum and reproductive performance

Among the congenital uterine malformations, the septate uterus is associated to the highest rate of damage of the reproductive capability but there is no scientific evidence that the presence of a septum certains reproductive problems.

One Stop Uterine diagnosis

Ultrasound
 Measure fundal myometrial thickness
 Identify double endometrial echo

Fluid Mini-Hysteroscopy
 Compartmentalisation of uterine cavity.

Kontrast sonography
 Confirm cavity form and measure myometrial thickness?
**Differential Diagnosis septate uterus**

- Septate uterus
- Bicornuate uterus

**TVS: Bicornuate vs. Septate**

- Orthogonal view along the long axis
- Straight line between the tubal ostia (1, 2) and apex of the fundal external contour (3)
- Bicornuate: (A) below the line or (B) up to 5 mm above
- Septate: more than 5 mm above (C)

**3D Sonography provides highest diagnostic accuracy**
Metroplasty, Scientific evidence?

Hysteroscopic resection of the septum improves the pregnancy rate of women with unexplained infertility: a prospective controlled trial.
Motto A. et al. Fertil. Steril. 2009 May; 91(3)

Small uterine septum is an important risk variable for preterm birth.

Hysteroscopic metroplasty improves gestational outcome in women with recurrent spontaneous abortion.

Hysteroscopic metroplasty

When should we operate?

- Women with long-standing unexplained infertility
- Recurrent miscarriage
- Women > 35 years of age and infertility problem
- Women in whom assisted conception is being contemplated

Hysteroscopic metroplasty

How should we operate?

1. Partial septa: microscissor
2. Total or large septum: microscissor and bipolar needle or resectoscope
3. Diagnostic uncertain situations
   - DD bicorn versus septum: Resectoscope under laparoscopic guidance.
   - DD T shaped uterus – subseptus: microscissor
Uterine septum dissection using the cold scissors

Procedure

- Measure fundal myometrial thickness with TVS
- Put a reference mark 5 mm under the tubal ostia
- Perform the septum incision unifying both reference marks
- Measure fundal thickness which should be minimal 10 mm

CONTROL DEPTH OF DISSECTION

ULTRASOUND
- Measurements of fundal myometrial thickness
- Myometrial vascular pattern in section plane
  - Direct visual control during dissection with microscissor
Limits of Hysteroscopic surgery with 5 French Instruments?

• Uterusplasty
• Polyp – Myomectomy
• Ashermann syndrome
• Endo myometrial exploration

Hysteroscopic Myomectomy with 5 French Instruments?

VIDEO DEMONSTRATION

Hysteroscopic surgery with 5 French Instruments?

• Uterusplasty
• Polyp – Myomectomy
• Ashermann syndrome
• Endo myometrial exploration
Treatment of Ashermann Syndrome with 5 French Instruments?

VIDEO DEMONSTRATION

Hysteroscopic surgery with 5 French Instruments?

- Uterusplasty
- Polyp – Myomectomy
- Ashermann syndrome
- Endometrial exploration
  - Myometrial lesions in US suspicious for adenomyosis
  - Exploration subtle HSC lesions
    - Endometrial
    - Cavity

Adenomyosis “A diagnostic Problem”

Seldom clinical diagnosis prior to hysterectomy.

Definitive diagnosis by histology

Endometrial glands of varying shapes embedded in abundant endometrial stroma are surrounded by smooth muscle bundles (hematoxylin & eosin, X 50)
TVS characteristics for adenomyosis

- Distortion and enlargement of myometrial layer
- Zones of Hypo/hyper echogenicy
- Myometrial haemorrhagic cysts

One stop uterine diagnosis

Ultrasound - Fluid Mini-Hysteroscopy - Kontrast sonography

Neither routine US nor HSC have pathognomonic images for adenomyosis.

Question remains how we can provide correct tissue removal for histological diagnosis?

Ultrasound and Hysteroscopic combined approach

New Tools for Myometrial Exploration

Spirotome acc. to Gordts

A device made to harvest high quality samples from soft tissues.

It is built on the pioneering concept of a cutting helix on a cutting cannula well identified by Ultrasound.
Insertion Spirotome through continuous flow sheath Trophy Scope

1. Creating double flow
2. Suction device for endometrial sampling
3. Guide for ultrasound guided intrauterine procedures like positioning embryo transfer catheter

Spirotome endomyometrial biopsy

Hysteroscopic guided Ultrasound controled myometrial biopsy with Spirotome.

Procedure
1. TVS shows myometrial distortion
2. Diagnostic HSC shows normal endometrium and cavity
3. Activation of 3,7 mm continuous flow sheath
4. Removal 2,9 hysteroscope
5. Introduction Spirotome

Spirotome

The sample is harvested by turning the helix into the diseased area under ultrasound guidance. The cannula turns subsequently over the helix to free the sample from the surroundings.
Trophy Scope – Spirotome - Ultrasound

VIDEO DEMONSTRATION

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Subtle lesions sign of JZ Pathology?

Abnormal endometrial images with an unclear clinical significance

- Cystic mucosal elevation
- Focal or general hypervascularisation
- Endometrial defects
Mucosal elevation

marked localised vascular pattern

Endometrial defects
Operative Hysteroscopic Exploration of Junctional Zone myometrium.

Endometrial exploration of subtle lesions

Procedure
1. TVS shows normal myometrium or distortion
2. Diagnostic HSC shows subtle endometrial lesions.
3. Activation of 4.4 mm continuous flow operative sheath
4. Endometrial exploration with 5 french instruments

Exploration of subtle lesions.

VIDEO DEMONSTRATION

Limits of Hysteroscopic surgery with 5 French Instruments?

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- Polyp – Myomectomy
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  - Myometrial lesions in US suspicious for adenomyosis
  - Exploration subtle HSC lesions
    - Endometrial
    - Cavity
Myometrial exploration using the cold scissors or bipolar needle

Subtle structural lesions of the cavity form

- Arcuate uterus
- T shaped uterus

Unclear clinical significance

Hysteroscopic exploration of the sub endometrial myometrium with formation of a pear like shaped cavity.

Controversial idea?
Skill level for surgery with 5 french Instruments

Operative hysteroscopy with 5 french Instruments requires high level of skills.

- Full proficiency in camera navigation and Hand eyes coordination measured by the HYSTT (hysteroscopy skill training and testing method).
- Full proficiency in diagnostic hysteroscopy using the vagina cervix approach. (more than 100 procedures).
- Proficiency in the use of the bipolar resectoscope.

Learning curve should start with ESGE Level 1 surgeries like IUD removal and endometrial biopsy than level 2 with 5 resections of polyps, 5 resections of pedunculated fibroids less than 2 cm(type 0) and 3 divisions/resections of uterine septum.

Level 3 surgery and endometrial ablation only when full proficiency is achieved.

Conclusions 1

With the new generation of operative hysteroscopes the scope of operative hysteroscopy with 5 French instrumentation has significantly enlarged.

Our experience shows that 75% of all hysteroscopic interventions can be performed in this set up. Especially the removal of polyps, Uterusplasty for uterine septum and T shaped uterus, the treatment of Ashermann syndrome, removal of placenta remnants and the exploration of the Junctional zone myometrial layer are done in this ambulatory set up.

Conclusions 2

Endometrial ablation and myoma resection where in equal portion performed in the conventional OR.

The ambulatory hysteroscopic surgery has an extreme patient satisfaction rate, low complication rate and high efficacy rate under the following conditions.

1. Ambulatory OR: easy access, high tech infrastructure, 5 minute turn over rate
2. Anaesthesia: conscious sedation or local anaesthesia, no specific recovery, patient leaves facility after 1 hour.
3. Surgery: small Instruments, saline as distension medium with the use of mechanical or bipolar energy.
More info on the training programmes in laparoscopic surgery
info@theacademy-house.org
www.theacademy-house.org