Operative Hysteroscopy with 5 French Instruments
From Macro to Micro Surgery

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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

Ambulatory endoscopic unit
**Watery distension medium**

- Grade A evidence
- Less painful than CO₂
- Hydro-flotation subtle lesions !!
- Saline for bipolar surgery

**Fluid administration**

- 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

**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 (2.9mm).

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 loaded with
4.4 mm operative continuous flow sheath

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

Bipolar probes

5 French Instruments

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
Prefere smaller operative hysteroscope than large Reectoscope.
Patient ASA score
Operation Time

Myomectomy

Ambulatory versus Conventional OR

<table>
<thead>
<tr>
<th>Typ</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>15</td>
<td>36</td>
<td>11</td>
<td>30,5</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>50</td>
<td>11</td>
<td>30,5</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>14</td>
<td>14</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td></td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

Mean diam. in cm

1.5 2.2

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
- Placental remnant removal
- Ashermann syndrome
- Exploration subtle HSC lesions
  - Endometrial
  - Cavity

Congenital anomalies of the uterus

<table>
<thead>
<tr>
<th>Incidence</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Overall</td>
<td>5%</td>
</tr>
<tr>
<td>Fertile women</td>
<td>2-3%</td>
</tr>
<tr>
<td>Infertile women</td>
<td>3%</td>
</tr>
<tr>
<td>Women with recurrent miscarriage</td>
<td>5-10%</td>
</tr>
<tr>
<td>Women with late miscarriages and preterm deliveries</td>
<td>&gt;25%</td>
</tr>
</tbody>
</table>

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>
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

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></td>
<td></td>
</tr>
<tr>
<td>Abortions</td>
<td>*104 (88.9%)</td>
<td>*6 (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>

*P-value < 0.001

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 certainly reproductive problems.

Septate, subseptate and arcuate uterus decrease pregnancy and live birth rates in IVF/ICSI.

Retrospective matched control study after 2481 embryo transfer in normal uterus and 289 embryo transfers before and 538 embryo transfers following hysteroscopic surgery.

Pregnancy rates after embryo transfer before hysteroscopic metroplasty were significantly lower, both in women with arcuate, subseptate as septated uterus compared with controls.

Differences in terms of live birth rates were even more evident: 1.9% versus 38.6%, OR 32 (P<0.001) and 3.0% versus 30.4%, OR 14 (P<0.001).

After surgery, the differences disappeared.

Abortion rates in pregnant women after IVF/ICSI with untreated & treated septate uterus.

Hysteroscopic Metroplasty in recurrent miscarriage improves pregnancy outcome.

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


Term Delivery Rate after Hysteroscopic Metroplasty in Patients with recurrent spontaneous abortion and T-Shaped, Arcuate and Septate Uterus. (10 fold increase)

Giacomucci E et al., Gynecol Obstet Invest. 2010 Dec 11.
Septated Uterus

Septate uterus is associated with impaired fertility
pregnancy outcome

Hysteroscopic metroplasty seems to be associated with an improvement in the achievement of pregnancy in pregnancy outcome

In an individual case where a septum has been diagnosed accidentally we do not have yet the possibility to predict the future reproductive capacity of the individual.

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

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

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

Uterine septum dissection using the cold scissors

Uterine septum dissection using the Bipolar needle
Uterine septum dissection using the Bipolar needle

Limits of Hysteroscopic surgery with 5 French Instruments:

- Uterusplasty
- Polyp – Myomectomy
- Placental remnants
- Ashermann syndrome
- Exploration subtle HSC lesions
  - Endometrial
  - Cavity
Hysteroscopic Myomectomy with 5 French Instruments?

Typ 2 Myoma

Typ 1 myoma

Typ 1 myoma
Hysteroscopic Myomectomy with 5 French Instruments? Typ 1 myoma

- Uterusplasty
- Polyp – Myomectomy
- Placental Remnants
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Surgical technique
- Use preferentially mechanical energy, then bipolar rather than unipolar.
- Remove carefully the intracavitary necrotic tissue mechanically with 5 French instruments or resectoscope cold resection.
- Identify and resect the intramyometrial invasion with the micro scissors, in case of bleeding use the bipolar needle or resectoscope.
- Perform surgery under US guidance for intramyometrial exploration and keep safety zone of 5 mm.

Hysteroscopic surgery with 5 French Instruments?

Hysteroscopic surgery of pregnancy remnants

Hysteroscopic removal of pregnancy remnants.
Hysteroscopic removal of pregnancy remnants.
Limits of Hysteroscopic surgery with 5 French Instruments?

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Treatment of Ashermann Syndrome with 5 French Instruments?

- Ashermann Syndrome: resection – dissection?

Treatment of Ashermann Syndrome.
Operative Hysteroscopy overview.

<table>
<thead>
<tr>
<th>Year</th>
<th>Interventions</th>
<th>Postoperative adhesions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polypressection</td>
<td>433</td>
<td>&lt; 5 %</td>
<td></td>
</tr>
<tr>
<td>Myomectomy</td>
<td>149</td>
<td>&lt; 5 %</td>
<td>1 after embolisation 1 adenomyosis</td>
</tr>
<tr>
<td>Uterusplasty/septum</td>
<td>183</td>
<td>&lt; 5 %</td>
<td>Only large septa in fundal area</td>
</tr>
<tr>
<td>Endometriumresection</td>
<td>197</td>
<td>Not validated</td>
<td></td>
</tr>
<tr>
<td>Ashermann</td>
<td>50</td>
<td>32 %</td>
<td>High for grade 3 and 4</td>
</tr>
<tr>
<td>Placental remnants</td>
<td>62</td>
<td>10 %</td>
<td>Increases with use of monopolar resectoscope</td>
</tr>
<tr>
<td>Total</td>
<td>1074</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R. Campo non published data

Limits of Hysteroscopic surgery with 5 French Instruments?

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Exploration of Subtle lesions?

Abnormal endometrial images with an unclear clinical significance

- Cystic mucosal elevation
- Focal hypervascularisation
- Endometrial defects

Mucosal elevation
Operative Hysteroscopic Exploration of Junctional Zone myometrium.

Endometrial defects

Exploration of subtle lesions.

Diagnostic Lecture

marked localised vascular pattern

Endometrial defects

Endo myometrial 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 sheet
4. Endomyometrial exploration with 5 French instruments
Limits of Hysteroscopic surgery with 5 French Instruments

- Uterusplasty
- Polyp – Myomectomy
- Ashermann syndrome
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  - 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?
T Shaped or DES uterus

T Shaped uterus

Uterusplasty T shaped Uterus

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 setup. Especially the removal of polyps, Uterusplasty for uterine septum and T-shaped uterus, the treatment of Asherman 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 were 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 turnover 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
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www.theacademyhouse.org