Hysteroscopy in Gynecology

Jeannette Lager, MD
Clinical Instructor
University of California, San Francisco

Objectives

• Overview of indications/contraindications
• Instrumentation
• Pain management
• Hysteroscopic sterilization techniques
• Non-resecting endometrial ablation techniques

Indications

• Abnormal pre or post-menopausal bleeding
• Endometrial thickening or polyps
• Submucosal fibroids
• Endocervical lesions
• Intrauterine adhesions
• Mullerian anomalies (e.g. uterine septum)
• Retained IUD or foreign bodies
• Retained POC
• Sterilization
• Endometrial ablation

Contraindications

• Viable IUP
• Active pelvic infection
• Known cervical or uterine cancer
**Instrumentation**

- Hysteroscope
- Outer diameter--3.1 to 10mm
- Working length--160 to 302 mm
- Types--Rigid and Flexible
- Viewing angle--zero to 70 degrees

**Operative Instrumentation**

- Operative sheath w/ instrument channels
- Electrocautery
- Hysteroscopic morcellator

---

**Who is currently doing office hysteroscopy?**

1. >75% of hysteroscopic procedures are in-office
2. 25-75%
3. <25%
4. I don’t do office hysteroscopy

---

**Why office setting?**

- Time
- Preop
- Post procedure
- Cost effective
Cervical preparation and dilation
- Systematic review of 10 randomized trials comparing misoprostol vs. placebo for cervical preparation in premenopausal women showed (1):
  - Reduced cervical dilation (RR 0.6; 95% CI 0.5-0.7)
  - Lower rate of cervical laceration (RR 0.2; 95% CI 0.1-0.6)
  - Greater cervical dilation (2.6mm; 95% CI 1.73-3.54)
  - Increased SE (VB, cramping, fever)


Misoprostol administration
- Vaginal vs. oral (7 vs 6mm dilation)
- Dosage 200mcg - 1000mcg (most studies 200-400mcg)
- No consistently demonstrated benefit in postmenopausal women
  - Estradiol x 2 wks + misoprostol

Patient considerations
- History of substance abuse
- Severe anxiety
- Low pain threshold
- Poor airway
- Limited mobility
- Cervical stenosis

Analgesia
- Evidence supports:
  - Preoperative NSAIDs 1 hour before office hysteroscopy reduces postop pain
  - Paracervical block can reduce pain
Pain

- Pain sensation is mainly due to impulses passing by sensory pathways down the lateral and posterior portions of cervix and into uterosacral ligaments

Analgesia

- Evidence is inconsistent for:
  - Intracervical injection
  - Topical IU anesthetic
  - Topical cervical anesthesia

Local Anesthetics

<table>
<thead>
<tr>
<th>Med</th>
<th>Conc</th>
<th>Ave Vol</th>
<th>Onset</th>
<th>Duration (min)</th>
<th>Max Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine</td>
<td>1%</td>
<td>5-20</td>
<td>3-5min</td>
<td>30-60</td>
<td>4.5mg/kg, not to exceed 400mg</td>
</tr>
<tr>
<td>Lidocaine w/ Epi</td>
<td>1%, Epi 1:100,000</td>
<td>5-20</td>
<td>3-5min</td>
<td>120-360</td>
<td>7mg/kg</td>
</tr>
<tr>
<td>Bupivacaine w/ Epi</td>
<td>0.25-0.5%, Epi 1:100,000</td>
<td>5-20</td>
<td>3-5min</td>
<td>180-240</td>
<td>2.5mg/kg, not to exceed 175mg</td>
</tr>
<tr>
<td>Procaine</td>
<td>2%</td>
<td>5-20</td>
<td>fast-acting</td>
<td>15-60</td>
<td>7mg/kg, not to exceed 350-600mg</td>
</tr>
<tr>
<td>Chloroprocaine w/ Epi</td>
<td>2%</td>
<td>5-20</td>
<td>fast-acting</td>
<td>15-30</td>
<td>14mg/kg, not to exceed 1000mg</td>
</tr>
<tr>
<td>Ropivacaine</td>
<td>0.2-0.5%</td>
<td>5-20</td>
<td>3-5min</td>
<td>120-360</td>
<td>5mg not to exceed 200mg for minor nerve block</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>1%</td>
<td>5-20</td>
<td>3-5min</td>
<td>45-90</td>
<td>7mg/kg, not to exceed 400mg</td>
</tr>
</tbody>
</table>

Fluid management

<table>
<thead>
<tr>
<th>Electrolyte Poor, e.g. glycine</th>
<th>Electrolyte Rich, e.g. NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monopolar use</td>
<td>Bipolar/Mechanical (morsellator)</td>
</tr>
<tr>
<td>Maintain pressure 60-75mmHg</td>
<td>Maintain pressure 60-75mmHg</td>
</tr>
<tr>
<td>Check electrolytes/consider diuretic at 500mL</td>
<td>Check electrolytes/consider diuretic at 750 mL</td>
</tr>
<tr>
<td>Consider stopping procedure at 1000mL</td>
<td>Consider stopping procedure at 2500mL</td>
</tr>
</tbody>
</table>

Consider co-morbidities, e.g. heart disease
Fluid overload

- Rare, 0.06 to 0.2% of procedures
- Complications include:
  - Volume overload
  - Electrolyte imbalance
  - Hyponatremia
  - Neurologic changes

Fluid overload

- Prevention
- Iso-osmolar, electrolyte fluids when possible
- Monitor fluid deficit
- Limit procedure to <1 hr
- Consider vasopressin
  - 1 unit/20 mL of NS resulted in 3 fold decrease of fluid absorption

Risks

- Fluid overload--0.2%
- Unplanned laparotomy
- Urinary tract injury
- Bowel injury
- Uterine perforation--0.8%
- Bleeding during surgery--0.2-1.0%
- Systematic review of 26,000 patients--Failure rate: 3.4 to 4.2%

Sterilization

- 2nd most common used method of contraception
- 2002, 16.7% of women used sterilization (18% used OCPs, 11.1% used condoms)
Sterilization

- Hysteroscopic sterilization
- Outpatient procedure
- Minimally invasive

What hysteroscopic procedure do you do?

1. Essure
2. Adiana
3. Both
4. I don’t do either

Essure

- Micro-insert
- Metal and Polyethylene terephthalate (PET)
- 4cm long and 1-2mm wide when deployed
- Ideally 3-8 coils visualized at end of procedure

Adiana

- Silicone matrix
- Position Detection Array confirms
- 1st step: Catheter delivers low level RF energy ~5mm lesion
- 2nd step: 3.5mm nonabsorbable silicone elastomer matrix is placed in each tubal lumen

www.essure.com

www.adiana.com
**Hysteroscopic sterilization**

<table>
<thead>
<tr>
<th></th>
<th>Essure</th>
<th>Adiana</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficacy</strong></td>
<td>99.7% (5 yr data)</td>
<td>98.4% (3 yr data)</td>
</tr>
<tr>
<td><strong>Perforation Rate</strong></td>
<td>1.1% (5/476)</td>
<td>0 (0/1100)</td>
</tr>
<tr>
<td><strong>Need for f/u HSG</strong></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Device Placement</strong></td>
<td>94.6%</td>
<td>95% (611)</td>
</tr>
<tr>
<td><strong>Procedure time</strong></td>
<td>13 min</td>
<td>11 min 54 sec</td>
</tr>
<tr>
<td><strong>Allergy concerns</strong></td>
<td>Nickel</td>
<td>None</td>
</tr>
<tr>
<td><strong>Distention Media</strong></td>
<td>NS or LR</td>
<td>Glycine, Mannitol or Sorbitol</td>
</tr>
</tbody>
</table>

**Contraindications**

- Uncertainty about sterilization
- Known or suspected pregnancy
- <6 weeks from delivery or abortion
- Active or recent PID
- Uterine or tubal pathology that affects access to tubal ostia
- Known allergy to HSG contrast media

**Endometrial Ablation**

- **Indication**
- **Definition**
- **Incidence 9-14%**
- **30-40% of hysterectomies performed for severe dysfunctional bleeding**
- **Thus, alternative is endometrial ablation**

**Absolute Contraindications**

- Genital tract pre-malignancy/malignancy
- Desire to preserve fertility
- Pregnancy
- PID
Relative Contraindications

- Dysmenorrhea
- Chronic pelvic pain
- Premenstrual syndrome
- Multiple or large myomas
- Enlarged uterus (>10 to 10.5)
- Previous uterine surgery
- Mullerian anomalies

Endometrial Ablation

- First generation technique (gold standard)
- Laser ablation
- Transcervical resection
- Rollerball ablation

Endometrial Ablation

- Second generation techniques (global ablation)
  - Hydro ThermAblator (HTA)
  - Thermachoice Balloon
  - Novasure
  - Cryoablation (Her Option)
  - Microwave endometrial ablation

Ablative Techniques

- In comparison, second generation
  - No overall difference in bleeding or patient satisfaction
  - Shorter procedures (15 min 95% CI 10.1-19.7)
  - Local anesthesia more likely to be used (OR 6.4, 95% CI 3-13.7)
  - Equipment failure more likely (OR 4.6, 95% CI 1.5-14.0)
  - Lower complication rate
  - More nausea/vomiting, uterine cramping
What ablation technique do you use?

1. 1st generation (rollerball, endometrial resection)
2. Novasure bipolar energy
3. ThermaChoice uterine balloon
4. HydroThermAblator (HTA)
5. A different technique than above
6. I don’t do endometrial ablation

HTA

• Approved by FDA 2001
• Using a 3mm hysteroscope in an 8mm sheath
• 0.9% saline solution heated to 90 degrees Celsius
• 50-55mmHg of pressure (opening pressure fallopian tubes 70mmHg)
• Saline circulates for 10min
• Auto-stops if 10mL fluid loss
• Used w/ fibroids <4cm

Novasure

• Approved by FDA 2001
• RF bipolar energy
• Confirms uterine integrity (absence of perforations as small as 18 G)
• Up to 180 watts of bipolar energy is applied depending on cavity dimensions
• Vacuum system removes steam and debris
• Average ablation is 90 sec
• Reduction in menstrual bleeding w/ polyps or myomas up to 3cm in diameter

TheraChoice Uterine Balloon

• FDA approved 1997
• Silicone balloon
• 5% Dextrose & water to 180mmHg
• Outer sheath 3.2mm, expands to 4.5 at site of balloon
• Approved for uterine cavity up to 10cm
• Has been shown to reduce menstrual blood flow w/ submucosal T2 myomas <3cm
### Endometrial Ablation

<table>
<thead>
<tr>
<th>Device</th>
<th>Diameter of Device</th>
<th>Sounded Cavity Length</th>
<th>Cavity to cornua distance</th>
<th>Intracavitary masses studied</th>
<th>Duration of procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro ThermAblator</td>
<td>7.8mm</td>
<td>6-10.5cm</td>
<td>--</td>
<td>can be used w/ masses up to 4 cm</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Novasure</td>
<td>7.5mm</td>
<td>6-10 (or &gt;4 from int os to fundus)</td>
<td>&gt;/= 2.5cm</td>
<td>up to 3cm had 95% improvement in 12 mos fu</td>
<td>90-120 sec</td>
</tr>
<tr>
<td>ThermaChoice III</td>
<td>5.5mm</td>
<td>6-10</td>
<td>--</td>
<td>up to 3cm had improvement</td>
<td>8 minutes</td>
</tr>
</tbody>
</table>

#### Bipolar vs Hydrothermal ablation
- Double blind, randomized controlled trial
- Ave duration of procedure 11.8 min (range 5-40min) vs 27.8 min (range 14-55 min)
- Satisfaction rate 87% vs 68% (RR 1.3, 95% CI 1.03-1.6)
- Amenorrhea rate 47% vs 24% (RR 2.0, 95% CI 1.2-3.1)

#### Bipolar vs Thermal Balloon
- Total response rates
  - 90% vs 79% at 12 mos (P<0.001)
  - 96% vs 90% at 5 years
- Amenorrhea rates
  - 43% vs 8% at 12 mos (RR 5.9, 95% CI 1.9-18)
  - 48% vs 32% (RR 1.6 95% CI .93-2.6) at 5 years
- Reoperation rates 9.8% vs 12.9%
- Significant equal improvement in QOL in both groups
Consider LVG-IUD

- 4 studies reviewed LVG-IUS
- Crosignani et al compared IUD to endometrial resection
  - Amenorrhea or hypomenorrhea 65% vs. 71%
  - Satisfaction 85% vs. 94% at 12 mos


LVN-IUD vs ThermaChoice

- 1st study 2003 by Barrington JW, et al
- RCT LVN-IUD vs ThermaChoice
  - 50 women
  - 6 mos follow up
  - Equally effective

ThermaChoice vs LNG-IUS

- Small Prospective randomized trial
- 79 women with menorrhagia randomized to LNG-IUS vs. thermal balloon ablation
  - Follow up at 3, 6, 12 & 24 mos
  - At 12 & 24 mos, IUS had lower scores 60 to 11.6, balloon 56.5 to 12 (P=0.002)
  - At 24 mos, amenorrhea rates 35% vs 5% (P=0.025)
  - Patient satisfaction similar

BJOG. 2006 Mar;113(3):257-63.

Conclusion

- Increase of in-office or outpatient procedures
- Review of indications/contraindications
- Fluid management
Conclusion

• Cervical dilation
• Misoprostol for premenopausal women
• Paracervical block
• Sterilization techniques
• Ablative techniques
• *Consider LNG-IUS

References


References