New surgical options in the management of menometrorrhagia: an overview

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Indications for endometrial ablation

- Dysfunctional uterine bleeding
- Failed traditional therapies (e.g. medical, dilatation and curettage)
- Contraindications to traditional therapies
- Poor surgical skills for anesthesia, hysteroscopic endometrial ablation, hysterectomy
- To preserve the uterus
Contraindications for endometrial ablation

- Genital tract malignancy (cervical, uterine, tubal, ovarian)
- Unresolved endometrial hyperplasia
- Women with anatomical or pathological uterine anomalies
- Women with history of previous classical caesarean section or transmural myomectomy
- Intra-uterine pregnancy
- Acute genital and/or urinary tract infection
- Women wishing to preserve their fertility
- Women expecting amenorrhoea as an outcome
- Women with an intra-uterine contraceptive device in place
- Failed previous endometrial ablation
Menometrorrhagia - Endometrial Ablation: 1st or 2nd generation?

First generation
• Video

Second generation
• Video
### Menometrorrhagia - Endometrial Ablation: 1st or 2nd generation?

<table>
<thead>
<tr>
<th>First generation</th>
<th>Second generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hysteroscopic vision</td>
<td>• Blind technique</td>
</tr>
<tr>
<td>• Energy:</td>
<td>• Several energies</td>
</tr>
<tr>
<td>– Monopolar energy</td>
<td>• Without general anesthesia</td>
</tr>
<tr>
<td>– Bipolar energy</td>
<td></td>
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<tr>
<td>• General or locoregional</td>
<td></td>
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<tr>
<td>anesthesia</td>
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2\textsuperscript{nd} generation endometrial ablation techniques

- Techniques
- Comparative studies
- Results
- Complications
- Cost effectiveness
Techniques

Daniels, BMJ 2012

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Advances in the medical and surgical management of menometrorrhagia
2nd generation Endometrial Ablation

• Thermal Balloon (TBA)

Insertion of a silicone balloon into the uterine cavity. Hot liquid circulates inside the balloon. Control of pressure and temperature by the computer. Duration: 2 to 10 minutes.
2nd generation Endometrial Ablation

- Thermal Balloon (TBA)
- Microwave (MEA)

- Insertion of a microwave probe into the uterine cavity to heat the endometrium
- Temperature is maintained at 75-80°C
- The probe is moved from side to side to destroy the endometrium
2nd generation Endometrial Ablation

- Thermal Balloon (TBA)
- Microwave (MEA)
- Radiofrequency electrosurgery (RFA)

- Impedance-controlled bipolar radiofrequency ablation
- A triangular mesh electrode is expanded to fill the uterine cavity
- The electrode delivers electrical current and destroys the endometrial lining
- Temperature 45°C
- Duration of the procedure: max 15 minutes
2nd generation Endometrial Ablation

- Thermal Balloon (TBA)
- Microwave (MEA)
- Radiofrequency electrosurgery (RFA)
- Hydrothermal ablation (HTA)
  - Temperature: 90°C/194°F
  - Duration: 10 minutes
2nd generation Endometrial Ablation

- Thermal Balloon (TBA)
- Microwave (MEA)
- Radiofrequency electrosurgery (RFA)
- Hydrothermal ablation (HTA)
- Cryoablation

A slender single-use probe is inserted into the uterus.

From the tip of the probe subzero temperatures are applied symmetrically to the uterine lining.

Duration: 20 to 30 minutes
Network of studies evaluating 2nd generation endometrial destruction devices for treatment of heavy menstrual bleeding

Daniels, BMJ 2012

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Amenorrhea rate at 12 months

Daniels, BMJ 2012
### Outcomes in patients who underwent office endometrial ablation using the HTA system according to myoma status

<table>
<thead>
<tr>
<th>Variable</th>
<th>Patients With Myomas</th>
<th>Patients Without Myomas</th>
<th>p Value(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome</strong></td>
<td></td>
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<tr>
<td>Amenorrhea</td>
<td>37 (38.9)</td>
<td>84 (61.8)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Oligomenorrhea</td>
<td>27 (28.4)</td>
<td>35 (25.7)</td>
<td></td>
</tr>
<tr>
<td>Eumenorrhea</td>
<td>9 (9.5)</td>
<td>12 (8.8)</td>
<td></td>
</tr>
<tr>
<td>Menorrhagia</td>
<td>11 (11.6)</td>
<td>4 (2.9)</td>
<td></td>
</tr>
<tr>
<td>Hysteroscopy because of bleeding</td>
<td>11 (11.6)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>95 (100)</td>
<td>136 (100)</td>
<td></td>
</tr>
<tr>
<td><strong>Menorrhagia or hysterectomy because of bleeding</strong></td>
<td>22 (23.2)</td>
<td>5 (3.7)</td>
<td>6.3 (2.5–16.0)</td>
</tr>
<tr>
<td><strong>Hysterectomy because of bleeding</strong></td>
<td>11 (11.6)</td>
<td>1 (0.7)</td>
<td>15.7 (2.1–119.9)</td>
</tr>
</tbody>
</table>

CI = confidence interval; HTA = HydroThermAblator (Boston Scientific Corp, Natick, Massachusetts) RR = relative risk.  
\(^a\) \(\chi^2\) test.

**Glasser et al, 2009**
TBA and RFA

- Results: 23% amenorrhea
- Predictor of amenorrhea:
  - Age ≥45 years
  - Uterine length <9 cm
  - Endometrial thickness <4 mm
- RFA > TBA
- 5-year cumulative failure rate: 16%

El Nashar et al Obstet Gynecol 2009
Cumulative failure rate

Predictors of treatment failure
- Age <45 years
- Parity ≥5
- Prior tubal ligation
- History of dysmenorrhea

El Nashar et al Obstet Gynecol 2009
- Retrospective cohort study after TBA for menorrhagia
- Follow up: 8 years
- Amenorrhea rate: 38% and substantial decrease in bleeding in 37%

Kopeika et al, Am J Obstet Gynecol 2011
Complications

- Perforation of the uterus
- Minor secondary haemorrhage
- Burning of the vagina, cervix and small bowel
- Serious complications occurring with an incidence of less than 1%
Recommendations

• In cases of suspected uterine displacement, clinicians should verify the correct placement using ultrasound before the device is activated.

• As well as the use of ultrasound for all devices, the use of hysteroscopy prior to the insertion of the ablation device is recommended if the device is not a balloon. This enables a check to be made that sounding and dilation of the cervix has not caused a perforation or false passage.
Cost-effectiveness: MEA vs TBA

- MEA is likely to be more cost-effective than TBA at 1 year.
- The mean cost of TBALL (10 years equipment life, 100 uses annually) of reusable equipment was £181 (95% confidence interval [CI] £70-434) greater than MEA.
- No statistically significant differences between the total nonhealth costs and health benefits of the two arms.
- On average, MEA provided more Quality-adjusted life-years (QALYs).
- MEA was, on average, dominant (less costly and at least as effective) and there was over a 90% chance that MEA would be considered cost-effective at a £20,000 threshold of cost per QALY.
• Technically easier
• Success rate and complication profiles compare favourably with TRE
• Less complication with 2nd generation procedure for TEA
  – Fluid overload
  – Uterine perforation
  – Cervical laceration
  – Hematometra
• More side effects: nausea, vomiting, uterine cramping
• Less effective than hysterectomy in stopping bleeding but is not invasive
• Hysterectomy is associated with a higher risk for pelvic floor repair and surgery for SUI

Lethaby, Cochrane Data Base 2005
Cooper et al, BJOG 2011
Therapeutic options for Heavy Menstrual Bleeding

- Menorrhagia
  - Mirena
    - Second generation techniques
      - Repeat ablation (first generation)
        - Hysterectomy
          - Well
  - First generation endometrial ablation techniques
    - Hysterecmy
      - Well
    - Repeat ablation (first generation)
      - Hysterecmy
      - Well
  - Second generation endometrial ablation techniques
    - Hysterecmy
      - Well
      - Repeat ablation (first generation)
        - Hysterecmy
        - Well
  - Hysterecmy
    - Well

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