Thermal balloon endometrial ablation: a systematic review
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CRD summary
This review found thermal balloon endometrial ablation to be a safe and effective method for treatment of abnormal uterine bleeding. Methodological flaws and a lack of information about the results and quality of the included studies mean that the reliability of the authors’ conclusions is unknown.

Authors' objectives
To review the effectiveness of thermal balloon endometrial ablation in the treatment of abnormal uterine bleeding.

Searching
PubMed was searched from 1994 to May 2007 for relevant English-language studies; some search terms were reported. Reference lists from relevant articles were searched to identify additional references.

Study selection
Comparative studies that evaluated use of thermal balloon ablation for treatment of menorrhagia, dysfunctional uterine or idiopathic bleeding were eligible for inclusion.

Four different devices were used across the trials for thermal ablation: ThermaChoice, Cavaterm, MenoTreat and Thermablast. The comparators were levonorgestrel-releasing intrauterine system, hysteroscopic endometrial resection, use of bipolar frequency impedance controlled endometrial ablation (NovaSure), hysteroscopic rollerball electrocoagulation, Nd-YAG laser and gestagen. Outcomes related to amenorrhoea or accurately measured hypomenorrhea were the primary outcomes. Other outcomes evaluated included those related to patient satisfaction and intra-operative complications and postoperative morbidity.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
The authors did not state they assessed methodological quality.

Data extraction
Data were extracted as reported and were entered into separate tables organised by study design. Little information on extracted data was provided.

The authors reported that data were extracted independently, but it was unclear how many reviewers performed the data extraction.

Methods of synthesis
Due to heterogeneity of comparators and the non-uniform selection of patients, the results of the included studies were summarised in a narrative review with tables accompanying the text.

Results of the review
Forty-four studies (n=3,754) were included in the review: 14 randomised controlled trials (RCTs) (n=1,528), 23 prospective non-randomised studies (n=1,609) and seven retrospective non-randomised studies (n=617). Follow-up ranged from six to 48 months; follow-up in most studies ranged from 12 to 24 months.

Success rates across the included studies ranged from 83% to 94%, with similar effectiveness as other medical or minimally-invasive methods. Significant decreases were found in menstrual blood loss, duration and pain. One study found that higher rates of amenorrhea were achieved with bipolar frequency impedance-controlled endometrial ablation (NovaSure) compared to thermal balloon ablation. Patient satisfaction ranged from 57% to 94%.
Minor complications related to the use of thermal balloon endometrial ablation included cystitis, endometritis, haematometra. The rate of minor complications was found to be 4% in one study.

**Authors’ conclusions**
Thermal balloon endometrial ablation was an effective alternative method for treatment of menorrhagia with significant reductions in menstrual bleeding and high satisfaction. Longer follow-up of patients was required to determine the future role of this treatment.

**CRD commentary**
The review addressed a clear question that was broad in scope. Some criteria for inclusion of studies in the review were stipulated. The search was limited to one database. The restriction of the review to English-language studies meant that there was a risk of language bias. There were no attempts to search for unpublished studies, so there was a risk of publication bias. Some steps to minimise errors and bias were reported for data extraction, but not for study selection. The authors did not perform a quality assessment, so it was difficult to draw any conclusions about the reliability of the results. There were no statistical tests included with the results of individual studies, many of which appeared to be underpowered.

Methodological flaws and a lack of information about the results and the quality of the included studies mean that the results should be interpreted with a substantial degree of caution. The reliability of the authors’ conclusions is unknown.

**Implications of the review for practice and research**
**Practice:** The authors stated that thermal balloon endometrial ablation was an effective method for treatment of menorrhagia, but differential diagnoses of malignant conditions were necessary before use.

**Research:** The authors stated that longer follow-up periods were required in subsequent research to further evaluate the effectiveness of thermal balloon ablation.

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