

Microwave endometrial ablation for hypermenorrhea treatment: a new era in Japan

K. Nakayama¹, K. Miyazaki¹, Y. Kanaoka²

¹*Department of Obstetrics and Gynecology, Shimane University School of Medicine, Shimane*

²*Department of Gynecology, Iseikai Hospital, Osaka (Japan)*

Summary

An estimated six million women in Japan suffer from excessive menstruation and the treatment of this disorder has been undergoing dramatic changes recently. In April 2012, microwave endometrial ablation (MEA) was approved for insurance coverage as a K863-3: a hysteroscopic endometrial ablation (17,810 points). Since the introduction of MEA to Shimane University Hospital in August 2007, authors (KN, KM) have performed the procedure in 96 patients with excessive menstruation. They have also evaluated its safety and its efficacy, not only by comparing it to the existing surgical treatment but by quantifying patients' satisfaction levels and symptom improvement. The authors conclude that MEA is a safe, effective, a low-cost treatment, and they recommend that it be considered as a standard treatment for conservative therapy-resistant excessive menstruation.

Key words: Endometrial ablation; Menorrhagia; Insurance coverage.

Introduction

An estimated six million women in Japan suffer from excessive menstruation and the treatment of this disorder has been recently undergoing dramatic changes. In April 2012, microwave endometrial ablation (MEA) was approved for insurance coverage as a K863-3: a hysteroscopic endometrial ablation (17,810 points). To note, this newly established criteria includes MEA and hysteroscopic transcervical resection of the endometrium (TCRE), which some facilities have been performing without insurance coverage.

MEA at 9.2 GHz was developed as an alternative to hysterectomy in 1995; it uses microwaves to necrotize the endometrium, thereby controlling excessive menstruation.

Microwaves are a type of electromagnetic radiation with wavelengths of 100 µm to one m and frequencies of 300 MHz to three THz. Their most well-known use is in microwave ovens. In Japan, a microwave tissue coagulator which generates microwaves at a frequency of 2.45 GHz received manufacturing approval about 30 years ago and has been used in surgery for several kinds of tumors, including liver, kidney, and prostate cancers, to control bleeding or to necrotize a malignant tumor and its neighborhood. MEA is a novel method of endometrial ablation that incorporates a Microwave tissue coagulator. With this device, the endometrium is safely coagulated and thoroughly destroyed. In the first-generation endometrial ablation devices, a high frequency wavelength or a laser was used under hysteroscopic visualization. In the second-generation devices, high frequency waves or microwaves are administered via an intrauterine introducer, without the need for hysteroscopy.

One of authors (YK) developed a unique microwave applicator for intrauterine use, called Sounding Applicator, in 2001. Since the tip of this applicator is thin and curved, it is able to be used for both functional excessive menstruation and for bleeding caused by uterine myomata and adenomyosis [1]. Because of its striking effectiveness, it was approved by the Ministry of Health and Labor of Japan as an advanced medical treatment in December 2008. It was approved by the Ministry of Health and Labor of Japan for insurance coverage surprisingly quickly, in April 2012.

Materials and Methods

In cooperation with one of authors (YK) and others, "Practice Guideline of MEA" were published in 2008 and revised in April 2012 [2]. According to the guidelines, MEA may be used in: 1) women who are considering hysterectomy or other surgical management of excessive menstruation; 2) women in whom conservative treatment for excessive menstrual bleeding has failed; 3) women who do not desire future fertility; 4) women who do not desire future fertility but wish to avoid hysterectomy; 5) women in whom endometrial malignancy has been excluded; 6) women in whom a sounding applicator can reach all parts of the endometrium – as long as this criterion is met, the technique can be used in women with uterine enlargement or deformity due to myomata or adenomyosis; 7) women in whom the myometrium is at least one cm in thickness throughout.

In addition, women who are not eligible for surgical treatment due to comorbidities, women who suffer from serious anemia due to hematological disease, and women with chronic renal failure, even on dialysis, are considered eligible for MEA to control excessive menstruation.

Results

Since the introduction of MEA to Shimane University Hospital in August 2007, the authors have performed the

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procedure in 96 patients with excessive menstruation. Authors (KN, KM) have evaluated its safety and its efficacy, not only by comparing it to the existing surgical treatment but by quantifying patients' satisfaction levels and symptom improvement [3]. They conclude that MEA is a safe, effective, low-cost treatment and we recommend that it be considered as a standard treatment for conservative therapy-resistant excessive menstruation. MEA is also safe and effective for emergency treatment. Authors (KN, KM) obtained good results with emergency MEA in a patient with hemorrhagic shock due to excessive menstruation [4].

Theoretically, microwaves denature proteins without tissue carbonization, acting directly on water molecules to generate heat. Because it does not carbonize, MEA is more effective in stopping bleeding than electric surgical knives. The authors were able to demonstrate the safety and efficacy of MEA to control not only excess menstruation but also uterine hemorrhage during transcervical surgery for large myomata and endometrium polyps. The efficacy of MEA for massive uterine hemorrhage has been added to "Guideline for Gynecological Practice in Japan, 2011," and the use of MEA is considered favorable in this situation.

Conclusion

The authors have shown that MEA is a novel therapy for conservative treatment-resistant excessive menstrua-

tion, with a good safety profile and a low monetary cost. It is also useful in women who are not good candidates for surgery.

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Address reprint requests to:
K. NAKAYAMA, MD, Ph.D.
Department of Obstetrics and Gynecology,
Shimane University School of Medicine,
Enyacho 89-1, Izumo, Shimane,
(Japan) 6938501
e-mail: kn88@med.shimane-u.ac.jp