CLINICAL CASE

Serious and deadly complications from pregnancy after endometrial ablation: Two case reports and review of the literature

Complications obstétricales sérieuses et même mortelles suite à une endométrectomie : deux cas cliniques et revue de la littérature

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Summary Endometrial ablation (EA) has been performed for the past two decades as an alternative to hysterectomy in women with dysfunctional-uterine bleeding unresponsive to medical treatment. However, unlike hysterectomy, this minimally invasive procedure is not an effective means of contraception. Pregnancy following EA has been reported, but the risks and complications related have not been emphasized. This is a report on two such cases and review of the literature, with a closer look at the frequent negative outcome. A 25-year-old woman underwent EA for dysfunctional-uterine bleeding unresponsive to medical treatment. She had no previous surgery, specifically she had no past myomectomy or caesarean section. She declined concomitant tubal ligation. She became pregnant five years later in early spring 2007 and sustained a large uterine rupture at 24 weeks and died in June 2007 secondary to massive internal bleeding at age 29. A 34-year-old woman with previous hysteroscopic EA became pregnant less than one year after surgery. At that time, she had refused concomitant tubal sterilization since her husband had a vasectomy. Unfortunately, the relationship ended soon after surgery and she had unprotected sexual intercourse with a new partner. Pregnancy termination was complicated by placenta increta, which required immediate abdominal hysterectomy. Pregnancy after EA is not a rare occurrence, regardless of which technique is used. Whether women choose to go on or terminate their pregnancy, this clinical situation can be associated with serious complications.
Introduction

Since the introduction of endometrial ablation (EA) more than 25 years ago, there have been over 100 pregnancies postablation published in the English literature, both intra- and extra-uterine [1,3]. The estimated pregnancy rate is quite variable from 0.7 to 2.4% after hysteroscopic ablation techniques [2,3] and up to 5.2% in one study with balloon techniques [4]. Many of these reported pregnancies were terminated either surgically or medically with misoprostol. Ongoing pregnancies evolved from normal gestation and delivery to pregnancy complicated by foetal anomaly, such as limb defects, intra-uterine growth retardation, preterm labour and delivery, placental anomaly and caesarean–hysterectomy. Histopathological changes seen after EA may be responsible for the increase in obstetrical complications. However, there has never been a report of maternal death in this clinical situation. This article looks at pregnancy outcome after EA, in order to provide adequate patient counselling regarding this issue.

Case report 1

A 25-year-old woman, living in the greater Montreal area, province of Quebec, requested EA for dysfunctional-uterine bleeding unresponsive to medical treatment. She had tried oral contraceptives, but had to stop because of persistent ophthalmic migraines. Her blood work was normal. She refused medroxyprogesterone acetate and levonorgestrel intra-uterine device. She had no previous medical or surgical history and in particular, no previous uterine surgery, myomectomy or caesarean section. She had two children delivered vaginally and did not wish to become pregnant anymore. However, she declined concomitant laparoscopic tubal sterilization, which was offered during preoperative assessment. She had no hormonal suppressive therapy before the EA and in particular, no Gn-Rh agonist. She underwent an uneventful hysteroscopic endometrial resection with combined loop electrode and rollerball (TCRE). There was no glycine absorption during the procedure. Pathologic report revealed normal basal endometrium with superficial strips of myometrium. She was advised to continue to use some form of effective contraception afterwards. Her bleeding became scant postoperatively and she was satisfied with the outcome. Nearly five years after the procedure, she became pregnant and, although unexpected, she elected to continue with her pregnancy. The patient was 29 years old, had never had any other uterine surgery than the TCRE and had no other risk factors for uterine rupture, such as the use of myometrial thinning agents, such as steroids.

She had an uneventful first trimester and she had a normal scan at 18 weeks, which showed a singleton pregnancy with normal morphology and appropriate growth. In June 2007, at 24 weeks gestation, she came in the emergency room of her community hospital complaining of severe abdominal pain. Her vital signs were reported normal and she was sent to radiology for an abdominal ultrasound after being evaluated by a gynaecologist. However, she suddenly became hypotensive and soon after, went into shock and despite aggressive resuscitation she died on the premises, in the radiology department. The gynaecologist on call did not even have the opportunity to perform emergency laparotomy before she passed away. An autopsy was performed and complications and even maternal death. Counselling about contraceptive options at the time of EA is paramount.

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Résumé L’endomérectomie est pratiquée depuis les deux dernières décennies en tant qu’alternative à l’hystérectomie chez les femmes qui présentent un saignement utérin dysfonctionnel rebelle au traitement médical. Toutefois, et contrairement à l’hystérectomie, cette approche peu efficace n’est pas un moyen sûr de contraception. Des grossesses après endomérectomie ont été rapportées, mais les risques et les complications particulières n’ont pas été bien soulignés. Cet article décrit deux cas cliniques dramatiques, en plus de revoir la littérature sur le sujet avec une emphase sur les issues négatives. Une femme de 29 ans a subi une endomérectomie cinq années plus tôt pour un saignement utérin dysfonctionnel réfractaire au traitement médical. Elle n’avait pas d’antécédent chirurgical, en particulier, elle n’avait jamais eu de césarienne ni de myomectomie. Elle refusa une stérilisation tubaire au moment de son endomérectomie. Elle devint enceinte au printemps 2007 et dès la vingt-quatrième semaine de gestation, elle a été foudroyée par une large rupture utérine et en mourut secondairement à une hémorragie massive. Une femme ayant eu une endomérectomie est devenue enceinte moins d’un an après son intervention. Elle avait refusé une stérilisation concomitante, puisque son conjoint était vasectomisé. Malheureusement, le couple se sépara après l’endomérectomie et madame eut une relation sexuelle non protégée avec un nouveau partenaire. L’interruption de la grossesse fut compliquée par un placenta percreta, qui a nécessité une hystérectomie abdominale d’urgence. La grossesse après une endomérectomie n’est pas un phénomène rare, peu importe la technique utilisée. Que la femme décide ou non de poursuivre la grossesse, le risque de cette situation clinique est significatif, avec des complications sérieuses pouvant entraîner la mort. Il est essentiel de bien conseiller les femmes sur les options contraceptives à long terme avant d’effectuer une endomérectomie.

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revealed massive intra-abdominal haemorrhage with a dead foetus and placenta outside the uterus. There was a 14 cm wide posterior uterine rupture. The rest of the uterus was unremarkable, with no fibroids or other areas of pathologic muscular thinning or sacculation.

**Case report 2**

A 34-year-old woman with two previous term deliveries was referred to our clinic for evaluation of persistent menorrhagia unresponsive to medical treatment, including two types of hormonal contraceptives. Her menstruations lasted more than eight days and she sometimes missed work because of the heavy flow. She had no relevant past medical or surgical history other than one c-section. Her husband had a vasectomy. Her general examination was unremarkable and her pelvic exam was also within normal limits. Cervical smear, cervical cultures as well as endometrial biopsy were performed. She had a normal pelvic ultrasound and a normal diagnostic hysteroscopy. Her blood work was normal, except for a decreased iron level. Final diagnosis of dysfunctional-uterine bleeding was made and a levonorgestrel intra-uterine device was proposed, but declined by the patient. She subsequently underwent hysteroscopic EA using a combination of monopolar loop electrode and rollerball in January 2005 after a one-month injection of LH–RH agonist. Histology confirmed normal endometrium as well as strips of myometrium. She became amenorrheic in the following months, but experienced cyclic pelvic pain on two occasions. She was advised to use nonsteroidal anti-inflammatory and come back for reevaluation. She was seen at another hospital with complaints of irregular bleeding nine months after the procedure and a pregnancy test came back positive.

Since her EA she had divorced from her husband who had the vasectomy and despite our recommendation to use condoms, she became pregnant.

On ultrasound, no embryo was visible, but an intra-uterine gestational sac was definitely present compatible with a five-week gestation. She was scheduled in the operating room for dilatation and evacuation under ultrasound guidance, but this was not feasible because of stenotic endocervical canal and intra-uterine synechiae. A total abdominal hysterectomy was performed immediately as planned with the patient. Final pathology reported the presence of placenta increta at the fundus with no embryo. Placental villi extended into the myometrium without interruption of the endometrial mucosa.

**Discussion**

Histopathological findings after EA may explain the increased incidence of these complications of pregnancy. Taskin et al. performed second-look hysteroscopy more than two years after rollerball EA and reported dense intra-uterine adhesions, focal regeneration of the endometrium, often in the fundal area, partial or complete obliteration of the uterine cavity, findings consistent with Asherman’s syndrome [5].

Lo and Pickersgill reviewed 75 pregnancies after EA, describing, in particular, one case where the patient was pregnant at the time of a microwave EA for dysfunctional-uterine bleeding. No pregnancy test had been done prior to the procedure. The patient had an uneventful medical abortion with misoprostol at 12 weeks gestation [1]. In their review, most reported cases were after TCRE or rollerball, but some were following microwave, Nd:YAG laser, hydrothermal ablation and thermal balloon. The true incidence for each technology is not available since the denominator, that is, the total number of cases done, is not known and also the numerator is most likely underestimated since report of such events is not mandatory in most countries.

Approximately 3% were ectopic pregnancies, 19% had a miscarriage and 38% of women chose pregnancy termination. The authors recommend in this situation medical abortion over D and E, since the uterine cavity may be distorted from the ablation.

For women who continued with their pregnancy, premature labour and delivery was the single most frequent complication (50% of all pregnancies beyond 24 weeks). Two cases of congenital anomaly were reported (craniostenosis and limb defect – ischemic right leg) as well as intra-uterine growth retardation and placental anomaly, such as placenta increta leading to caesarean–hysterectomy. No maternal death linked to previous EA has been reported.

In a series of 1621 cases of TCRE, Xia et al. reported on 39 subsequent pregnancies with only one going to term and ending with a caesarean–hysterectomy because of placenta increta [3]. Of significance, was their 13% rate of ectopic pregnancy, with two cornual, one cervical and two tubal pregnancies. Pregnancy termination by dilatation and curettage was difficult in two cases out of 32 (synechiae and bleeding).

When trying to find factors that would influence the risk of fertility, Lo and Pickersgill found a lower chance of conception in women who were amenorrheic after TCRE (0.3%) than those who continued to have cyclical bleeding (3.2%) [1]. This finding is also confirmed by Hare and Olah, who found only two cases of pregnancy after long standing amenorrhea [6]. Still, no patient seems totally risk-free and pregnancy has been reported even a decade or more after surgery. They reviewed 32 ongoing pregnancies after EA and found a 71% caesarean-section rate, mostly because of malpresentation and growth retardation [6]. The high incidence of morbidly adherent placenta was also mentioned and compared to previously reported cases of pregnancy after treatment of Asherman’s syndrome [7].

In their review of 26 cases, Taskin et al. looked at morphologic changes more than two years after rollerball ablation and found at second-look hysteroscopy dense adhesions–obliteration and the endometrium from atrophic to diffuse regeneration [5]. Distinctive long-term histopathologic features were necrosis, regeneration, inflammation, scarring, hyalinization and neovascularization. Most regeneration was at the level of the ostia and the fundus and no premalignant or malignant cells were found. Contrary to some belief, EA does not seem to cause adenomyosis, since none was found on any of the 26 specimens.

Many authors as well as national guidelines, such as those of the British Society of Gynaecological Endoscopy recommend that laparoscopic sterilization be offered at the same time EA is performed. The American College does not go as
far but recommends that all premenopausal women undergoing EA be counselled to use appropriate contraception [8]. More recently, hysteroscopic sterilization has been made available and proposed concomitantly to the ablation, with a high degree of efficacy [9,10]. The quoted pregnancy rate after both laparoscopic sterilization and hysteroscopic EA is low, approximately one per 50,000 [11].

Finally, in women contemplating pregnancy after EA, assessment of the uterine cavity by hysteroscopy or hysterosalpingogram could first be performed as suggested in one CME review article [12]. In their paper, Cook and Seman found that a normal uterine cavity seems to be associated with a better obstetrical outcome compared to an abnormal cavity with scarring and synechiae. In any case, the risk of previously described poor obstetrical outcomes should be thoroughly explained.

Our two case reports illustrate the risk of serious, even deadly, consequences of pregnancy following EA, regardless if women elect to terminate their pregnancy or try to continue to term. Moreover, to our knowledge, this is the first time a maternal death has been reported. Ethical or medical/legal issues may however prevent other such reports. This is unfortunate since this information can and should be disclosed to our patients when discussing the advantages and disadvantages of EA.

These serious adverse events also underline the importance of discussing effective alternatives to EA, such as Lng-IUD, particularly in younger women where contraception is an issue. In our first case report, the patient was quite young at the time of TCRE (25 years old) and the pertinence of performing the procedure, even if the patient had presented complications with hormonal contraception can certainly be debated. However, this paper is about the potential serious complications of pregnancy after EA and these can happen regardless of a woman’s age. Other comprehensive publications about the indications and contra-indications of performing EA are available [13,14].

It is essential to provide adequate counselling about contraception for unsterilized premenopausal women who undergo EA, as demonstrated with our two case reports. The incidence of uneventful pregnancies after EA is unknown as they are likely underreported. Moreover, when there is a complication of pregnancy after EA, for example in the case of premature labour, it is difficult to rule out other factors, such as advanced maternal age or pregnancy-induced hypertension, which could explain poor obstetrical outcomes after EA.

In our view, the following statements summarize a few important counselling tips for prevention and management of pregnancy after EA:

- EA is strictly for women who do not wish to remain fertile;
- women in their reproductive age should be informed that EA, either by hysteroscopic or global technique, is not an effective permanent birth-control method and that some form of contraception is needed;
- preoperative counselling should include the option of performing laparoscopic- or hysteroscopic-tubal sterilization at the time of EA. Other methods of contraception may also be utilized;
- a pregnancy test should be performed before the procedure;
- the probability of a pregnancy seems to be higher if the patient has a normal bleeding pattern as opposed to amenorrhea post-EA;
- any woman without proper contraception who has persistent abnormal bleeding, pelvic pain or amenorrhea after EA should have a pregnancy test;
- although there have been reports of successful outcomes, pregnancy occurring after EA is associated with significantly greater risk of complications, both foetal and maternal;
- complications include ectopic pregnancy, including cornual, miscarriage, foetal anomaly, such as limb defect, growth retardation, improper placental location including placenta increta, preterm rupture of membranes, preterm labour and delivery, caesarean—hysterectomy, foetal demise and maternal death from uterine rupture;
- in women who wish to continue their pregnancy, these risks should be discussed and appropriate follow-up should include prompt consultation with an obstetrician specialized in high-risk pregnancy. Serial ultrasound to detect foetal or placental anomaly is recommended;
- early pregnancy termination may be complicated by cervical stenosis, intra-uterine synechiae; ultrasound monitoring may be required during D and C. Hysterectomy may be required. There is some evidence that medically induced abortions using pharmaceutical agents, such as misoprostol after EA, may be safer.

**Conclusion**

Endometrial ablation, by whatever means, is not considered a permanent contraceptive method for women in their reproductive age and pregnancy after this procedure is considered at high risk. Should the patient elect to terminate her pregnancy, medical management is preferred over dilatation and curettage and the risk of a possible hysterec- tomy because of abnormal placental implantation should be discussed. On the other hand, should she wish to continue with her pregnancy, close follow-up with serial ultrasound and consultation with a high-risk specialist is recommended, since serious foetal and maternal complications and even death related to the previous EA can occur.

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**References**


