

## Pregnancy Outcome following Endometrial Ablation

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### Abstract

**Introduction:** Pregnancies following endometrial ablation are rare. Management in the antenatal period should highlight and monitor the risks to mother and baby. Risks include intrauterine growth restriction, premature labour and premature rupture of membranes, morbidly adherent placenta, uterine rupture, postpartum haemorrhage and hysterectomy. **Case Report:** A 32-year-old, para 2, woman presented at 26 weeks gestation. She historically had an endometrial ablation. Since the procedure, she had amenorrhoea and had been using progesterone-only pills with good compliance. Two growth scans suggested appropriate growth of the baby. Premature rupture of membranes at 35 weeks and transverse lie resulted in a caesarean section with bilateral tubal ligation finally leading to delivery of healthy baby. **Conclusion:** Individuals considering endometrial ablation should have completed their family. Pre-operatively and post-operatively discussion of effective ideally irreversible contraception should be discussed. Outcomes involving complications to mother and pregnancy should be reiterated.

**Keywords:** Hysteroscopy, Intrauterine Growth Restriction, Placenta Praevia, Premature Rupture of Membrane, Preterm Infants, Pregnancy.

## Introduction

Endometrial ablation is one of the modes of treating dysfunctional uterine bleeding. This is achieved by destroying the stratum functionalis of the endometrium. Previously a proportion of ladies would have had to resort to hysterectomy for the management of menorrhagia. Endometrial ablation has been found to have lower morbidity, cost and recovery time [1].

There have been two generations of treatment to the endometrium by the destruction of the endometrium. The first generation consisted of transcervical resection, rollerball ablation and laser ablation. These were performed under direct hysteroscopic vision. However, a newer, easier and safer second-generation ablation has become more popular when compared with amenorrhoea two years after treatment [2]. Furthermore, they are non-hysteroscopic. These involve devices that

are placed within the uterus and activated in order to treat the cavity of the endometrium. The cavity can be treated through several mediums. Examples include bipolar radiofrequency electrical energy (Novasure), microwave application or thermal balloon ablation [3]. Although the majority of the endometrium is destroyed, any remaining functional endometrium can become an area for implantation of a pregnancy to occur. Endometrium also has the potential to regenerate potentiating pregnancy [4].

Post-operatively contraception advice should be counselled, highlighting that pregnancy following this procedure can be complicated for both the mother and the fetus. Literature studies have suggested pregnancy rates of 0.2-5%. The majority were conceived by first generation treatment methods but majority resulted in terminations, miscarriages or ectopic pregnancies [5]. Pregnancies that continued had common

associations with morbidly adherent placenta. Consequently, there were increased risks of uterine rupture, postpartum haemorrhage and emergency or elective hysterectomy. Effects of the pregnancy on the fetus were poor. There were large rates of intrauterine growth restriction, premature rupture of membranes, preterm deliveries, stillbirths and neonatal deaths [5].

## Case Report

A 32-year-old woman gravida 5 para 2 presented at 26 weeks pregnancy. Her body mass index (BMI) was 33.3 at booking. She had conceived her two pregnancies after using clomiphene. This was preceded by a four-year history of subfertility and two miscarriages. Both children were delivered vaginally. Following a long-standing history of menorrhagia, she underwent bipolar radiofrequency electrical energy (Novasure) endometrial ablation two years after her last pregnancy. The procedure was unremarkable. Prior to the procedure, she had been using a progesterone intrauterine system (Mirena). This was removed at the start of the operation. She has an anteverted uterus of 5.5 cm cavity length and width of 2.5 cm. The duration of the endometrial ablation was 2 minutes. She had amenorrhea following the procedure and on the advice of the clinicians, was commenced on a progesterone pill within quick succession of the procedure. She reported good compliance with the contraceptive. However, she identified that she was pregnant incidentally when attending the doctor for what was assumed to be an abdominal hernia. Unlike her previous pregnancies which were complicated by hyperemesis gravidarum, there were no obvious symptoms of pregnancy other than weight gain and fatigue. A private scan dated the pregnancy at 23 weeks gestation and consequently performed a detailed anomaly scan.

The patient presented to the hospital for her first booking scan at 26 weeks and 4 days and subsequently saw a consultant at 29 weeks. Placenta was highlighted to be right lateral and not

low. All other growth parameters were considered normal. She had a further scan at 35 and 6 days which established that there was no evidence of placenta accreta and that the baby was breech. There was oligohydramnios with a mean vertical pool of 1 cm. All growth parameters were normal. She was admitted at 35 weeks and 4 days, with generalised intermittent abdominal pain. As a urine dip had 2+ of leucocytes, she was admitted with a suggestion of uterine tightening secondary to a urine infection. A vaginal speculum exam showed a multiparous dilatation of the cervical os. She was commenced on intravenous antibiotics. Her uterine tightening evolved into regular uterine contractions and she subsequently had a premature rupture of membrane at 35 and 6 days. A bedside scan suggested anhydramnios and the baby was transverse so a decision for a caesarean section was made after initiating corticosteroids. She consented for bilateral tubal ligation and a possible hysterectomy. At the caesarean section, a high uterine incision in the uterine segment was made as multiple congested veins in the lower segment were identified. The baby girl was delivered by breech extraction. The placenta was manually removed and appeared complete. The internal cervical os on palpation felt stenosed with scarring. This was dilated to the external cervical os to allow drainage of blood.

Bilateral tubal ligation was performed with modified Pomroy's technique. There was good haemostasis following routine closure of the abdomen. The estimated blood loss was 850 mL. The baby had a good range of movements in all limbs. She weighed 2152 g and APGAR score was 8 at 1 minute, 9 at 5 minutes and 10 at 10 minutes.

## Discussion

This case highlights the complexity of having a pregnancy following endometrial ablation. It also highlights that despite the lady being amenorrhoeic and using a reliable form of contraception, pregnancies can occur. Therefore, this stresses

the importance of having a low threshold to consider pregnancy in some cases despite endometrial ablation. Furthermore, it stresses the importance of counselling the patient post-ablation regarding contraception. This patient was taking the progesterone-only pill, norethisterone 350 µg once a day (Noriday). If used correctly and consistently the progestogen-only pills are more than 99% effective. However, it may be advisable to suggest irreversible forms of contraception such as sterilisation. Alternatively, any patient still considering having their fertility maintained should consider other modes of management for menorrhagia.

Bipolar radiofrequency electrical energy endometrial ablation (Novasure) has an amenorrhoea rate of 45-55% after two years [6]. Therefore, this mode of treatment of the endometrium is very popular. The endometrium has a large potential to regenerate. Furthermore, small areas of endometrium can remain if not fully treated. These areas can be susceptible to implantation of pregnancies [4]. A systematic study identified 18 cases following Novasure ablation of which 8 were over 24 weeks gestation [5]. However, due to the aggressive nature of destruction of the endometrium in the procedure, the consequence of a pregnancy may be more complicated.

Possible risk factors for pregnancy following endometrial ablation are individuals that did not have amenorrhoea post-procedure and maternal age [7]. In one retrospective study of 1621 individuals who underwent TCRE, 39 (2.41%) became pregnant. 3.2% had regular menses in comparison to 0.3% [4]. The failure rate of ablation in the management of menorrhagia is associated with age. There is 80% uterine conservation at 8-year follow-up in those over 45 years of age in comparison to 60% in fewer than 40 years of age [7]. The mean age of endometrial ablation was 37.5 (range 26-50). The mean interval between ablation and conception was 1.5 years [5].

Pregnancies after endometrial ablations are associated with morbidly adherent placenta with the risk being 12% in a systematic review [5]. Studies have shown that ultrasonography and MRI are comparable. Thus, any suspected placenta accreta should be investigated with ultrasound modalities in the first instance. However, in equivocal cases, an MRI can be a useful adjunct to complement the ultrasound images. Diagnosis of placenta accreta can ensure safe planning of the delivery in a timely manner involving the multidisciplinary team. The aim is to reduce maternal and neonatal mortality and morbidity [8]. Whilst in this case there was no obvious placenta accreta identified on scan, large vessels were visualised anteriorly on the lower segment at the time of caesarean section. A high uterine incision was made to avoid the vascularities. The RCOG guideline for placenta accreta suggests making an incision distant from the site of the placenta and delivering the baby without disturbing the placenta. The aim is to enable conservative management of the placenta or proceed to an elective hysterectomy [8].

A study that performed hysteroscopy following endometrial ablation showed a variety of changes occurring to the uterine cavity between 3 months and 2 years. At just 3 months the endometrium and some of the superficial myometrium appear necrotic. Over the following 3 months, granulomatous changes and fibrosis occur. By one year the cavity can appear fibrotic with myofibrous scars. Two years post-operative there may be evidence of uterine adhesions. The adhesions may vary from narrow scarred uterus, stenosed cervix and ostia to complete obliteration of the cavity [9]. These findings can possibly explain the increased rates of miscarriage by 28% and ectopic pregnancies by 6%. Pregnancies that have passed 24 weeks are associated with contractures or intrauterine growth restriction possibly due to the fibrosis of the cavity and poor placental perfusion. In this case, the child was born with normal parameters of all growth. The uterine environment

may have caused a lack of sufficient movements to achieve a cephalic presentation. Additional risks in pregnant females after ablation include 12% (Vs 0.5-8%) premature rupture of membrane, 31% (Vs 5-7%) preterm birth, 14% (Vs <1%) perinatal mortality and 1.6% (Vs 0.01%) maternal mortality. The use of antenatal corticosteroids may improve outcomes prior to preterm delivery [10].

## Conclusion

Pregnancy after ablation is associated with a range of risks both to the pregnancy and the mother. Endometrial ablation should only be offered to those that have completed their family. There are several alternatives for the management of menorrhagia that will maintain fertility. In the event of choosing endometrial ablation, a discussion about reliable forms of contraception to avoid pregnancy must be stressed. Laparoscopic sterilisation at the time of endometrial ablation is a possible solution. In the event of a pregnancy, patients should be counselled about the risks to the mother with increased risks of chorioamnionitis, adherent placenta, uterine rupture and caesarean hysterectomy. They should also be informed of the risk of miscarriage, ectopic pregnancy, intrauterine growth restriction, preterm labour and neonatal death [5].

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