

## Picture of the Month

### Cesarean delivery scar

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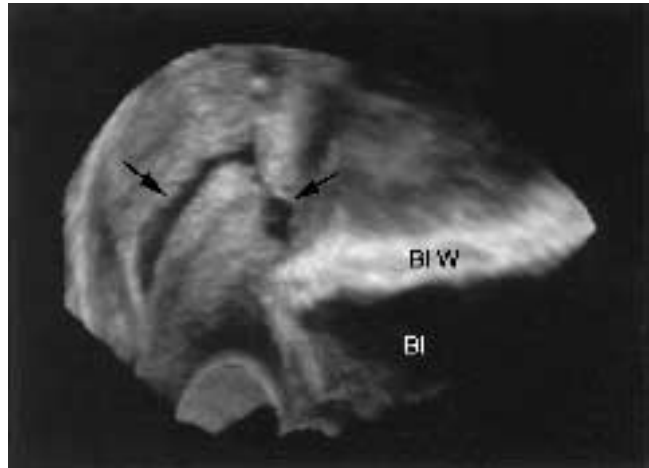
#### INTRODUCTION

Pregnancy after Cesarean delivery requires extra care during follow-up and subsequent delivery due to the risks of developing an ectopic pregnancy in the scar tissue<sup>1–5</sup> and uterine rupture during labor<sup>6</sup>.

We report a case of post-Cesarean delivery scar in the isthmic part of the uterus in a woman during her third *in-vitro* fertilization (IVF) treatment cycle.

#### CASE REPORT

A 35-year-old-woman presented to us for her third IVF treatment cycle. She had had a Cesarean delivery 7½ months earlier following a successful IVF treatment. She had had an uneventful recovery from the operation. After delivery she had two menstrual periods then decided to start a new IVF treatment cycle. She had her first ultrasound scan on cycle day (CD) 9, which was performed before the luteal start of gonadotrophin releasing hormone (GnRH) treatment. All the scans were performed using a Kretz Voluson 530 ultrasound machine (Kretztechnik, Zipf, Austria) with three-dimensional (3D) facilities. The isthmic scar was visible on CD 9, but looked intact. The pituitary down-regulation was achieved after 33 days of GnRH therapy. The patient was scanned weekly, and the scar looked normal. During ovarian stimulation with follicle stimulating hormone (FSH) injections, the scar became conspicuous on ultrasound scans. The scar seemed to contain endometrial tissue, which reacted to ovarian stimulation and started to grow and secrete mucus, enabling clear visualization of the scar. The 3D ultrasound examination (Figure 1) on the day before human chorionic gonadotrophin (hCG) administration and 3 days before egg collection revealed a fenestration throughout the isthmic scar. The patient was scanned 2 days after egg collection and there was no change in the appearance of the scar. After consultation with an obstetrician, we decided to transfer two embryos under ultrasound guidance into the uterine cavity, carefully avoiding transfer into the scar. The patient was informed about the possible risks, and she accepted the decision. Two weeks later she performed a pregnancy test which was positive. Three weeks



**Figure 1** Cesarean delivery scar during *in-vitro* fertilization treatment. Both the cervical canal (left arrow) and the isthmic Cesarean delivery scar (right arrow) are filled with mucus. Bl W, bladder wall; Bl, bladder.

after embryo transfer she was scanned, and there was a singleton pregnancy in the uterine cavity and the yolk sac was visible. The dehiscence in the uterine scar was not observed. Five weeks after embryo transfer, fetal pole and heartbeat were detected. She had an uneventful elective Cesarean delivery of a healthy male infant at 39 weeks of gestation.

#### DISCUSSION

Three-dimensional ultrasound offers several distinct advantages over conventional ultrasound, including 3D image reconstruction with a single pass of the ultrasound beam<sup>7</sup>. It can not only portray individual image planes, but it can also store complex tissue volumes which can be digitally manipulated to display a multiplanar view, allowing a systematic tomographic survey of any particular field of interest<sup>8</sup>. The role of 3D ultrasound in assessing the cervical morphology and the risk of preterm delivery are currently under evaluation and the results are not consistent<sup>9,10</sup>. We report here the use of 3D sonography in the examination of a postoperative Cesarean delivery scar.

In this case the scar did not become visible until ovarian stimulation commenced. The endometrial tissue inside the scar started to react and secrete mucus, which did not leak out and enabled clear visualization of the scar. The scar was scanned with 3D ultrasound and the volume was saved and digitally processed afterwards. The planes obtained confirmed the suspected dehiscence throughout the myometrial layer in the isthmic part of the uterus.

In order to avoid the risk of ectopic pregnancy in the Cesarean delivery scar<sup>1-5</sup>, the embryo transfer was performed under ultrasound guidance. The patient achieved a pregnancy, and the scans revealed that the only implanted embryo was in a safe area in the fundal part of the uterine cavity.

According to the current consensus, for the majority of women with a previous Cesarean delivery, a trial of labor should be encouraged<sup>6</sup>. Ultrasound measurement of the lower uterine segment late in the pregnancy is highly recommended in considering a trial of labor after previous Cesarean deliveries<sup>11,12</sup>. However, less than 6 months' interpregnancy interval has been shown to be inversely associated with the likelihood of uterine scar failure during subsequent labor<sup>13</sup>.

In this case 3D scanning enabled us to analyze the area of interest in several different planes and make the clinical decisions in collaboration with an obstetrician. The information obtained from the 3D data file was superior to the two-dimensional printout.

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