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## BRIEF COMMUNICATION

# Pregnancy following MR-guided focused ultrasound surgery for a uterine fibroid

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Uterine leiomyomas are the most common tumors of the female reproductive tract. For women desiring future pregnancies, current treatment for clinically significant uterine fibroids varies between expectant management and myomectomy. This report briefly discusses a physician's choice of a noninvasive treatment.

The patient was a 29-year-old woman complaining of a slight abdominal distension. She reported never having been pregnant and her history revealed no significant medical or gynecologic problems such as pain, abnormal bleeding, or infertility. On clinical examination the size of her uterus was comparable to the size at 14 weeks of pregnancy. A pelvic ultrasound examination showed a single anterior uterine wall mass consistent with a leiomyoma. Because of its size, concern was raised that it might cause complications during a pregnancy, such as abortion, preterm labor, or pain from degeneration. However, the patient wished to

avoid an invasive surgical procedure because of possible adverse effects and complications.

Magnetic resonance-guided focused ultrasound surgery (MRgFUS) has been used effectively for the noninvasive treatment of symptomatic fibroids [1]. Due to the precision of this technique and its ability to target the tumor without affecting surrounding myometrium or uterine walls, we hypothesized that MRgFUS would not negatively affect future fertility.

After providing informed consent, the patient decided to undergo MRgFUS rather than myomectomy, and a first series of MR images was obtained to plan the treatment. The ExAblate 2000 device (InSightec, Haifa, Israel) was used. On T1-weighted magnetic resonance imaging (MRI), a round lesion was observed in the anterior wall of an antero-flexed uterus. Its maximal dimensions on MRI were 6.8×8.0×7.9 cm and its volume was 215 mL (Fig. 1a).

During MRgFUS, after a significant portion of the lesion had been ablated, measurements based on MRI T1-weighted, gadolinium-enhanced images indicated a nonperfused volume of 111 mL, and therefore that 51.6% of the tumor was ablated. The treatment was pursued without complications and the patient was discharged 2 h later. At three months the fibroid volume had shrunk by 22.8% (Fig. 1b).

The patient conceived spontaneously three menstrual cycles after undergoing MRgFUS. The treated uterine fibroid caused no complications and the course of the pregnancy was uneventful. Repeated ultrasound scans throughout the pregnancy showed normal fetal development, normal placental insertion in the posterior uterine wall, and no change in the size of the treated fibroid. At 39 weeks of pregnancy, she had

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**Figure 1** Pretreatment contrast-enhanced sagittal T1-weighted MR image of the fibroid (solid arrow) (a), and T2-weighted MR image acquired three months post treatment showing a fibroid reduction of 23% (dashed arrow) (b).

an uneventful labor and was vaginally delivered of a healthy male newborn. His weight was 3.212 kg and Apgar scores were 8 at 1 min and 9 at 5 min. The postpartum period was uneventful and the patient returned to her daily routine without major complaints.

Ablating a large asymptomatic uterine fibroid using MRgFUS is a new approach, and it was uncertain whether the patient's uterus could sustain a pregnancy after this treatment. Although clinical reports had concentrated on the treatment of symptomatic women who had completed their families, experience had shown that necrosis after heat ablation was limited to the capsule of the treated fibroid, and that MRgFUS did not cause damage to healthy tissues.

There was one previous report on a safe pregnancy and vaginal delivery following MRgFUS, but the patient had been treated for focal adenomyosis [2]. Since women with uterine fibroids may conceive spontaneously, we do not suggest that our patient

became pregnant as a result of MRgFUS. Moreover, the safety of MRgFUS in women with fibroids who wish to carry a pregnancy is still unknown. Large studies should be conducted to ascertain the benefit and safety of MRgFUS as a preconception treatment for uterine fibroids in asymptomatic women desiring to preserve their fertility.

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