



## The effect of focused ultrasound waves during ablation of uterine fibroids on the endometrial receptivity in patients planning pregnancy

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### Abstract

Literature data on the influence of various methods (conservative regression, organ-preserving surgical) treatment of uterine fibroids on the morphofunctional state and endometrial receptivity are few and very contradictory. The literature practically does not cover the effects of focused ultrasound energy on the endometrium depending on the location of uterine fibroids along the anterior or posterior wall, which suggests a reflected or direct penetrating impact of ultrasonic waves on the tissue.

**Purpose.** To investigate the influence of focusing ultrasonic waves during ablation of uterine fibroids on the endometrial receptivity in patients planning pregnancy.

**Material and methods.** 67 women with symptomatic uterine fibroids planning a pregnancy were examined. The main group included 32 patients receiving ablation of uterine fibroids by focused ultrasound under the control of magnetic resonance imaging and a comparison group - 35 women who received surgical treatment by laparoscopic myomectomy. The endometrium on the LH7+th day defined by urinary ovulation test was examined by scanning electron microscopy (SEM) before and three months after treatment.

**Results.** It was established that the focusing ultrasound rays passing through the endometrium do not cause changes in the maturation rate and do not affect the state of intercellular contacts. At the same time, a significant increase in the frequency of asynchronous maturation of pinopodia 50.00% (16) versus 14.28% (4);  $p=0.021$  and the number of heteromorphic secretory cells 53.33% (8) versus 5.88% (1);  $p = 0.002$  in implantation endometrium was found.

### Conclusion

Observation data may indicate a certain negative effect that affects ultrasound on the functional state of individual cells, endometrium and inhibition, intercellular interactions under the influence of the energy of ultrasonic waves. The use of non-invasive methods for the treatment of uterine fibroids in patients of reproductive age, pregnancy planning, should be justified and have the nature and cause of previous reproductive failures.

### Biography

Melkozerova O.A. Doctor of Medical Sciences, Associate Professor, works at the Federal Research Institute of Deputy Director for Science. Doctor heads gynecological clinic of Institute, performs the full amount of surgical interventions for gynecological diseases, including laparoscopic myomectomy. The gynecological clinic specializes in reproductive surgery to prepare patients with gynecological diseases for pregnancy, including the using of the method of focused ultrasound exposure under the control of magnetic resonance imaging.

### Publication

1. Adamyam LV, et al. (2015) Uterine fibroids. Diagnosis, treatment and rehabilitation. Clinical recommendations (treatment protocol). M. (In Russ.)
2. Melkozerova OA, Bashmakova NV, Malgina GB, Bragina EE, Michelson AA, Chistyakova GN (2019) Ultrastructural markers of tissue endometrial receptivity in patients with recurrent implantation failure, Gynecological Endocrinology 35:sup1, 45-48.



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