

## Factors Affecting Endometrial Receptivity during Embryo Implantation

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**Abstract:** the Endometrium Itself Has Excellent Tolerance and is Used in in Vitro Fertilization-Embryo Transfer Technology to Help Improve the Success of Embryo Implantation. Diseases That Affect the Tolerance of the Endometrium Include Uterine Fibroids, Adenomyosis, Endometriosis, Polycystic Ovary Syndrome and the Like. in Recent Years, Relevant Medical Experts and Scholars Have Carried out a Lot of Research on the Uterine Tolerance, and the Related Factors Affecting the Endometrial Capacity Are Taken as the Main Investigation Content, and Different Evaluation Methods Are Adopted, But An Endometrial Receptor Assessment Method Has Not Been Proposed in the Current Clinical Situation.

### 1. Introduction

The date of birth of the first test-tube baby in the world was July 1978. With the continuous advancement of medical technology, the technology of IVF has generated a breakthrough by analyzing the clinical pregnancy rate which can be seen that the analysis of the factors affecting the clinical pregnancy rate is about 30%-40%, which is directly related to the repeated implantation failure of the embryo and the repeated implantation failure of the embryo is reduced by the endometrial receptivity influences.

### 2. Endometrial Receptivity

The endometrial tolerance is the competence of the endometrium to accept blastocysts, the first time to study the endometrial capacity is about 1986, and mice are the main research aim. Since then, the study has involved several other animals, as the results, the study indicate that in rodents and humans, embryo implantation of the endometrium occurs during a specific period of time, which is often referred to as the “implantation window period.” In humans, this period usually refers to 20-24 days of the menstrual cycle, or 6-8 days after ovulation. During this period, a large amount of progesterone and estrogen are hidden in the ovary, which accelerates the differentiation and proliferation of endometrial cells, and also secretes molecules that affect the development of trophoblast cells. Thereafter, during the actual development of the endometrium, the implantation of the embryo will not be accepted, and whether the endometrium can be successfully implanted is directly related to whether the embryo can reach the endometrium in time and precisely<sup>[1]</sup>.

### 3. Factors Affecting Endometrial Receptivity during Embryo Implantation

#### 3.1 Endometrial Morphological Disorders

If the uterine dysplasia is congenital, it will generate a certain effect on the morphology of the endometrium, which will have a greater impact on the endometrial capacity. For instance, the abnormality of Müller's tube fusion may cause obvious abnormalities in the double uterus, the arcuate uterus, the single-horned uterus and the double-horned uterus. Moreover, causing defects in the mediastinal degeneration, and the uterus is completely longitudinal or incomplete. Clinically relevant

studies have demonstrated that the appearance of double uterus and arcuate uterus is directly related to infertility. The degeneration of the single-horned uterus and the double-horned uterus and the mediastinum will have a greater impact on the morphology of the endometrium and a greater impact on the tolerance of the endometrium. In addition, acquired uterine lesions will have a greater impact on the morphology of the endometrium, such as uterine submucosal fibroids, endometritis, adenomyoma, endometrial polyps and intrauterine adhesions, etc. It has a great influence on the environment of the uterine cavity and the implantation site of the embryo, which leads to adverse pregnancy <sup>[2]</sup>.

### **3.2 Fallopian Tube Water**

The hydrosalpinx will flow back into the human uterine cavity, which will have plenty of adverse effects on the implanted embryo, leading to a significant revision in the local environment of the endometrium, which will have a greater impact on embryo implantation. Related researchers have suggested that the serious accumulation of water in the fallopian tube is directly related to the decline of the expression of the relevant factors of the leukemia inhibitory factor, integrin, and the source frame gene of the implantation window. When the hydrosalpinx is removed after the loss, the expression of the above factors will increase tremendously. The above results indicate that the reduction of endometrial receptivity is directly related to hydrosalpinx. Based on the above research results, it can be seen that the success rate of embryo transfer in patients with hydrosalpinx under ultrasound is lower than that in patients with fallopian tube resection <sup>[3]</sup>.

### **3.3 Thrombosis Defects**

Medically relevant clinical research data show that acquired thrombophilia and hereditary thrombophilia are the direct causes of embryonic failure. Although it is in the stage of thrombosis, it is directly related to the tolerance of the endometrium. There are also some experts and researchers suggest that the coagulation mechanism is also the main influencing factor affecting the endometrial receptivity. For some patients with thrombosis, it is very important to apply effective intervention before embryo transfer. Low molecular weight heparin is caused in the uterus. Decreased membrane capacity leads to the main cause of recurrent spontaneous abortion in patients, and in some patients with endometrial tolerance, and failure in repeated implantation will not have a significant effect. Therefore, low molecular weight heparin can be applied to some patients with repeated thrombosis with thrombophilia. Thrombotic tendency is the main factor affecting endometrial receptivity and induced abortion <sup>[4]</sup>.

### **3.4 Placental Implantation Cytokine Deficiency**

Because of the large quantity of cytokines in the egg cell fluid, the cytokine itself is closely related to the reproductive system, affecting all aspects of reproductive activities, directly related to paracrine and autocrine, due to the endometrial receptivity decreased, which in turn leads to a severe loss of related cytokines. First, the production of related cytokines is directly related to blood vessels. During embryo implantation, the embryos are identified by mutual recognition with the endometrium, which lays a material foundation for better implantation of the embryo in the blood vessels <sup>[5]</sup>. Medically relevant clinical studies have shown that the endometrium has good tolerance and is directly related to the rich blood flow under the endometrium. It plays an important role in angiotensin system and vascular endothelial growth factor. Second, the angiotensin system. As a humoral regulation system, the angiotensin system is present in systemic cardiovascular activities. With ATII as the main effector substance, this substance plays a great role in the regulation of ovarian function, which provides the channel for the proliferation of endometrial blood vessels, moreover the endometrial receptivity is greatly enhanced, which makes the surrounding capillaries more abundant <sup>[6]</sup>.

#### 4. Conclusion

Cytokines, hydrosalpinx and abnormal endometrial morphology of endometrium receptively will generate significant influence, some experts and scholars will improve the clinical pregnancy rate and the receptive endometrium of a lot of research and analysis, especially for some patients with infertility, because some patients are with relatively lower and the receptivity of endometrium. In the actual research process, affected by the objective conditions constraints, most studies failed to provide adequate basis of evidence-based medicine, which is not able to clearly understand the forming conditions of the receptivity of endometrium. Whereas we believe that with the development of research work, researchers will further deepen the further comprehension to the research about the blastocyst implantation mechanism and channels for infertility factors, eventually it will definitely be helpful to promote the success rate of assisted reproduction.

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