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Effect of administration of atosiban at day of embryo transfer on *in-vitro* fertilization out come

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Abstract
Background: The most crucial step of assisted reproduction is embryo implantation, which is impacted by a variety of factors, including the patient's age, embryo quality, and endometrial receptivity. The embryo transfer (ET) procedure, which induces uterine contractions, may hinder embryo implantation.
Objectives: On the day of embryo transfer, examine the effects of Atosiban administration on implantation, clinical pregnancy, miscarriage, and live birth rates.
Material and Methods: The study included 60 individuals with a diagnosis of primary or secondary infertility due to male or female factor, tubal factors, moderate endometriosis, or other unknown reasons. Two groups of patients were selected at random. The first group received 6.75 milligrammes of atosiban intravenously 30 minutes before ET, whereas the second group received no medication. Pregnancy outcomes in both groups were compared.
Results: Significantly higher clinical pregnancy and implantation rates were observed (60% versus 30%) and (37.8% versus 17.8%) respectively, with non-significantly higher live birth rates (94.4% versus 66.7%), while the miscarriage rate was lower in the Atosiban group but not significantly (5.6% versus 33.3%).
Conclusion: These findings imply that atosiban therapy prior to embryo transfer improves embryo implantation.

Keywords: Administration, atosiban, embryo transfer, *in- vitro* fertilization, outcome

Introduction
The embryo transfer (ET) procedure may induce uterine contractions, which may hinder embryo implantation. During an ovarian stimulation cycle, supraphysiological serum estradiol (E2) concentrations may promote the growth of endometrial. Synthesis and release of prostaglandin F2, in addition to oxytocin production and maturation of oxytocin receptors [1]. Around 30% of people with endometriosis suffer excessive uterine contractions (> 5 per minute), which have been linked to failure *in vitro* fertilisation (IVF) therapies [2]. Atosiban (Tractocile; Ferring), a combined vasopressin V1a and oxytocin receptor antagonist, has been approved for the treatment of preterm labour with minimal adverse effects. While the nano-peptide hormone oxytocin is involved in a variety of reproductive processes, it was formerly considered to be essential for uterine contractility in nonpregnant women [3].

Aim of the study
Determine the effects of Atosiban dosing on the day of embryo transfer on:
- implantation rate
- Clinical pregnancy rate.
- Rate of pregnancy loss
- Rate of births to live mothers.

Methods
The study comprised 60 people between the ages of 18 and 40 with primary or secondary infertility due to a male or tubal illness, mild endometriosis, or other undetermined causes. According to her age, medical history, and hormonal analysis, each patient got an antagonistic therapy. Patients are monitored with recurrent vaginal ultrasounds and blood levels of estradiol measurement, followed if required by ovum retrieval. Around 34–36 hours after HCG induces ovulation, oocyte extraction under transvaginal ultrasound guidance occurs.

On the day of embryo transfer, which was normally 2 or 3 days (depending on the amount and quality of oocytes), the patients were randomly separated into two groups, with at least one high-quality embryo chosen for transfer. The first group got an intravenous dose of atosiban (6.75 mg) 30 minutes before to ET, whereas the second group acted as the control and did not receive treatment. On day 14 after embryo transfer, a serum ß-HCG test is done. A further ultrasound was conducted on the woman with the positive result to objectively confirm the existence of one or two gestational sacs, indicating clinical pregnancy [4], and to monitor the pregnancy until live birth.

Results

In the Atosiban group, clinical pregnancy rates and implantation rates were significantly higher than in the control group (60% against 30% and 37.8% versus 17.8%, respectively). Much higher live birth rates (94.4% vs 66.7%) and considerably reduced miscarriage rates (5.6% versus 33.7%) were also seen in the Atosiban group.

Table 1: CSI results compared between the atosiban and control groups

ICSI consequence	Atosiban	Control	*p* value
Pregnancy rate (n.) (%)	18 (60%)	9 (30%)	0.037*
Implantation rate (%)	37.8%	17.8%	0.015*
Miscarriage rate (n.) (%)	1 (5.6%)	3 (33.3%)	0.055
Live birth rate (n.) (%)	17 (94.4%)	6 (66.7%)	0.055

SD: Standard deviation; *: *p* value < 0.05 (significant)

Discussion

The embryo transfer is a crucial IVF cycle stage that requires particular attention. The embryo transfer is a crucial IVF cycle stage that requires particular attention. The efficacy of the operation is determined by the frequency of uterine contractions, the receptivity of the endometrium, and the quality of the embryos transplanted. The efficacy of the operation is determined by the frequency of uterine contractions, the receptivity of the endometrium, and the quality of the embryos transplanted. According to research, the uterine contractility evaluated before embryo transfer (ET) in IVF cycles is six times greater than that recorded before ovulation in natural cycles [5]. Excessive manipulation of the cervix, such as the use of tenaculum, may potentially produce uterine contractions, so preventing embryo implantation. Almost fifty percent of implanted embryos stayed in the uterus one hour after transfer, according to research. Around 15% were detected in the vagina following ET [1]. The results of our research that Atosiban was related with better ART cycle outcomes, which may have therapeutic implications, are corroborated by Schwarze *et al*. [6]. Atosiban enhances uterine receptivity in women undergoing embryo transfer by inhibiting the oxytocin and vasopressin V1a receptors. This blockade might be a safe and effective strategy for decreasing uterine contractile activity, enhancing endometrial perfusion, and enhancing endometrial health [7]. Pierzynski *et al*. presented the first research to demonstrate that atosiban decreased strong spontaneous uterine contractility as measured by transvaginal sonography, increased uterine receptivity, and resulted to successful embryo implantation during ET following endometrial synchronisation [8]. Atosiban modifies the endometrial environment prior to ET, which, according to Moraloglu *et al*., improves IVF-ET pregnancy outcomes by decreasing uterine contractile activity, increasing endometrial perfusion, and inhibiting endometrial prostaglandin synthesis [7].

Conclusion

Indications from this study suggest that atosiban treatment prior to embryo transfer enhances implantation.

Conflict of Interest

Not available

Financial Support

Not available

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