CASE REPORT

Birth of a Healthy Infant After In Vitro Fertilization and Embryo Transfer in Patient of Total Uterine Prolapse

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INTRODUCTION

The total (third degree) uterine prolapse, especially when occurring in young women is a cause of serious disability including infertility and a difficult challenge for the gynecologist to manage. Proper management of patients with uterine prolapse should be based on patient's complaints and desires (1). As in some cases of tubal diseases, IVF-ET would be the best option for the patient with uterine prolapse and inoperable tubal diseases. However, to our knowledge, there has been no reported case of successful live birth after IVF-ET using a pessary in patients with total uterine prolapse. We describe a successful pregnancy after IVF-ET using a pessary in a patient with total uterine prolapse.

CASE REPORT

A 28-year-old woman, gravida 0 para 0, who developed spontaneous total (third degree) uterine prolapse 5 years ago presented to our clinic for clinical evaluation and assessment of the possibility of pregnancy. The patient showed a total uterine prolapse with eversion of the entire vagina not only in the upright position but also in lying down position. The

prolapsed uterus with hypertrophied cervix could be pushed up into the pelvis with some difficulty by fingers and caused pelvic pain, back pain, and dyspareunia. From the beginning, no causes which might result in uterine prolapse were identified, and the degree of prolapse became worse and eventually reached total uterine prolapse. The patient underwent two unsuccessful suspension surgeries to correct uterine prolapse at another hospital before her referral to our clinic. Hysterosalpingogram showed distal obstruction in both tubes with a moderate degree of hydrosalpinges. Diagnostic laparoscopy confirmed the same findings as in hysterosalpingogram and both tubes had severe adnexal adhesions which revealed an inoperable tubal status.

IVF-ET was chosen with the application of a ring-type vaginal pessary. IVF-ET was performed as usual. Briefly, the patient underwent ovulation induction using a "long" protocol that included GnRH-agonist (buserelin; Hoechst, Germany) and human menopausal gonadotropin (hMG; IVF-M, LG, Korea). Human chorionic gonadotropin (hCG; IVF-C, LG, Korea), 10,000 IU, was administered when two follicles measuring 17 mm were observed. Oocytes were collected vaginally under ultrasound guidance 34 h later.

Husband's semen parameters were normal and sperms were treated with Ham's F-10 Nutrient Mixture (81200-040, Gibco, USA) supplemented with 10% human follicular fluid (hFF). Nineteen oocytes were collected, 15 of which were mature stage (metaphase II) and 4 were immature stage (germinal vesicle). Oocytes or fertilized oocytes were cultured in Dulbecco's Modified Eagle Medium (11966-025, Gibco, USA) supplemented with 10% or 20% hFF,

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respectively. Up to five oocytes were inseminated with approximately 200,000 sperms per 2 ml in each well (3037, Falcon, USA). Fertilization was examined the following morning and fertilized oocytes were cocultured on the vero cell monolayers until transfer or cryopreservation (2).

On Day 2, after embryo grading (3), all embryos were further cultured for 3–5 days for blastocyst–ET. On Day 5, blastocysts grading were done as Grades 1–3 (4). Two blastocysts of Grade 1 were selected and transferred into pessary-supported uterus, using Tom Cat catheter (8890-703021, Sherwood, USA). Five blastocysts showing BG1 ($n = 3$) and BG2 ($n = 2$) were cryopreserved, and seven arrested embryos at the stage of vacuolated morula ($n = 3$), 6-cell ($n = 3$), and 2 PN ($n = 1$) were discarded. Luteal phase support was provided in the form of progesterone in oil (50 mg IM daily), beginning from the day of oocyte retrieval and until embryo with cardiac activity was observed on ultrasound.

Pregnancy was confirmed by serum β -hCG on Day 10 after ET and singleton clinical pregnancy was observed by vaginal ultrasound with the presence of an intrauterine gestational sac with embryo that had cardiac activity. Pessary was applied during the process of IVF–ET and the entire period of pregnancy except the time of oocyte pick up. The patient was advised not to exert heavy straining or lifting work which might increase intraabdominal pressure to hold the uterus in place during the entire period of pregnancy especially during the first trimester. Other routines for pregnancy were performed as usual but the position of pessary was checked each time the patient came to the hospital.

The patient had an uneventful pregnancy and delivered a healthy, normal female infant weighing 3,420 g by elective cesarean section at 38 weeks of gestation due to malposition of fetus. The mother experienced an uneventful postoperative course and the infant showed cytogenetically normal karyotype of 46, XX chromosomes with no structural or numerical aberrations.

DISCUSSION

Recently since the introduction of IVF–ET, the indications of IVF in the treatment of infertility have expanded very much. Uterine prolapse accompanied with inoperable tubal diseases is a clear indication of IVF–ET as in tubal factor infertility. In classification of uterine prolapse, the total uterine prolapse

extending outside the introitus with eversion of the entire vagina without straining or traction is called third-degree prolapse or procidentia (5). Multiple factors are usually involved in the genesis of uterine prolapse but the most prominent cause is pregnancy, associated prolonged labor, or difficult delivery. However, previous pregnancy is not a required precondition for prolapse, since even in nulliparous women, although very rare, it may occur spontaneously (6) as in our case. In many cases, chronic constipation or chronic straining is considered a prime etiologic factor (1,7) and, menopause, along with estrogen deficiency, plays a role by weakening the support tissues (6). For the treatment of uterine prolapse, vaginal hysterectomy can be a definite operation for patients who do not want further pregnancy but for young women who want to preserve reproductive function, conservative suspension surgery or a pessary application should be considered. Various conservative surgical procedures have been used to correct uterine prolapse in young women but the transvaginal approach with sacrospinous uterine fixation technique is favored with success compared to abdominal approach techniques (8). Only the technical aspect of surgery was described without mentioning the reproductive outcome. In one study, after conservative surgery of plication of both uterosacral and cardinal ligaments through a vaginal approach in 19 parous patients with uterine prolapse of less than third degree, six full-term living pregnancies were reported (9). In addition to surgery, a pessary can be used temporarily in patients who want further pregnancy or to delay definite surgery, or in patients who refuse surgery and in those whose general health is too poor to permit surgery. In our case, pessary was chosen after the failures of two suspension surgeries for temporary relief of uterine prolapse to permit the patient to become pregnant through the process of IVF–ET. In the literature search, we could not find any IVF–ET case in patients of total uterine prolapse after failures of surgery and this may be related with the very low incidence of uterine prolapse in nulliparous young-aged woman. In conclusion, IVF–ET with placement of a pessary even in the patients with a long history of total uterine prolapse with unsuccessful surgeries is worth performing.

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