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SURROGATE PREGNANCIES IN PATIENTS WITH MAYER–ROKITANSKY–KUSTNER–HAUSER SYNDROME AND SEVERE TERATOZOOSPERMIA

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The challenge of the case presented was threefold: congenital absent uterus (Mayer–Rokitansky–Kustner–Hauser syndrome), a request for surrogacy, and teratozoospermia in the husband (6% normal morphology according to the Tygerberg strict criteria). Surrogacy was dealt with by means of guidelines proposed by the SA Law Commission after a surrogate mother was found. The gestational carrier was synchronized with the genetic donor with congenital absent uterus, the main aim being assisted reproduction. Two gamete intrafallopian transfer (GIFT) procedures were performed, both unsuccessful. Poor fertilization of excess GIFT oocytes was also observed. Three intracytoplasmic sperm injection procedures were then performed. The first two were unsuccessful and the third ensued in a singleton pregnancy. Hormonal support (progesterone and estradriol valerate until 12 weeks pregnancy duration) was given. The pregnancy resulted in the normal delivery of a healthy male infant at full term. Psychological support was given to mother and surrogate throughout pregnancy, as well as thereafter. The success of this case gives hope to infertile couples with severe infertility factors.

Keywords Mayer–Rokitansky–Kustner–Hauser syndrome, teratozoospermia, surrogate pregnancy, ICSI, IVF

In this study the adverse effects facing our unit were threefold: congenital absent uterus (Mayer–Rokitansky–Kustner–Hauser syndrome), a request for a gestational carrier (surrogacy), and severe teratozoospermia in the husband. Vaginal agenesis is a rare entity that occurs with a frequency of 1 in 10,000 women [5]. In vaginal agenesis, the external genitalia and fallopian tubes are normal. The cervix is either absent or hypoplastic. The uterus may be normal or display a variety of the uterine anomalies. The most frequent form (83% of cases) of this rare entity is the condition known as the Mayer–Rokitansky–Kustner–Hauser syndrome where the uterus is congenitally absent with normal fallopian tubes and ovaries [5].

Surrogacy in our country has recently been addressed and in this case was handled according to the guidelines proposed by the South African Law Commission [1]. Teratozoospermia as diagnosed by the Tygerberg strict criteria [3] complicates prognosis of fertilization and pregnancy significantly [4, 6]. This factor together with the ones mentioned previously presented our unit with a unique challenge of complicating factors not often seen.

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METHODS

A 32-year-old patient presented with a congenitally absent uterus (Mayer–Rokitansky–Kustner–Hauser syndrome) and a wish to have a baby. Her husband had teratozoospermia with 6% nominal morphology according to the Tygerberg strict criteria [3]. A gestational carrier was available at the time and a contract between the two parties was drawn up along the guidelines of the South African Law Commission [1].

The first step toward the surrogate pregnancy was to synchronize the menstrual cycles of the genetic mother and the gestational carrier. This was achieved by suppressing both menstrual cycles with a gonadotropin-releasing hormone agonist (GnRHa) for a period of 3 weeks. When the E_2 level was below 138 pmol/L, an arbitrary day 1 for both cycles was chosen and the genetic mother was stimulated in a standard fashion by using hMG, 2 ampoules per day. The endometrium of the surrogate mother was prepared by means of estradiol valerate. In both patients the GnRHa treatment was continued—in the surrogate until first pregnancy test and in the other patient (donor) until the day of hCG.

During the first cycle gamete intrafallopian transfer (GIFT) was attempted. At that stage intracytroplasmic sperm injection (ICSI) was not yet freely available in our unit. Six ova were retrieved from the genetic mother, of which 3 were metaphase II (MII) and 3 MI. The 3 MII ova were used for transfer, but no pregnancy occurred. The 3 MI oocytes did not fertilize in vitro. During the second cycle another GIFT procedure was attempted. Six ova were retrieved with 6 metaphase II oocytes. Again 3 metaphase II ova were replaced but no pregnancy occurred and no fertilization resulted from the leftover oocytes.

Based on the poor fertilization of the MII oocytes in the second cycle, it was decided to try ICSI. During the first ICSI cycle, 4 embryos were replaced in utero but no pregnancy followed. In the second cycle, 4 embryos were also replaced, but again no pregnancy resulted. In the third cycle, 3 embryos were replaced, all at the 8-cell stage 72 h after fertilization, and a singleton pregnancy resulted. Hormonal support was given in all cycles by means of estradiol valerate 6 mg/d as well as progesterone 25 mg on the day of retrieval of ova followed by 50 mg of pure progesterone intramuscularly and 100 mg vaginal suppository per day until 12 weeks pregnancy duration.

The pregnancy continued uncomplicated. A normal male infant was delivered at term by uncomplicated vaginal delivery. Psychological support was given to the surrogate mother throughout the pregnancy and continued directly after the birth of the baby. The genetic mother stayed with the baby in the antenatal ward and the surrogate mother was discharged after 24 h and followed up at the consulting rooms daily for 1 week and again at 6 weeks. No problems ensued and the baby was transferred to the genetic mother. Baby and genetic mother were discharged 5 days after delivery.

DISCUSSION

Surrogacy is a fairly new concept in South Africa and in our approach we were led by the guidelines set by the South African Law Commission [2]. The gestational carrier was sent for full psychological evaluation to establish her motives for surrogacy. It was clearly established that the motive in this instance was humanistic. It was also stated that reasonable costs of the gestational carrier should be carried by the genetic parents as outlined by the Law Commission guidelines [2]. This, along with other relevant issues, were incorporated in the contract

between the two parties. Based on the guidelines by the Law Commission the following issues had to be addressed in the contract between the genetic parents and the surrogate mother: (1) termination of parental power of the surrogate mother, (2) medical and health care of the surrogate mother during pregnancy, (3) compensation, expenditure, and insurance toward the pregnancy, (4) assumption of risk by the surrogate mother during pregnancy, and (5) confidentiality toward the whole procedure and the pregnancy.

Teratozoospermia in the husband as diagnosed by the Tygerberg strict criteria [3] complicated the case further. Success rates for GIFT procedures with sperm morphology below 14% (this case 6%) vary between 9% (metaphase I oocytes) and 15% (metaphase II oocytes) [2] compared to 33% success rate in normal morphology above 14%. In the first 2 cycles GIFT procedures were done and in all cases metaphase II oocytes were selected to maximize success rates. Due to failure to achieve a pregnancy in the first 2 cycles and nonfertilization of excess MII oocytes, it was decided to change to the ICSI procedure, which became available at that time. In our unit success rates with ICSI in cases of severe teratozoo-, oligozoo-, and asthenozoospermia equals that of GIFT and in vitro fertilization procedures. The ongoing pregnancy rate being 31.1% based on our latest data [7]. In retrospect, we should have reverted to ICSI much sooner, had it been available. Today it is obviously the treatment option of choice in cases with severe teratozoospermia or where poor fertilization results after GIFT if excess MII oocytes are available.

Oocyte donation offers an alternative treatment for infertile women who do not produce ova due to abnormal ovarian function or ovarian failure or in our case surrogacy where the mother has no uterus, but normal ovaries. Pregnancy rates in oocyte donation programs are as high as 54 [8] and 61% [2] per transfer cycle. In this unique case where we had to deal with a severe male factor and the use of surrogacy due to the congenital absence of the uterus approach gives hope to infertile couples (male and female) with infertility factors that not so long ago seemed impossible to overcome.

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