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Review

Live birth by fallopian tube sperm perfusion in hyperprolactinemic woman after failed *in vitro*-fertilization

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The case presented describes a live birth following treatment of a 35-year-old woman with fallopian tube sperm perfusion (FTSP) using donor sperm after three-repeated unsuccessful courses of In-vitro fertilization (IVF) with Percutaneous Epididymal Sperm Aspiration (PESA), Testicular Sperm Extraction (TESE), and donor sperm. The indication of FTSP is hereby explored and discussed.

Key words: Male infertility, intrauterine insemination, hyper-prolactinemia, azoospermia, donor sperm, Lagos.

INTRODUCTION

Fallopian tube sperm perfusion (FTSP) is a modified form of intrauterine insemination recommended for the treatment of mild to moderate male infertility, unexplained infertility and infertility due to non immunological mucus insufficiency. However, for cases of severe male infertility, in-vitro fertilization, intracytoplasmic sperm injection (ICSI) and embryo transfer (IVF, ET) will achieve far greater success and also afford an opportunity of determining whether a man's sperm is capable of fertilizing his partner's eggs (Ajayi et al., 2003).

Intrauterine insemination, both in spontaneous and preferably in super-ovulated cycles, is recommended as the first choice option of assisted conception techniques, since the procedure is non- invasive and also much more cost effective (Ashiru et al., 2004).

However, it could be successful for couples with oligospermia and severe male infertility (Kazutomo et al, 1992). This procedure greatly reduces the distance that the sperm must travel and increases the amount of spermatozoa available to the oocytes. The number of sperm that reach the fallopian tubes is increased as much as 25% with IUI (Dodson et al, 1987).

The uniqueness of this procedure (FTSP) is the larger volume of spermatozoa, about 10 times the volume used in the conventional IUI is discharged into the female reproductive tract. No doubt, this procedure has indeed improved the pregnancy outcome rates in our centre; hence we report this particular case as an emphasis of this procedure.

CASE HISTORY

The couple presented here in this report had already undergone three unsuccessful IVF attempts in the past prior to presentation in our centre in 2005 for the purpose of achieving pregnancy after ten years of infertility. The woman was found to be 35 and her husband 47 years old. Investigation done at our centre confirmed the man to be azoospermic. So donor sperm option was advised and subsequently offered. The donor semen used for treatment gave sperm density of 35.7 million/ml and motility of 40% Table 1.

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Abbreviations: IUI, Intrauterine insemination; **IVF**, *in vitro*-fertilization; **ART**, assisted reproductive technology; **ET**, embryo transfer; **FTSP**, fallopian tube sperm perfusion; **PESA**, percutaneous epididymal sperm aspiration; and **TESE**, testicular sperm extraction.

Table 1. Various investigation and treatment options carried out on the couple.

Husband	Wife
Sperm analysis: Count- 0 , azoospermic Surgical sperm extraction: 1. TESE with IVF failed 2. PESA with IVF failed 3. Donor sperm with IVF failed	Normal Transvaginal ultrasound done revealed the uterus to be of normal size and anteverted. Both ovaries were normally placed with normal appearance.
Present treatment at MART: Donor sperm: count -35.7 million /ml, motility- 40%	**MART diagnosis:** hormonal profile - FSH- 8.996 mIu/ml (1-10) prolactin – 28.667ng/ml (1-16) Finding: mild hyper-prolactinemia BMI = 29.4 ,Overweight in the pre-obese group. Managed with antiprolactin drug- Bromocryptine followed by FTSP, gave a positive result- pregnancy. Metformin to deal with any possibility of PCO and improve response to fertility treatment.

The woman weight was 85 kg and 1.7 m in height. Based on these parameters, her body mass index (BMI) was calculated as 29.4 kg/m2. All the early follicular phase hormones (PG, LH, E2, PROL) measured were found to be normal except a very high prolactin level which was recorded.

Transvaginal ultrasound done revealed the uterus to be of normal size and anteverted. Both ovaries were normally placed with normal appearance.

The high prolactin level was managed with antiprolactin drug, Bromocryptine. Pituitary down regulation with Buserelin (Suprefact, Hoescht Marion Roussel, UK), ovarian superovulation using human chorionic gonadotrophin (Profasi, Serono, UK) was followed by FTSP procedure.

For the FTSP Procedure, a portion of the donor semen was used and prepared using swim up method by Kasumoto et al. (1997). About 500 l of the capacitated sperm was drawn up into a Cook's catheter. This catheter was then passed through the cervical os and the content was discharged into uterus at about the time of ovulation. The luteal phase was supported with 400 mgprogesterone daily (Cyclogest, Shire Pharmaceutical Ltd, UK) and pregnancy test was done two weeks after and confirmed positive. A pelvic ultrasound done about 4 weeks later confirmed active singleton. She has since been delivered of a live female child.

DISCUSSION

Therapeutic approach for managing male infertility will include ART such as intrauterine insemination (IUI) either with fresh or cryopreserved sperm from donors (Kazumoto et al., 1992; Ajayi et al., 2003).

Hyperprolactinemia if not properly managed may lead to amenorrhoea and anovulation as reported in this case (ACOG, 1989 ; Kelly and Tulandi, 2002). Serum prolactin should be measured under basal conditions and the generally accepted normal range is 1-16 mg/ml. This patient had prolactin level of 28.667 mg/ml (> 16 mg/ml). Hence, bromocryptine an anti-prolactinemic drug was used to control the high prolactin level.

An increased risk of delayed conception was also observed among women whose BMI was greater than 20 kg/m2. The BMI for this patient was 29.4 kg/m2, which falls in the over-weight (pre-obese) group (Bolumar et al., 2000). Excessive body weight on the other may result from excess production of male hormone by the ovary causing polycystic ovary syndrome (PCOS) which interferes with ovulation, hence lead to anovulation.

PCOS also poses a high risk for insulin resistance, particularly in women who are obese. About half of PCOS patient also have diabetes and nearly 30% of obese women with PCOS had amenorrhea (David et al., 2001).

Anti- diabetic drug like metformin with proven efficacy (David et al., 2001) was given to this patient, in order to improve the patient response to fertility treatment. The patient was advised to avoid fatty foods, fried food and abstain from sweet during the course of treatment and strict diet therapy enforced to ensure that hormonal profile does not fluctuate appreciably during the course of treatment.

Ovarian stimulation combined with FTSP, has been found to be more effective than that with natural cycle. This initial procedure was hence adopted in the patient, however only for a few selected cycles (Dodson et al., 1987). There is good evidence that medical treatments are highly effective in anovulatory infertility where a

specific problem in the hypothalamic pituitary axis has been identified (Dodson et al., 1987).

Prior to the advent of intracytoplasmic sperm injection (ICSI) for the management of male factor infertility, demand for donor sperm was relatively high (Ajayi et al 2003; Akinrinola et al., 2003). Although ICSI remains the best solution for male factor infertility, there is still role for donor sperm. Some request for donor sperm following poor prognosis for surgical sperm collection (SSC) and others do so after an unsuccessful SSC procedure (HFEA, 1996). Donor sperm can be obtained from sperm bank scattered all over the state for purposes of ART other than the common reason of sperm preservation for men undergoing cancer treatment (Shittu et al., 2005) . In fact when SSC have failed to give good sperm cell for ART, another option left for a couple is to consider the use of a donor sperm (HFEA, 1996).

The results of IUI by extrapolation FTSP in terms of pregnancy rates per treatment cycle vary considerably between clinics and evaluation of the results is difficult because of the heterogeneity of the patient population and the different ovarian stimulation protocols used in the studies. Usually pregnancy occurs in the first four to six attempts and thereafter the pregnancy rate is hardly increased by continuing for longer.

Careful selection of patients is important. Those who will benefit most are young women with patent fallopian tubes with no ovulatory disorder, no endometriosis of moderate or severe degree and no severe degree of male factor infertility in their partner.

CONCLUSION

Our experience with FTSP has shown it to have a better pregnancy outcome than the conventional IUI, especially with one or second ovulation cycle.

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