

## TRANSLAPAROSCOPIC SEMEN INTRAFALLOPIAN TRANSFER (SIFT)

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### SUMMARY

Several Assisted Reproductive Techniques such as GIFT, ZIFT, IVF-ET have been developed to effectively achieve pregnancies in infertile couples. Each of these techniques have their indications and successful pregnancy rates. We report a new technique called Translaparoscopic Semen Intrafallopian Transfer (SIFT), in which prepared semen is directly introduced into one or both the fallopian tubes laparoscopically timing with ovulation. Out of 50 patients who underwent this new technique, 16 achieved pregnancy giving a success rate of 32% which compares favourably with other established Assisted Reproductive Techniques.

### INTRODUCTION

Treatment of Infertility using Assisted Reproductive Techniques has gained popularity in the last decade. For couples with unexplained or male infertility there are different methods of treatment such as Intrauterine Insemination (IVI), Gamete Intra Fallopian Transfer (GIFT), Zygote Intra Fallopian Transfer (ZIFT) or In-vitro Fertilisation - Embryo Transfer (IVF-ET). All these methods of assisted reproduction in induced cycles increases the chance of fertilisation because there are more oocytes, the semen is artificially improved and

the sperm's path is shortened.

Jansen and Anderson (1987) reported on the catheterisation of the fallopian tubes through the vagina under ultrasound guidance, using a specially designed device. Catheterisation and transfer of capacitated spermatozoa to the oviduct resulted in a few normal pregnancies. Later Transvaginal Intrafallopian Semen Transfer was successfully attempted by Holst and Forsdahl (1988) employing blind catheterisation of the fallopian tubes transvaginally using a specially designed catheter. In Ten women with unexplained infertility who underwent this procedure four normal singleton pregnancies resulted.

We report a simplified cost effective tech-

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Accepted for Publication on 23.04.1993.

nique called the Translaparoscopic Semen Intra Fallopian Transfer (SIFT). In this technique prepared semen is directly introduced into one or both fallopian tubes timing with ovulation.

## MATERIALS AND METHODS

### Patients

Fifty couples underwent the SIFT techniques during March '90 - April '91, their infertility ranging from 4-7 years. The causes of infertility in these patients were due to cervical hostility, tubal (single patent tube), male and unexplained factors. Infertility in 8% (4) of the women due to cervical hostility, had a negative or a poor post coital (PCT), performed in three different cycles.

In this test cervical mucus, collected from the cervical canal 6 hrs after coitus was examined for the presence of progressively motile sperms. At least 10-15 active sperms with forward progression have to be present for a positive PCT. Cervical mucus is most favourable for sperm viability during the preovulatory phase, at which time, under the influence of high levels of estrogen, the cervical mucus is thin, watery and relatively acellular. Therefore, the test should be carried out as close to the ovulatory period as possible.

Infertility due to the male factor was found in 54% (27). These men had a sperm count in the range of 10-30 millions/ml and motility at the end of 1 hour was not less than 50% with less than 20% abnormal forms. Infertility in 30% (15) of the women was due to the tubal factor where they had only one patent tube. The remaining 8% (4) were with infertility due to unexplained factors.

The investigations of the couple included a hysterosalpingography and diagnostic laparoscopy to confirm patency of the tubes, rule out Endometriosis and adhesions of the tubes with other pelvic structures. The semen sample was analysed and its processability was also assessed. The minimum criteria for in-

clusion into the SIFT programme was a total count not less than 10 million/ml with a motility of 50% or more and less than 20% abnormal forms. A semen culture and sensitivity test was done prior to the procedure and any infection present was appropriately treated.

### INDUCTION OF OVULATION

Ovulation was induced by using Clomiphene Citrate (CC - 100 mg/day) alone on days 2-6 of the cycle, or in combination with personally tailored doses of Human Menopausal Gonadotrophin (hMG) from days 4 depending on the result of follicle growth monitored daily ultrasonographically with a 5 MHz vaginal probe (Aloka SSD 630; Mitaka-shi, Tokyo, Japan). A dose of 5000 I.U. of Human Chorionic Gonadotrophic (hCG) was given 34-40 hours prior to the procedure.

### SPERM PREPARATION

Semen was obtained by masturbation in a sterile container and prepared by the swim-up technique, which was modified from the technique reported by Mahadevan and Baker (1984). For swim-up 2 ml, of culture medium was added to 1 ml of semen and centrifuged at 800-1000 rpm for 6 minutes. The supernatant was decanted and 2 ml of Earle's Bicarbonate culture medium was added to the sperm pellet and the pellet was thoroughly mixed with the culture medium using a 1 ml syringe and centrifugation was repeated. The supernatant layer was decanted off and the culture medium was stratified over the sperm pellet and incubated at 37°C for 30 minutes. Active sperms moved up into the culture medium and only the supernatant was used for insemination.

### SIFT TECHNIQUE

The SIFT technique was a simple laparoscopic procedure, which was done 34 to 40 hours after administration of hCG. The procedure was done under I.V. Sedation (Diazepam 10 mg + Pethidine 100 mg). The

patient was placed in the supine position and abdomen painted with spirit. Local Anaesthesia (1% Xylocaine) was infiltrated around the umbilicus. Pneumoperitoneum was created by passing a 12 cms long verres cannula. About 1.5 to 2 litres of Carbon-dioxide gas was insufflated into the peritoneal cavity through the cannula. An incision of 0.25 to 0.5 cm was made below the umbilicus to pass the 6 mm trocar cannula, through which the Storz double puncture laparoscope was introduced. A second incision 0.25 to 0.5 cm was made in the left lateral region 3 to 4" away from the midline to insert a 4 mm trocar cannula. A Semm's grasping forceps was passed through this to grasp the fallopian tube at the fimbrial end. A puncture was made at the right lateral region 2" away from the midline, to pass another needle (16 G. 18 CM.) with stilette. The fallopian tube was held firmly to the fimbrial end and cannulated to the lateral 1/3rd portion. The stilette was removed, the GIFT catheter (William Cook, Australia, K GIFT 1010.5. OFR. 16 G. 50 CM) loaded with 0.3 to 0.5 ml of processed semen was fed into the cannula. The cannula was slowly withdrawn and with the GIFT catheter in situ, 0.1 to 0.2 ml of the processed sample was slowly injected. The same was done to the other fallopian tube. After insemination both the trocars were removed, pneumoperitoneum reduced and the two incision were sutured using linen.

The SIFT Technique was an out-patient procedure and the patient could be sent home within 2 to 2 1/2 hours, after the procedure.

Couples were asked to abstain from intercourse during the periovular period and until 48 hrs after insemination. This was aimed to ensure correct pre-established abstinence before ejaculation and also as a means of checking that if pregnancy ensued, it was indeed the result of the result of the SIFT technique.

**RESULTS**

Out of the 50 patients who underwent SIFT 16 pregnancies were achieved. There were 12 clinical pregnancies as evidenced by progressively rising serum Beta hCG levels combined with identification of a gestational sac by ultrasound. Out of these 12, there were 7 normal deliveries. 2 ectopics and 3 missed abortions. However there were 4 biochemical pregnancies wherein there was a rise in serum Beta hCG but a gestational sac was not documented by ultrasound.

There was a success rate of 32% by the SIFT technique. Out of these, patients stimu-

**Table II**

**Relative success rates of IVF-ET, GIFT & SIFT**

Procedure	Success Rate
IVF - ET	15 - 20%
GIFT	20 - 25%
SIFT	32%

**Table I**

**Success rates with two ovulation stimulations**

Stimulation	Total	CC + HCG	CC + HMG + HCG
No. of Patients	50	27	23
Pregnancies	16 (32%)	7 (14%)	9 (18%)

lated with clomiphene Citrate and Human menopausal gonadotrophin showed a better success rate of 18% compared to those who were stimulated with Clomiphene Citrate alone who showed a success rate of 14% (Table I). There are reports (Table II) of success rates being 15-20% in IVF-ET procedures (Hurley et al., 1991 and Talbert et al., 1991) and 20-25% in the GIFT procedures (Talbert et al., 1991 and Corsan & Kummann 1991). Our centre achieved a success rate of 32% out of the 50 patients who underwent SIFT, which favourably compares with other Assisted Reproductive Techniques.

**CONCLUSION**

In a developing country like India, the cost involved in procedures like IVF-ET, GIFT or ZIFT which includes hormonal and ultrasound monitoring of the case can be very time consuming, costly and hence prohibitive for infertile couples to take up treatment.

SIFT a simple, cost effective procedure. This technique will eliminate the use of expensive equipments required for IVF or GIFT. We believe it will supplement the existing Assisted Reproductive Technique to successfully achieve pregnancies in infertile couples at a much lower cost than procedures such as GIFT, ZIFT and IVF-ET.

**REFERENCES**

1. Corsan G. H. and Kammann E. : *Fertil. Steril.* : 55, 468, 1991.
2. Holst N. and Forsdahl F. : *Acta. Obstet. Gynec. Scand.* : 67, 471, 1988.
3. Hurley V. A., Osborn J. C., Leonei M. A. and Leeton J. : *Fertil. Steril.* : 55, 559, 1991.
4. Jansen R. R. S. and Anderson J. C. : *Lancet* : 11, 309, 1987.
5. Mahadevan M. and Baker G. : *Assessment and preparation of semen for in-vitro fertilisation. In : Wood, C. and Trouson A. O. Eds., Clinical in-vitro fertilisation, 1984, 83, Berlin, Springer Verlag.*
6. Talbert L. M., Hammond M., Bailey L. and Wing R. : *Fertil. Steril.* : 55, 555, 1991.

Table II

Relative success rates of IVF-ET, GIFT & SIFT

Procedure	Success Rate
IVF-ET	15-20%
GIFT	20-25%
SIFT	32%

Table I

Success rates with two regimens stimulation

Stimulation	Total	CC + HCG	CC + HMG + HCG
% of Pregnancies	18	14	18
Pregnancies	9 (50%)	7 (50%)	9 (50%)