
CASE REPORT

A Childbirth from Azoospermic Male by Microsurgical Epididymal Sperm Aspiration (MESA) Technique : the First Case Report in Thailand

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ABSTRACT

Azoospermia can be resulted from either obstructive or non-obstructive pathological condition. By introducing the microscopic epididymal sperm aspiration (MESA) technique, some motile sperm can be retrieved from the epididymis of the obstructive azoospermic patient. However, most of the aspirated sperm has poor fertilizing capacity, it needs to be combined with the intracytoplasmic sperm injection (ICSI) for assisting the fertilization. This presentation a couple whose the husband was azoospermia due to previous vasectomy and failed vas deferens reanastomosis twice. The pregnancy was achieved by performing MESA for sperm retrieval and doing ICSI for assisting fertilization. The baby was born with completely normal and appropriate development. To our knowledge, this is the first report in Thailand of successful childbirth concieved by this technique.

Key words : microsurgical epididymal sperm aspiration, childbirth

Azoospermia is one of the desperated male problem often faced in the infertility treatment. It can be resulted from either obstructive or non-obstructive pathological condition. For the obstructive azoospermia, it is expected to have normal testicular spermatogenesis and sperm storage in the the epididymis. With the concept of epididymal sperm aspiration, Tempt-Smith et al⁽¹⁾ was the first who reported the pregnancy from using epididymal sperm in conjunction with in vitro

fertilization (IVF) in a case of congenital absence of the vas deferens. However, most of the later reports had been disappointed with the low fertilization rate using the epididymal sperm with the IVF. It seem to be that the fertilization rate is much depended on the total count and motility of the epididymal sperm retrieved.⁽²⁻⁵⁾

Since the very successful of introducing the intracytoplasmic sperm injection (ICSI) for treatment of severe male infertility, the Belgium

group⁽⁶⁾ has reported of much higher fertilization rate in combining the microsurgical epididymal sperm aspiration (MESA) with the ICSI procedure. This is because the procedure needs only a single motile sperm for injecting into the oocyte cytoplasm.

In our centre, the ICSI result had been in good success for the oligospermic patients. To help those patients with azoospermia, we started to do the MESA in combination with the ICSI procedure. This report is of our first successful case of the childbirth conceived from this technique.

Case Report

The couple had been married for 5 years without having a baby. The husband was 55 years old, had two children from the first marriage and had vasectomy done 15 years ago. Upon this second marriage, he had undergone vas deferens reversal twice without success, there was no sperm in the ejaculated semen. The wife was 37 years old, had one child from the first marriage and had been divorced for 7 years before this second marriage. She was apparently normal with regular period as well as normal pelvic finding and hysterosalpingography. After thoroughly counselling about the treatment procedure and chance of getting pregnancy, they agreed to go through the MESA and ICSI treatment.

THE FIRST TREATMENT CYCLE (June 1995) CONTROL OVARIAN STIMULATION

Using the short protocol, GnRH analogue (Suprefact nasal spray) 600ug/day was started from Day2 of the menstrual cycle and hMG (Metrodin) injection was started with a dosage of 225 U/day from day 4 of the cycle. Ovarian response was monitored by ultrasonogram and E₂ blood level. When the leading follicle was 20 mm

in diameter, 5,000 U of hCG (Pregnyl) was injected. Oocyte pick up was done 36 hours after the hCG injection on June 14, 1995. Twelve oocytes were retrieved with ten Metaphase II and two Metaphase I stages.

SPERM RETRIEVAL BY MICROSURGICAL EPIDIDYMAL SPERM ASPIRATION (MESA) TECHNIQUE

The procedure was performed on the same day of the ovum pick up (June 14, 1995) under general anaesthesia. Briefly, the scrotal skin was incised layer by layer until the Tunica albuginea was reached. Upon opening this layer, the testis was exposed and the epididymis was identified. Under microscope, the epididymal capsule was incised and the underneath epididymal tubule was opened (figure 1). The coming out fluid was aspirated and sent for sperm searching. After enough number of motile sperm had been obtained, the epididymal tubule was closed by 10-0 nylon.

THE ICSI PROCEDURE

The surrounding cumulus cell of the oocyte was dissected out by using 80 U/ml of hyaluronidase enzyme in order to get the denuded oocyte. Only the mature oocytes (Metaphase II) were subjected for sperm injection.

The epididymal sperm was divided into two parts, one for ICSI and one for cryopreservation. The ICSI part was washed and centrifuged twice with sperm washing media (HTF-HEPES), then incubated until the injection time. The cryopreservation part was mixed well with cryopreservative media (Test-citrate-egg yolk-glycerol) and frozen by computerized control rate freezing method, after which kept cryostorage in the liquid nitrogen.

The ICSI procedure was carried out under

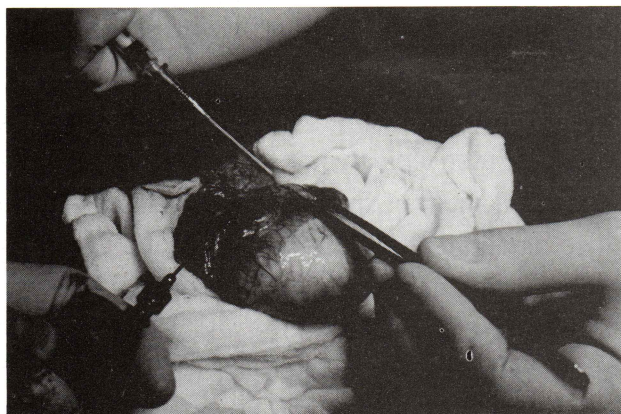


Fig. 1. The MESA procedure : aspiration of the sperm from epididymis.

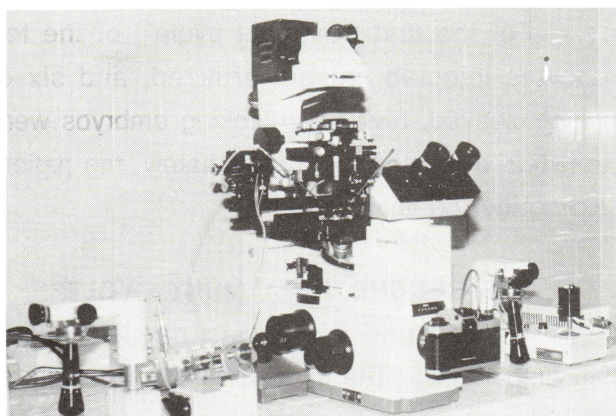


Fig. 2. The inverted microscope equipped with the micromanipulator for intracytoplasmic sperm injection (ICSI).

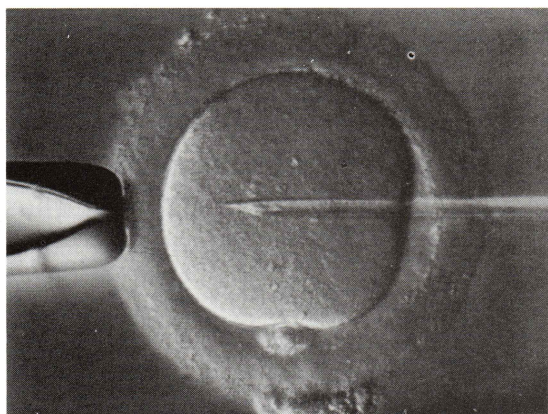


Fig. 3. A single sperm was injected into the oocyte.

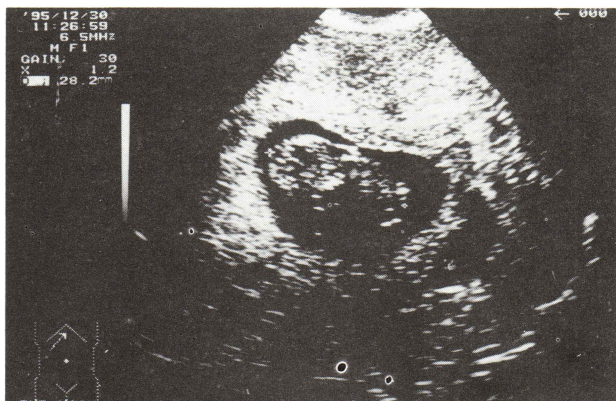


Fig. 4. Ultrasound picture of the pregnancy at 8th week, showing the gestational sac and the fetus CRL of 28.2 mm.



Fig. 5. The healthy baby at the age of 3 months.

inverted microscope (Olympus) equipped with micromanipulator (Narishige) (figure 2). With the microscope and micromanipulator, a motile epididymal sperm was searched, immobilized and picked up into the injecting needle. The holding pipet was brought down to the field to hold the oocyte, the sperm was then injected directly into the oocyte cytoplasm (figure 3). After each oocyte had been injected, they were incubated for 16 hours, then checked for sign of fertilization.

For the first treatment cycle ; of the ten oocytes injected, seven fertilized, and six of which cleaved. Five good looking embryos were transferred intrauterine, unfortunately, the patient did not get pregnant.

THE SECOND TREATMENT CYCLE

The second cycle was carried out in November 1995. The ovarian stimulation protocol was the same as previous cycle. Ten oocytes were retrieved with eight Metaphase II and two Metaphase I stages.

The frozen epididymal sperm was used for ICSI procedure. It was thawed by placing at room temperature for 15 minutes, then washed twice with the sperm washing media (HTF-HEPES).

Of the eight injected oocytes, five fertilized, and all the embryos cleaved. Four grade A and one grade B embryo were intrauterine transferred on the November 8, 1995. The serum β -hCG 14 days after the transfer was 117 u/ml. The ultrasonogram at 9th week revealed single intrauterine gestational sac with fetal CRL of 28.2 mm (figure 4).

Even with the increasing risk of chromosomal abnormality at this age, the patient denied to have amniocentesis for prenatal genetic diagnosis. The pregnancy had been going well until 37 weeks where she had antepartum bleeding. The baby was born by low transverse caesarean section due to low lying placenta. He was a completely normal boy with the birthweight of 3,200 g and good APGAR score. His development was appropriated and gained the weight up to 6,800 g at the age of 3 months (figure 5).

Discussion

The microscopic epididymal sperm aspiration (MESA) is another advancement in obtaining

the sperm from patients with obstructive azoospermia and helping these couples to be able to have their own genetic children. However, the aspirated epididymal fluid does not contain enough amount of spermatozoa for simply artificial insemination. Also, the quality of the aspirated sperm can be varied, which may effect the fertilization rate. Therefore, most of the cases have to be done in conjunction with the assisted reproductive technique like IVF or ICSI. With the ICSI technique, the problem of fertilization failure can be overcome because only a few motile sperm is needed. Currently, the MESA in conjunction with ICSI has been performed worldwide and there have been a large number of babies born by this technique.^(7,8)

In conclusion, this is the first report in Thailand of the successful childbirth conceived by using MESA in combination with ICSI technique in an azoospermic male who had previously failed vas deferens reanastomosis.

References

1. Tempt-Smith PD, Southick GJ, Yates CA, Trounson AO, de Kretser DM. Human pregnancy by in vitro fertilization (IVF) using sperm aspirated from the Epididymis. *J In Vitro Fertil Embryo Transfer* 1985 ; 2 : 119-22.
2. Patrizio P, Asch RH. Epididymal sperm in assisted reproductive technology. *Annals of the Academy of Medicine, Singapore* 1992 ; 2 : 533-7.
3. Bladon F, Grillo JM, Rossi D, Noizet A, Gamberie M, Eeny R, Luciani JM, Sermet G. Epididymal sperm aspiration in conjunction with in- vitro fertilization and embryo transfer in case of obstructive azoospermia. *Hum Reprod* 1991 ; 6 : 1284-7.
4. Hovatta O, Von Smitten K. Sperm aspiration from vas deferens and in-vitro fertilization in cases of non-treatable anejaculation. *Hum Reprod* 1993 ; 8 : 1689-91.
5. Hirsh AV, Mills C, Bekir J, Dean N, Yovich JL, Tan SL. Factors influencing the outcome of in-vitro fertilization with epididymal spermatozoa in irreversible obstructive azoospermia. *Hum Reprod*

- 1994 ; 9 : 1710-6.
6. Silber SJ, Nagy ZP, Liu J, Godoy H, Devroey P, Van Steirteghem AC. Conventional in-vitro fertilization versus intracytoplasmic sperm injection for patients requiring microsurgical sperm aspiration. Hum Reprod 1994 ; 9 : 1705-9.
 7. Silber SJ, Devroey P, Tournaye H, Van Steirteghem AC. Fertilization capacity of epididymal and testicular sperm using intracytoplasmic sperm injection (ICSI). Reprod Fertil Dev 1995 ; 7 : 281-92.
 8. Payne D, Matthews CD. Intracytoplasmic sperm injection-clinical results from the Reproductive Medicine Unit, Adelaide. Reprod Fertil Dev 1995 ; 7 : 219-27.