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Successful Fertilization and Pregnancy Using Testicular Sperm for Intracytoplasmic Sperm Injections (ICSI)

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(Presentation to be made by Dr. Seck L. Chan)*

Abstract

ICSI has emerged as a significant breakthrough in assisted-reproduction technique especially in the management of male factor infertility. Most centers have reported successful fertilization using ejaculated or epididymal sperm. Use of testicular sperm from biopsy samples has been reported but the methodology was cumbersome. For the past 18 months, we have been using spermatozoa retrieved from percutaneous needle biopsy specimens in performing ICSI using a simplified technique.

Materials & Methods

Twenty-three men with severe oligospermia or obstructive azoospermia underwent percutaneous needle biopsy of the testes on the day their female partners had oocyte retrieval following controlled ovarian hyperstimulation. The spermatic cord was blocked with 6-8 ml of 0.25% Marcaine. After the scrotal skin and tunics overlying the inferior pole of the testis were infiltrated with 1 ml of the local anesthetic, a small skin incision was made with an 18G needle. The biopsy was performed using a Bard 18G 10 cm monopty biopsy gun, entering the testis from the inferior aspect, aiming away from the epididymis. Four samples were usually sufficient. The tissue was individually placed in each well of a Nunc 4-well plate prepared with 500 ul of HHTF in each well. Immediate microscopic examination at 20-40x was carried out and loose dissociated tissue was identified and transferred into a single drop of HHTF in a micromanipulation plate. This was then examined for the presence of sperm with an inverted microscope at 200-400x. After allowing red blood cells to settle, the tissue was transferred to a second drop of HHTF and pipetted vigorously to promote further dissociation. Motile spermatozoa were selected and moved to the PVP drop with an injection needle, followed by ICSI. Fertilization was defined by male and female pronuclear formation determined at 16-18h post ICSI.

Results

Out of 346 metaphase 11 stage oocytes injected, 159 were fertilized (46%). Of the 23 retrievals and subsequent embryo replacements, 8 clinical pregnancies were achieved (35%).

Summary

Retrieval of testicular sperm obtained by percutaneous biopsy is simple and rapid with minimal patient morbidity. The sperm preparation protocol is straight forward and pregnancy rate is comparable to procedures using more elaborate techniques.