

## ICSI Technique—Impact on Fertilization Rate

To the Editor:

In their article, Carrillo et al. (1) compared the ICSI outcome from two different techniques: rupturing the oolemma outside the injection needle versus rupturing the oolemma inside the injection needle. In the first technique, oolemma surrounding the needle recoils after being pushed through the zona, and the aspiration of a small amount of ooplasm into the needle were taken as evidence that the oolemma had ruptured. In the second technique, oolemma was aspirated into the needle until it ruptured, as was evidenced by the rapid and free flow of ooplasm into the needle. They reported fertilization rates of 40% and 68%, respectively. However, they did not provide an explanation for the immediate increase in fertilization rate when they switched from the first to the second technique.

In our experience, when applying the first technique, oolemma surrounding the needle recoils after being pushed through the zona, and the aspiration of a small amount of ooplasm into the needle is not sufficient evidence for oolemma rupture. In fact, the unruptured intact oolemma can easily be seen moving into the needle during aspiration of a small amount of ooplasm. Therefore, when applying the first technique, one still needs to continue aspirating the oolemma/ooplasm (as in the second technique), until the oolemma ruptures as evidenced by the rapid and free flow of ooplasm into the needle. The necessity can easily be verified by applying the first technique followed by the second technique on the same oocyte. The fertilization rate obtained from the first technique in some oocytes is due most likely to thinner oolemma in these oocytes, which is easily ruptured by aspiration of a small amount of ooplasm into the needle after recoiling the oolemma.

Yalcin Yavas, D.V.M., Ph.D.  
Sylvie Roberge, Ph.D.  
Toronto Fertility Sterility Institute  
Toronto, Ontario, Canada  
December 7, 1998

### Reference

1. Carrillo AJ, Atiee SH, Lane B, Pridham DD, Risch P, Silverman IH, et al. Oolemma rupture inside the intracytoplasmic sperm injection needle significantly improves the fertilization rate and reduces oocyte damage. *Fertil Steril* 1998;70:676–9.

PII S0015-0282(99)00109-0

Reply of the Authors:

We appreciate Drs. Yavas and Roberge reading our paper (1), and we thank them for their comments. We agree with their assertion that aspirating a small amount of cytoplasm into the injection needle may have been misinterpreted as evidence that the oolemma had ruptured; we in fact were only aspirating the intact oolemma and corresponding cytoplasm into the injection needle without membrane rupture. This could account for the lower fertilization rate observed in the former group (1). It is also possible that the lower fertilization rate obtained with this procedure (1) as opposed with the more aggressive aspiration of the oolemma (2), may have been due to these oocytes having thinner oolemma, which ruptured after mild aspiration with the ICSI needle. This further demonstrates our reasoning that aggressive aspiration of oolemma results in a higher fertilization rate. The difference in fertilization rates between the two ICSI techniques also could be due to the previously reported finding that aspirating larger amounts of ooplasm results in more effective activation of the oocyte than aspirating lesser amounts of ooplasm (2). This is also demonstrated in our finding that aggressive aspiration of oolemma resulted in a significantly higher rate of oocytes with 1 pronucleus when compared with mild aspiration of oolemma. We still can't explain why we had a significantly higher damage rate with the mild oolemma aspiration when compared with aspirating larger amounts of oolemma and ooplasm.

Alberto J. Carrillo, Ph.D.  
Bonnie Lane, L.P.N., A.A.S.  
Dwight D. Pridham, M.D.  
Phyllis Risch, B.A.  
Ingun H. Silverman, M.T.A.  
University of Louisville  
School of Medicine and Alliant Health System  
Louisville, Kentucky

Suzanne H. Atiee, B.A.  
Fertility Center  
San Antonio, Texas  
January 7, 1999

### References

1. Carrillo AJ, Atiee SH, Lane B, Pridham DD, Risch P, Silverman IH, et al. Oolemma rupture inside the intracytoplasmic sperm injection needle significantly improves the fertilization rate and reduces oocyte damage. *Fertil Steril* 1998;70:676–9.
2. Tesarik J, Sousa M. Key elements of highly efficient intracytoplasmic sperm injection technique:  $Ca^{2+}$  fluxes and oocyte cytoplasmic dislocation. *Fertil Steril* 1995;64:770–6.

PII S0015-0282(99)00108-0