

Zona-free oocyte formed a one pronucleus zygote following piezo intracytoplasmic sperm injection can subsequently develop to the blastocyst in micro-well culture system

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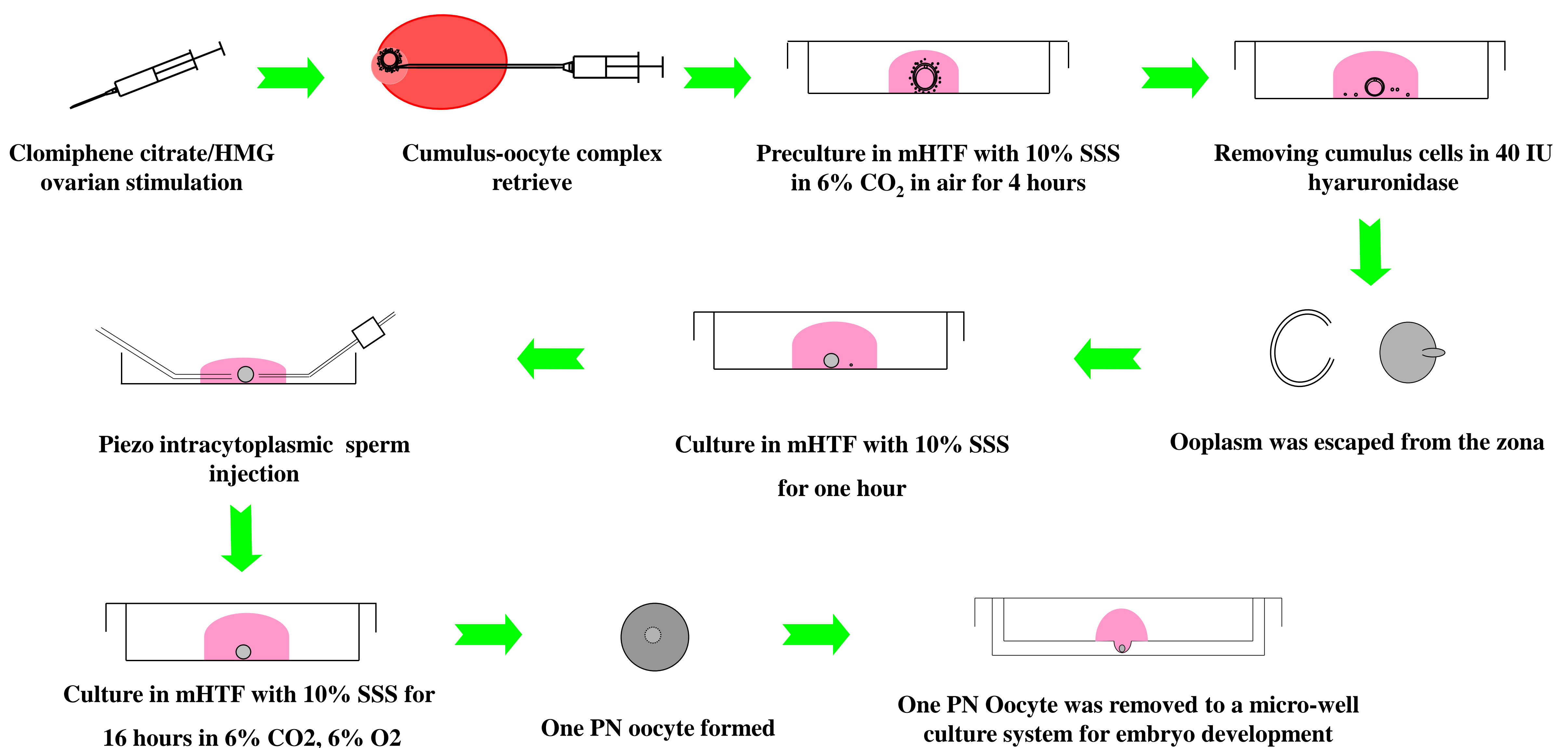
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Abstract

Before performing intracytoplasmic sperm injection (ICSI), cumulus-oocyte complexes are treated by hyaluronidase to remove their cumulus cells. Occasionally, the ooplasm can escape from their zona pellucida during this procedure. The mature and morphologically normal zona-free oocytes can be fertilized with ICSI and then cultured to the blastocyst stage (J. Ding et al. Human Reproduction, 1999). In this report, a 33-year-old primary unexplained sterility woman underwent an ICSI cycle in our clinic. The clomiphene citrate/HMG method was used in her ovarian stimulation. One oocyte-cumulus complex was retrieved. During removing of cumulus cells in hyaluronidase, the matured ooplasm was losing its zona pellucida. The zona-free oocyte was then injected with one spermatozoon by using piezo-ICSI, and the fertilized oocyte developed a one pronucleus (1PN) zygote. The 1PN zygote was cultured in a micro-well drilled by melting the 35 mm dish bottom with a heated steel rod. On the fifth day, no blastocyst was formed, but a good expanding blastocyst was formed on the eighth day.

Keyword: zona-free oocyte, piezo ICSI, one pronucleus, development, blastocyst

Materials and Methods



Results

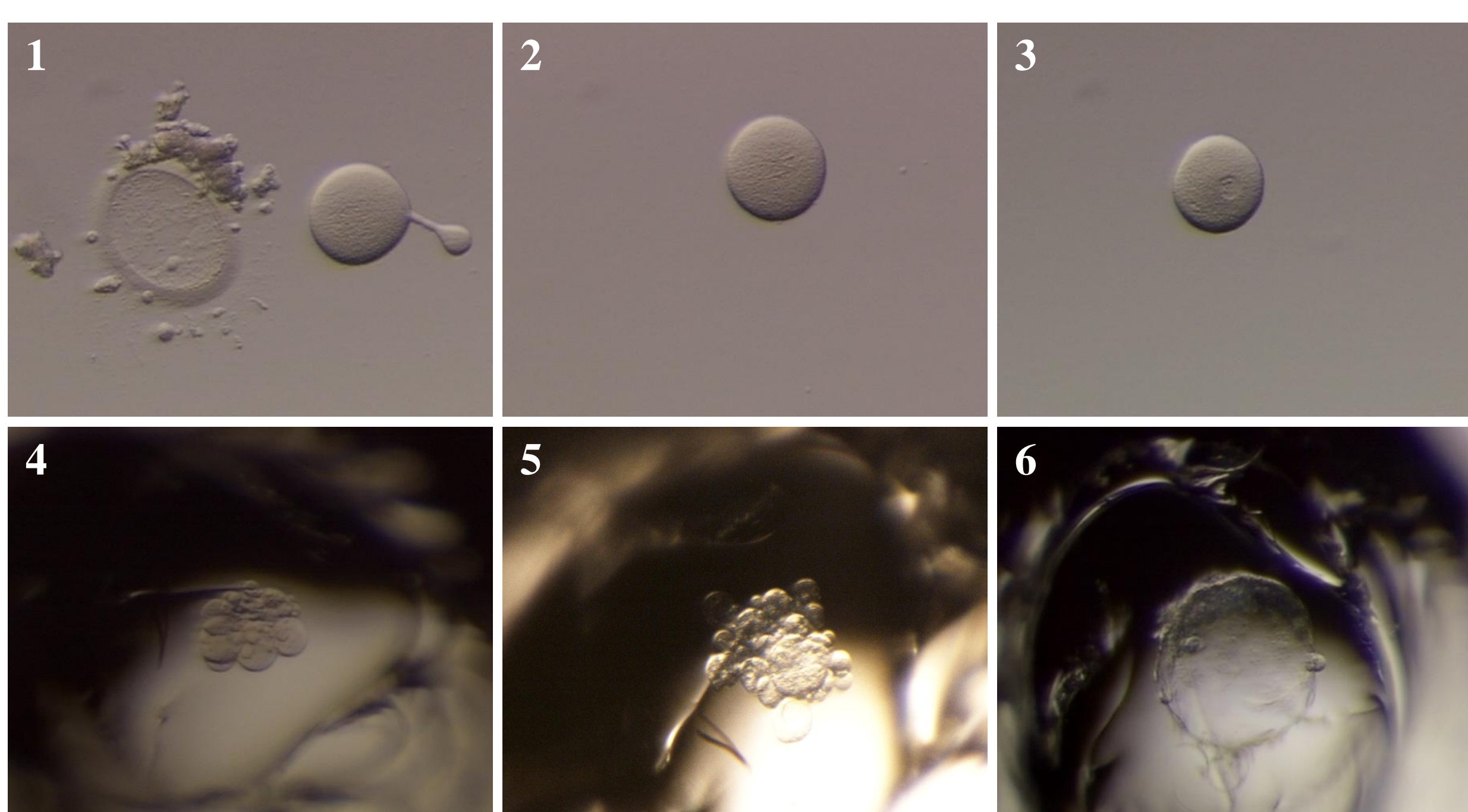


Fig 1. Ooplasm was escaped from zona after treatment with 40 IU hyaluronidase, and the oocyte was during releasing its first polar body.

Fig 2. A matured oocyte was formed after further one hour culture in mHTF with 10% SSS.

Fig 3. One pronucleus was appeared in mHTF with 10% SSS at day 1 after piezo ICSI.

Fig 4. Embryo development at day 3 in a micro-well culture system in SICM with 10% SSS.

Fig 5. Blastocyst was not formed at day 5 in micro-well culture system in SIBM with 10% SSS.

Fig 6. A good blastocyst was developed at day 8 in micro-well culture system in SIBM with 10% SSS.

Conclusions

1. The results suggest that zona-free oocyte can be fertilized by piezo ICSI, and the fertilized zygote can develop to a good blastocyst using micro-well culture system.
2. Combine with the previous result that 1PN-derived blastocyst could result in pregnancy and birth in human assisted reproductive technology (Lyn Gras et al., Human Reproduction, 1999), the blastocyst derived from zona-free 1PN zygote may be used for clinical treatment.