

©Title

Influence of the duration between removal of cumulus cells and oocyte retrieval on fertilization and embryonic development

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©Study question

The aim of present study was to investigate if the timing of cumulus removal post retrieval would be a critical on fertilization and embryonic development.

©Summary answer

The present study suggested sufficient time to culture of oocytes with intact cumulus cells post-OPU have favorable influence on the embryonic development compared to immediate denudation.

©What is known already

The role of cumulus cells surrounding oocytes in the process of maturation, ovulation, and fertilization in mouse has been extensively studied. Prolonged culture of oocyte with intact cumulus cells has been reported to induce apoptotic changes in oocyte. However, the influence of culture duration of oocyte with cumulus cells in human has not been investigated not only on competence of oocyte, but also subsequent embryonic development.

©Study design,size,duration

Prospectively randomized study was performed on 667 oocytes retrieved from 54 patients (54 cycles) between October 2013 and May 2015.

©Participants/materials,setting,methods

Patients under 39 year old treated by ICSI with controlled ovarian stimulation were randomly divided into 2 groups. Cumulus cells were removed immediately after oocyte retrieval in group A and were removed 120 minutes after retrieval in group B. ICSI was performed on all matured oocytes and they were cultured to blastocyst stage. The rates of maturation, fertilization, abnormal fertilization, blastocyst and good quality blastocyst were compared between the two groups.

©Main result and the role of chance

The rates of maturation, fertilization, abnormal fertilization, and blastocyst between group A and B were $84.2 \pm 13.0\%$ vs $88.1 \pm 11.3\%$, $88.4 \pm 10.2\%$ vs $88.3 \pm 11.4\%$, $5.6 \pm 7.3\%$ vs $4.9 \pm 8.4\%$, $62.8 \pm 30.1\%$ vs $73.8 \pm 23.3\%$, respectively and no significant differences in any category. On the other hand, there was significant difference ($p < 0.05$) in good quality blastocyst rates ($33.1 \pm 28.4\%$ vs $52.0 \pm 30.9\%$) between group A and B.

©Limitations, reasons for caution

None

©Wider implications of the findings

The present study revealed that culture of oocyte with cumulus cells 2 hours or longer improved the quality of resulting blastocyst. Time lag between ICSI and oocyte retrieval might be required to acquire sufficient maturation on cytoplasm of oocyte and beneficial to achieve pregnancy in IVF practice.

©Study funding/competing interest(s)

None

©Trial registration number

None