Title: OOCYTE DYSMORPHISM IS NOT A LIMITING FACTOR FOR POST-THAW SURVIVAL FOLLOWING VITRIFICATION BY CRYOTOP METHOD

Objective: Oocyte and embryo morphology significantly affect the survival rates after slow
freezing. Oocyte dysmorphism is a major concern for a majority of the embryologists although vitrification methods with oocyte survival rates >90% have been reported. The aim of our study aim was to examine if oocyte dysmorphism after denudation significantly affects survival rates following vitrification by cryotop method.

**Design:** Prospective study.

**Materials and Methods:** 336 oocytes obtained from 139 patients (<36 y) were individually vitrified and thawed using cryotop method. All of these oocytes had failed to fertilize after IVF-ICSI. Oocytes were divided in six groups based on the type of dysmorphisms: Group A = vacuolated cytoplasm (n = 60); Group B = smooth endoplasmic reticulum cluster (n = 52); Group C = large perivitelline space (n = 50), Group D = granulated cytoplasm (n = 60); Group E = amorphous cytoplasm (n = 51) and Group F = normal morphology (n = 60; controls). All the oocytes were equilibrated in an equilibration solution (ethylene glycol, 7.5% and 1, 2 propanediol; 7.5%) for 15 min and transferred into vitrification solution (VS; 15% ethylene glycol and 15% 1, 2 propanediol) for 1 min. They were immediately placed on the cryotop with a minimum volume of VS solution and submerged in LN2. The vitrified oocytes were thawed at 37°C for 1 minute using sucrose solution (1 Molar) followed by dilution solution (DS; 0.5 M of sucrose) for 3 minutes and washed X2 in wash solution (M-199 with 20% synthetic serum substitute) for 5 min each. They were examined for post thaw survival based on the dysmorphism.

**Results:** The post-thaw survival rate was comparable in all the groups

**Table 1:** Comparison of survival rates in different groups following minimal volume vitrification

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<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tr>
<td>B</td>
<td>0.98</td>
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<tr>
<td>C</td>
<td>0.91</td>
<td>0.93</td>
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<tr>
<td>D</td>
<td>0.94</td>
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<tr>
<td>F</td>
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<td>0.96</td>
<td>0.96</td>
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No statistical differences were observed among different groups by chi-square analysis.

**Conclusions:** Vitrification by cryotop technology using minimal volume approach increases both cooling and warming rates. The rapid transfer of heat helps maintain the oocyte cytoarchitecture irrespective of the morphology unlike slow freezing. Oocyte morphology may not be a limiting factor in predicting the survival following minimal volume vitrification by cryotop method.

**Support:** None

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