Several studies have shown that culture of human and mice embryos in groups improves embryo development, implantation and clinical pregnancy rates.1,2,3 Paria and Day, 1990 have found that mouse embryos cultured singly had inferior development to blastocysts and lower cell numbers per blastocyst compared with those cultured in groups, which show a clear evidence that specific growth factors of embryonic origin participate in preimplantation embryo development and blastocyst functions in an autocrine/paracrine manner. Recently, it has been suggested that micro-vibration increases the cell number of blastocysts in mice and have a positive effect on porcine blastocyst development and pregnancy and implantation in humans.

In this study, a retrospective analysis of a cohort of ICSI patients attending a private fertility center between April 2012 and December 2013 was done. In vitro culture was performed either in a static environment with single oocyte/embryo culture or under micro-Vibration and group culture (n = 244 patients).

**What is known already**

In the static culture group, oocytes/embryos were cultured individually, while in the micro-vibration all the oocytes were cultured together and up to 4 embryos were cultured in the drop with a three-dimensional vibration of 56 Hz for 5 s every 60 minutes. Variables were analyzed by Mann Whitney test and chi-square test.

**Participants/materials, setting, methods**

In this study, a retrospective analysis of a cohort of ICSI patients attending a private fertility center between April 2012 and December 2013 was done. In vitro culture was performed either in a static environment with single oocyte/embryo culture or under micro-Vibration and group culture (n = 244 patients).

**Treatmen Outcomes**

Baseline and cycle characteristics of patients

<table>
<thead>
<tr>
<th>Static Culture</th>
<th>Micro-Vibration Culture</th>
<th>Mann-Whitney</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female age (years)</td>
<td>Mean: 35.09, SD: 4.724</td>
<td>Mean: 35.07, SD: 4.727</td>
</tr>
<tr>
<td>No. Oocytes</td>
<td>9.863, 6.006</td>
<td>10.71, 6.36</td>
</tr>
<tr>
<td>No. MII Oocytes</td>
<td>6.68, 6.625</td>
<td>7.385, 5.105</td>
</tr>
<tr>
<td>No. Zygote</td>
<td>4.809, 5.645</td>
<td>6.066, 3.835</td>
</tr>
<tr>
<td>No. of transferred embryos</td>
<td>1.784, 0.46</td>
<td>1.742, 0.456</td>
</tr>
<tr>
<td>Day of transfer (days)</td>
<td>4.243, 1.2</td>
<td>4.406, 1.012</td>
</tr>
</tbody>
</table>

Table 1. Differences among static and micro-vibration culture patients was limited to number of pronuclear zones obtained, confirming the significant increase in fertilization rates observed under micro-vibration. Statistical analysis was performed using the GraphPad Prism 6.0 software and p< 0.05 was considered significant. Unpaired t test for nonparametric variables (Mann Whitney test) was used as most of the data did not follow a normal distribution (D’Agostino & Pearson omnibus normality test).

**Limitations, reason for caution**

Two variables were simultaneously applied (micro-vibration and group culture), so the positive effect observed could be identified and may be caused by both group culture and micro-vibration synergistically. Furthermore, this is a retrospective analysis and not all confounding factors could be considered.

**Wider implications of the findings**

These results emphasize the importance of culturing oocytes and embryos in groups rather than individually. Furthermore, three-dimensional vibration of oocytes and embryos would significantly improve fertilization and implantation rates, in agreement with two previous studies. Mechanical vibration of an embryo may mimic the embryo’s in vivo environment, where oocytes and embryo are in a continuous movement in the fallopian tube and uterus. In addition movement of media around the embryo may allow for refreshing the media surrounding the embryos and diffusion of waste material. These factors could explain the beneficial effects of the micro-vibration culture on the fertilization and the implantation rates.

**References**