Background: Recently, it has been reported that cancer patients could become pregnant by transplantation of cryopreserved ovarian tissue following chemo- or radiation-therapy. However, this method may have a risk of re-introduction cancer cells to the patient after medical treatment. Although this risk may be avoided by using in vitro embryo production techniques following in vitro growth of follicular oocytes, it is difficult to grow oocytes from early pre-antral follicles, especially earlier than secondary follicles. Current study was undertaken to find a possibility of in vitro growth of human early pre-antral follicles.

Methods: Human early pre-antral follicles were isolated from ovarian tissues of Gender Identity Disorder patients with informed consent. The follicles were embedded in a 2% alginate hydrogel beads and cultured in αMEM supplemented 5% SSS, 10 µg insulin/ml, 5.5 µg transferrin/ml, 6.7 ng sodium selenite/ml and 0.1 IU/ml FSH in the atmosphere of 95% air and 5% CO₂ for 14 days.

Result: Ovarian tissues were isolated from 4 patients aged 25-40 years. Totally 18 follicles (mean diameter 65.9 ± 16.6 µm; 41-100 µm) were isolated and increased the diameter (mean 90.7 ± 5.7 µm; 62-148 µm) for 4 to 10 days and thereafter degenerated.

Conclusions: Our preliminary data show that human early primary follicles can grow in vitro, but the follicular development stops around 4-10 days after the start of culture and degenerated. Further studies are required to find more suitable culture conditions for follicular survival.