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**P-594 mRNA COVID-19 vaccine does not influence performance during oocyte donation cycles**

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**Study question:** What is the effect of mRNA SARS-CoV-2 vaccines on oocyte donors regarding oocyte quality, embryo development and clinical outcomes?

**Summary answer:** Oocyte quality, fertilization, blastocyst formation, embryo quality and pregnancy rates were similar following donors' mRNA SARS-CoV-2 vaccination compared to previous oocyte donation cycles.

**What is known already:** The severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) infection, urged scientists to develop safe and effective vaccines. During the ongoing pandemic, the scientific community has promoted vaccination programs to reduce morbidity and mortality.

While it has been suggested that SARS-CoV-2 infection might impact fertility, limited evidence shows that vaccination has no influence on sperm parameters, follicular steroidogenesis, or oocyte quality and only one study reported no effects on fertilization or top-quality embryos rate in vaccinated patients undergoing IVF. There is a paucity of evidence with regards to younger population undergoing ovarian stimulation.

**Study design, size, duration:** This prospective, multicentre cohort study evaluated 32 oocyte donors with two controlled and similar ovarian stimulation, before and after complete SARS-CoV-2 vaccination, between November 2020 and January 2022. A total of 64 oocyte recipient cycles were analysed equally separately into these two groups. Severe male factor was excluded.

**Participants/materials, setting, methods:** Complete SARS-CoV-2 vaccination of the oocyte donor made the difference between the two groups of recipients analysed. The time frame between the previous ovarian stimulation and the vaccination was lower than 8 months. We evaluated and compared the rates of matured eggs (metaphase II, MII), the fertilization and blastocyst formation rates, blastocyst quality (A/B ASEBIR categories), positive pregnancy test and clinical pregnancy rates in both groups of recipients. The statistical analysis was performed using SPSS.

**Main results and the role of chance:** The average number of MII collected were similar before and following vaccination (12.23 vs 12.91,  $p=0.198$ , respectively). In recipients, the outcomes with regards to fertilization rate (81.4% vs 77.3%  $p=0.210$ ), blastocyst formation rate (60.2% vs 61.5%,  $p=0.771$ ) and high-quality blastocysts (quality A: 31.1% vs 36.4% and quality B: 29.0% vs 25.1%,  $p=0.430$ ) did not differ statistically between the control group ( $n=32$ , pre-vaccination) and the study group ( $n=32$ , post-vaccination), respectively.

Furthermore, regarding clinical outcomes, there were not statistically differences in pregnancy rates (64.0% vs 77.4%,  $p=0.269$ ) or clinical pregnancy rates (60.0% vs 64.5%,  $p=0.729$ ) before and after vaccination respectively.

**Limitations, reasons for caution:** Our encouraging results should be interpreted with caution due to the small sample size and the short period of follow-up. Larger controlled trials are needed to corroborate our findings as the countries continue making forward with the vaccination campaign.

**Wider implications of the findings:** The present study suggests no influence of mRNA SARS-CoV2 vaccines on donor oocyte cycles, reflecting no detrimental effects on the assisted reproduction outcomes. The safety of SARS-CoV-2 vaccination concerning IVF cycles is encouraging for the medical community and the health of our patients.

**Trial registration number:** Not Applicable