Abstract citation ID: dead093.415

P-050 Using a second sample of ejaculate for IVF treatment

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Study question: Is it beneficial to use the second sample of ejaculate collected within 2 hours from the previous sample to fertilize the oocytes in IVF treatments?

Summary answer: A significantly higher clinical pregnancy rate was achieved using the second sample of ejaculate.

What is known already: The WHO recommends abstinence of 2 to 7 days prior to semen collection for standard evaluation. Although semen volume and sperm concentration may increase with prolonged abstinence, such abstinence may have a negative impact on sperm motility and viability. Previous studies have shown that a second ejaculate sample following a short period of abstinence exhibited improved sperm concentration, progressive motility, vitality, and decreased DNA fragmentation. It was suggested that a second ejaculate collected within 1 h might be preferable for ART procedures.
To the best of our knowledge it has not yet been clinically implemented in routine IVF treatment cycles.

**Study design, size, duration:** A retrospective study of couples treated at our IVF unit between Dec 2020 and Dec 2022. All male partners were asked to give a second sample of ejaculate within 2-3 hours after the first. In all cases we used the second sample for fertilization whether it was better or worse than the first one.

**Participants/materials, setting, methods:** The study included 422 male partners of couples treated for IVF. Patients were divided into 2 groups. Group 1- 223 male partners that provided a second sample of ejaculate and Group 2- 199 patients unwilling to be detained that refused to provide an additional sample. Sperm count, motility percentile and sperm volume were recorded for each sample of ejaculate. Fertilization, cleavage, positive beta-hCG and clinical pregnancy rates were adjusted according to maternal and paternal age.

**Main results and the role of chance:** Of the 223 samples in Group 1 the second sample showed improved sperm quality in 123 samples, identical sperm parameters in 31 samples and inferior sperm quality in 69 samples compared with the first sample. Regardless of sperm quality, only the second sample was used in all Group 1 participants. Demographic characteristics such as maternal age, cause of infertility, semen concentration and motility were similar in both groups. Paternal age was higher in Group 2 compared with Group 1 (37.2 ± 7.0 and 35.2 ± 6.3, p = 0.002 respectively). Clinical pregnancy rates were 36.9% in Group 1 and 21.8% in Group 2 (p < 0.003). Higher clinical pregnancy rates using the second sample remained after adjustment for maternal and paternal age OR = 1.92; 95%CI (1.15-3.19) and even when the second sperm sample was inferior in quality compared with the first.

**Limitations, reasons for caution:** The study limitation stems from the retrospective nature of the study and the fact that the groups might have a selection bias we were unaware of.

**Wider implications of the findings:** These findings suggest that it may be beneficial to routinely ask male partners, among couples undergoing IVF, for a second ejaculate 2-3 hours following the first. Further studies showing higher clinical pregnancy rates following the use of the second ejaculate for fertilization are needed to validate these findings.

**Trial registration number:** CMC-0017-22