The first IVF failure doesn't predict second attempt outcomes: the importance of a short interval

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Introduction

Failure of the first IVF cycle may lead couples to discontinue treatment before achieving a live birth, with high dropout rates significantly affecting the overall effectiveness of fertility care. Additionally, prolonged intervals between IVF attempts have been associated with lower success rates, underscoring the need for timely intervention and a multicycle strategy to optimize reproductive outcomes [1]. However, the extent to which a patient's reproductive history—including prior failed IVF cycles [2], embryo transfers [3], and the absence of euploid blastocysts within embryo cohorts [4]—predicts future success remains an area of ongoing research.

Objectives

We conducted a retrospective study analyzing 1,286 second IVF attempts performed due to DuoStim protocol (N=332), no blastocyst or only aneuploid blastocysts obtained (N=531), after ≥1 implantation-failure (N=261), ≥1 miscarriage (N=63), or ≥1 LB (N=99). We examined the association between characteristics of the first attempt – including maternal-age, cause of infertility, basal FSH and AMH, embryological outcomes, reason for cycle conclusion, retrieval-to-cycle-conclusion time, interval between attempts, and total gonadotropin dose differences - and the main outcomes of the second attempt. These outcomes included the likelihood of retrieving more Cumulus-Oocyte Complexes (COCs), the number of blastocysts obtained, the oocyte developmental competence, and the cumulative Live Birth Rate (cLBR).

Results

In their second attempt, 149 patients (11.6%) retrieved the same number of COCs, while 622 (48.4%) obtained more. A shorter interval between attempts (OR: 0.965, 95% CI: 0.952–0.978, p<0.001) and a higher total gonadotropin dose (OR: 1.46, 95% CI: 1.163–1.832, p=0.001) were associated with an increased chance of retrieving more COCs. Among patients who failed to obtain a blastocyst in their first attempt (N=399), 156 (39.1%) experienced the same outcome in their second attempt. Specifically, 326 (25.4%) obtained the same number of blastocysts, and 560 (43.5%) produced more. Maternal age (OR: 0.931, 95% CI: 0.902–0.961, p<0.001), AMH levels (OR: 1.137, 95% CI: 1.052–1.229, p=0.001), and the interval between attempts (OR: 0.969, 95% CI: 0.957–0.982, p<0.001) were significantly associated with this outcome. Oocyte developmental competence, defined as the blastocyst rate per retrieved COC, remained unchanged in 356 patients (27.7%) and improved in 521 (40.5%) during the second attempt. Maternal age (OR: 0.959, 95% CI: 0.929–0.989, p=0.009) and the time between attempts (OR: 0.977, 95% CI: 0.965–0.990, p<0.001) were associated with an increased likelihood of improvement. Among 1,222 patients who completed both cycles, the cLBR for the second attempt was 24% (N=292/1,222). This rate was independent of whether a live birth was achieved (N=120) or not (N=1,102) in the first attempt, even after adjusting for age and AMH (OR: 0.895, 95% CI: 0.516–1.553, p=0.694).

Conclusions

In second IVF attempts, the likelihood of retrieving more COCs, obtaining more blastocysts, and achieving ≥1 live birth is independent of the first attempt's outcomes. When a second IVF attempt is clinically feasible, couples should be reassured that a previous negative result does not impact on future outcomes. Moreover, shorter intervals between attempts are associated with improved outcomes, highlighting the importance of timely intervention. Therefore, adopting a multicycle counseling approach from the very first consultation is essential to avoid treatment discontinuation after the first IVF failure.

Bibliography

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