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CUMULATIVE IMPLANTATION AND LIVE BIRTH AFTER RECURRENT IMPLANTATION FAILURE: OUTCOMES OF SIX CONSECUTIVE SINGLE EUPLOID EMBRYO TRANSFERS IN A COHORT OF 20,536 PATIENTS

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Title: CUMULATIVE IMPLANTATION AND LIVE BIRTH AFTER RECURRENT IMPLANTATION FAILURE: OUTCOMES OF SIX CONSECUTIVE SINGLE EUPLOID EMBRYO TRANSFERS IN A COHORT OF 20,536 PATIENTS

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Preferred Presentation Type: Poster

Study Type: Retrospective Cohort Study (includes comparator groups)

Category - Subcategory(ies): ART: Outcomes

Funding: No financial support data to report.

References:

- Lugano RIF Workshop; RIF: reality or a statistical mirage? Pirtea et al. Fertil Steril 2023
- Pirtea P et al. Rate of true RIF is low: results of three successive frozen euploid single embryo transfers. Fertil Steril 2021
- Gill P et al. Does RIF exist? Prevalence and outcomes of five consecutive euploid blastocyst transfers in 123 987 patients. Hum Reprod 2024

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Nothing to disclose. No off-label or otherwise non-approved product use.

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Trainee: Yes

Abstract Category: All Other Categories

Applied for the In-Training Award for Research

Abstract Text:

OBJECTIVE: Recurrent implantation failure (RIF), or repeated failed sustained implantation (SI), occurs in fewer than 5% of patients undergoing in vitro fertilization (1). Recent studies report cumulative SI (cSI) of 95.2% and cumulative LB (cLB) of 92.6% and 98.1% after 3 and 5 single euploid embryo transfers (SEETs), respectively (2,3). Still, whether there is a threshold number of SEET cycles beyond which the likelihood of SI or LB declines remains unclear. This study evaluates clinical outcomes and predictors of SI in patients who underwent up to 6 consecutive SEETs.

MATERIALS AND METHODS: This multi-center retrospective study included patients who underwent up to 6 consecutive SEETs between 2014 and 2024. All patients had satisfactory uterine cavity evaluation prior to SEET. Exclusion criteria were uterine factor, uterine anomalies, and use of gestational carrier. Primary outcomes were SI, defined as intrauterine gestation with cardiac activity at 7 weeks, and cSI, defined as the proportion of SEETs resulting in SI across all transfer attempts. SI was selected as the primary outcome to align with prior literature (1) and distinguish RIF from recurrent pregnancy loss. Secondary outcomes included positive hCG, LB, and cLB. Generalized linear mixed-effects Poisson regression and Cox proportional hazards models were used to evaluate outcomes across SEETs, adjusting for age, BMI, endometrial thickness (EMT), and clinical site. Adjusted relative risks (RR), hazard ratios (HR) and 95% CI were calculated. Survival curves were generated for cSI and cLB.

RESULTS: The study included 28,165 SEET cycles from 20,536 patients, with 20,536 cycles comprising the 1st SEET. Subsequent SEETs after initial SI failure included: 2nd (n=463 cycles), 3rd (n=1,262), 4th (n=452), 5th (n=120), and 6th (n=32). SI declined across successive SEETs: 56.8% (1st), 46.7% (2nd), 41.6% (3rd), 41.8% (4th), 35.0% (5th), and 28.1% (6th). Age-adjusted relative risks for SI similarly declined: 2nd SEET RR 0.88 [0.82-0.99], 3rd RR 0.73 [0.66-0.79], 4th RR 0.73 [0.64-0.85], 5th RR 0.62 [0.46-0.84], and 6th RR 0.49 [0.26-0.96]. Still, cSI reached 98.7% [97.8-99.2%] after 6 SEETs. Positive hCG from 1st to 6th SEETs were: 74.7%, 68.9%, 62.8%, 60.8%, 55.8%, and 50.0%. Corresponding LB were: 52.5%, 44.8%, 38.7%, 37.3%, 30.4%, and 25.0%. While age-adjusted LB per cycle declined similarly to SI, cLB reached 97.8% [96.5%-98.7%] by the 6th SEET.

In evaluating predictors of SI, patients aged 38-40 and >42 had significantly reduced likelihood of SI compared to those <35 (HR 0.94 [0.89-0.99] and HR 0.85 [0.78-0.92], respectively). Despite this, in patients 38-40 and 40-41.9, cSI reached 98% and 96%, respectively, by the 6th SEET.

CONCLUSIONS: While probability of SI and LB decline with each successive SEET, cumulative outcomes demonstrated that 98.7% of patients achieved SI by the 6th transfer. Accordingly, the study observed a cumulative RIF rate of 1.3% after 6 transfers among patients undergoing SEET.

IMPACT STATEMENT: Patients who experience RIF should be advised to continue treatment up to 6 SEETs, as SI and LB demonstrate very high cumulative success rates.

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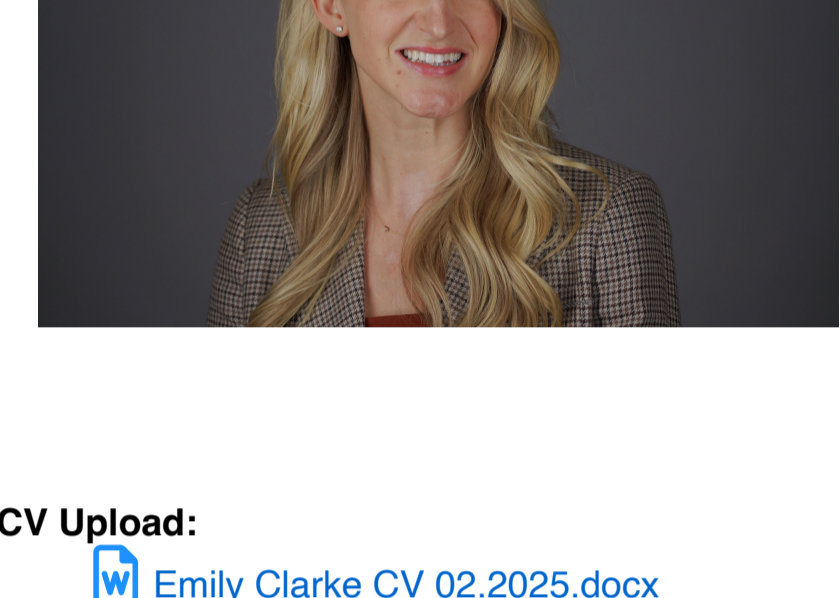
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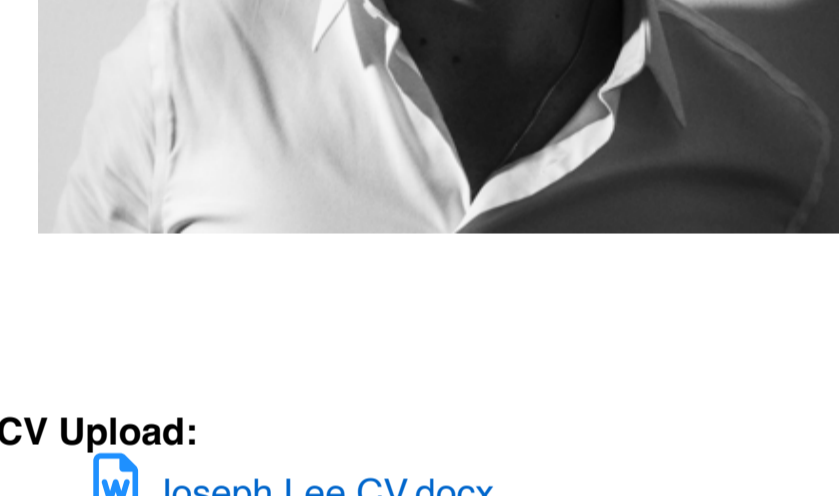
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Biographical Sketch Early success, marked by his first publication in CELL at Harvard Medical School, inspired Joseph to continue his research endeavors in reproductive endocrinology and infertility. Joseph has been with Reproductive Medicine Associates of New York since 2011. Joseph has authored over 400 peer-reviewed abstracts & manuscripts. Passionate about development, he cultivates relationship with investors & entrepreneurs to advance reproductive endocrinology & infertility care.

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Organization Name	Relationship Type	Who has this Relationship?
Ferring	Paid Consultant Relationship Began - Relationship Ended - Tuesday, December 31, 2024	Self

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Biographical Sketch Phillip Romanski, M.D., M.Sc., is a Reproductive Endocrinology and Infertility physician at RMA of New York in Manhattan and is a faculty member at the National Institutes of Health. He is an expert in family-building including the evaluation and management of female and male infertility, third-party reproduction, and fertility preservation. Dr. Romanski completed his residency in Obstetrics and Gynecology at Harvard Medical School (Brigham and Women's Hospital/Massachusetts General Hospital) and his fellowship in Reproductive Endocrinology and Infertility at the Weill Cornell Medical Center/NewYork-Presbyterian Hospital. Dr. Romanski additionally serves as the Associate Research Director for US Fertility and has authored over 60 peer-reviewed research publications with a particular interest in patients with a history of unsuccessful treatment and patients with diminished ovarian reserve. In recognition of his research contributions, he has received multiple national awards and has subsequently been invited to speak at both national and international conferences to present his work.

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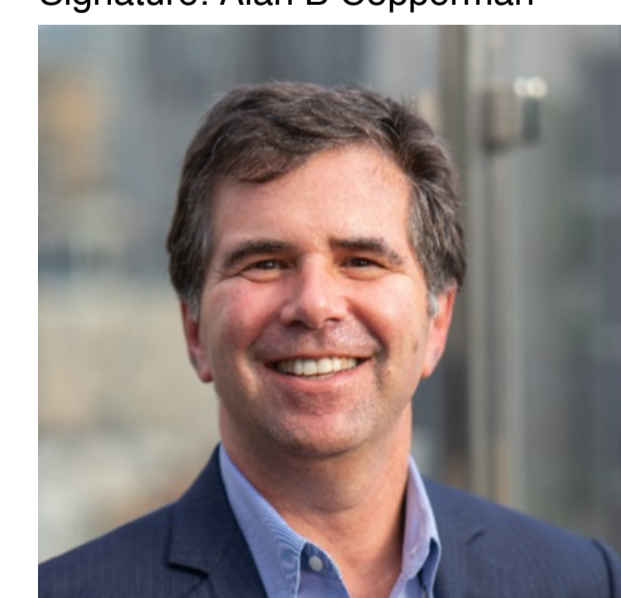
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Organization Name	Relationship Type	Who has this Relationship?
Progynty	Company Officer Relationship Began - Friday, August 25, 2017 Relationship Ended - Thursday, June 1, 2023 Paid Consultant Relationship Began - Relationship Ended - Direct Stockholder Relationship Began - Friday, August 25, 2017 Relationship Ended - Friday, November 1, 2024	Self

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