OOCYTE WARMING OUTCOMES AND LIVE BIRTH RATES OVER A 5 TO 7 YEAR FOLLOW UP PERIOD AFTER PLANNED OOCYTE CRYOPRESERVATION CYCLES

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BACKGROUND

Since the availability of oocyte cryopreservation (OC) for fertility preservation only, the number of patients undergoing planned OC has increased exponentially. While limited by follow-up time, prior data has shown return for oocyte warming is low. Little is known of the outcomes and live birth rates after warming oocytes from planned OC cycles.

OBJECTIVE

To assess outcomes and live birth rates from oocyte warming cycles over a 5–7-year follow-up period after planned OC cycles using the Society for Assisted Reproductive Technology Clinic Outcome Reporting System (SART-CORS) database.

MATERIALS AND METHODS

- Data were obtained from the SART-CORS database
- Inclusion criteria:
  - All planned OC cycles of autologous oocytes for fertility preservation between 2014 to 2016
  - All linked oocyte warming cycles through 2021 to allow for a 5-7-year follow-up period.
- Exclusion criteria:
  - OC cycles performed for oncologic, medical, or infertility diagnoses
  - Cycles with fertilization of any portion of fresh oocytes.
- Likelihood of obtaining an embryo for cryopreservation or fresh embryo transfer (ET) and live birth rate (LBR) after fresh ET were compared across SART age groups.
- Statistical analysis was performed using Chi-square test for independence and the Cochran-Armitage test for trends.

Table 1. Outcomes of oocyte warm cycles 5 – 7 years after planned OC

AGE AT RETRIEVAL	PTS WITH PLANNED OC CYCLES (N)	PTS WITH WARM CYCLES (N)	% PTS WITH WARM CYCLES	% PTS WITH USABLE EMBRYO % (N) *	% PTS WITH FRESH ET % (N) **	% PTS WITH EMBRYOS FOR CRYO ONLY % (N)	% PTS WITH NO EMBRYOS % (N)
<35	4454	91	2.0	80.2 (73)	67.0 (61)	13.2 (12)	19.8 (18)
35-37	5129	240	4.7	82.5 (198)	65.0 (156)	17.5 (42)	17.5 (42)
38-40	3790	241	6.4	74.7 (180)	56.4 (136)	18.3 (44)	25.3 (61)
41-42	917	61	6.7	72.1 (44)	60.7 (37)	11.5 (7)	27.9 (17)
>42	607	24	4.0	75.0 (18)	66.7 (16)	8.3 (2)	25.0 (6)
TOTAL	**14897**	**657**	**4.4**	**78.1 (513)**	**61.8 (406)**	**16.3 (107)**	**21.9 (144)**

* Nonsignificant difference in likelihood between all SART age groups (p=0.199)
** Nonsignificant difference in likelihood between all SART age groups (p=0.257)

Table 2. Live birth rates (LBR) of patients after warming of oocytes from planned OC cycles

AGE AT RETRIEVAL	LBR OF PTS WITH FRESH ET % (N) *	LBR OF PTS WITH FRESH ET OR NO EMBRYOS % (N) **	YRS FROM PLANNED OC TO FRESH ET MEAN (SD) ***
<35	50.8 (31)	39.2 (31)	3.44 (1.78)
35-37	38.5 (60)	30.3 (60)	4.14 (1.81)
38-40	32.4 (44)	22.3 (44)	3.98 (1.34)
41-42	24.3 (9)	16.7 (9)	3.13 (1.55)
>42	6.3 (1)	4.6 (1)	4.00 (-)
TOTAL	**35.7 (145)**	**26.4 (145)**	**3.88 (1.67)**

* Significant decrease in LBR with increasing age (p<0.001)
** Significant decrease in LBR with increasing age (p<0.001)
*** Nonsignificant difference in time between SART age groups (p=0.126)

RESULTS

- 14,897 patients underwent 19,148 planned OC cycles with only 657 patients (4.4%) returning for warming cycles within 5 to 7 years of follow-up (Table 1).
  - 78.1% obtained a usable embryo (at least one embryo for fresh transfer and/or cryopreservation)
    - 61.8% of patients underwent a fresh ET
    - 16.3% of patients opted for a freeze-all approach
  - 21.9% of patients had no embryos after warming
- There was no difference in obtaining a useable embryo (p=0.199) or having a fresh ET (p=0.257) across SART age groups (Table 1).
- Of the 406 patients who underwent a fresh ET, 35.7% resulted in a live birth (Table 2).
  - After including the 144 patients who did not obtain any embryos, the overall live birth rate (LBR) decreased to 26.4%.
- There was a significant decrease in the LBR with increasing SART age group at time of OC (p < 0.001).
- There was no significant difference in time between planned OC and subsequent fresh embryo transfer between SART age groups (p = 0.126) (Table 2).

CONCLUSIONS

While return for oocyte warming within 5 to 7 years of planned OC is low, the outcomes for patients who do return for oocyte utilization is reassuring.

Most patients obtain a usable embryo from oocyte warming cycles and live birth rate after fresh ET is reassuring and demonstrates expected age-related decline.

However, given the low return rate, the yield on a per-planned OC cycle is very low.