

CHARACTERIZATION OF ONCOFERTILITY AND ELECTIVE FERTILITY PRESERVATION PATIENTS: UTILIZATION AND OUTCOMES

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Background: Each year, over 100,000 people under 35 in the U.S. are diagnosed with cancer, and many attain remission due to advancements in treatment. However, approximately 42% of female survivors face ovarian failure due to the gonadotoxicity of cancer therapies. While data on elective fertility preservation (EFP) outcomes is growing, limited research exists on the oncofertility population—patients who undergo fertility preservation between cancer diagnosis and treatment. Return rates for using cryopreserved material among cancer patients vary from 6% to 15%, and studies show that oncofertility patients face unique challenges, such as younger age, medical comorbidities, and different treatment timelines. Few studies have directly compared the outcomes of EFP versus oncofertility patients, leaving gaps in understanding differences in utilization and success rates.

Objective: The aim of this study was to compare the utilization of oocyte and embryo cryopreservation between female cancer patients undergoing fertility preservation and those undergoing elective fertility preservation over last decade in United States.

Materials and Methods: All autologous oocyte retrieval cycles from January 2010 to September 2023 in women presenting for fertility preservation were included. They were categorized into (1) Onco-Fertility Preservation (OFP) group: Cancer treatment was the diagnosis for first oocyte retrieval, (2) Elective Fertility Preservation (EFP): No other fertility diagnoses or medical conditions noted. Only the first oocyte retrieval cycle and embryo transfer for each patient was included for analysis. Our primary objective was to compare the cycle characteristics and utilization of cryopreserved oocytes/embryos between the two groups. Secondary outcomes included positive pregnancy, intrauterine pregnancy (IUP), live birth (LB), singleton birth weight and gestational age of delivery in the two groups.

Results: A total of 9,597 cycles were included, OFP cycles n=1,483 (15.4%) and EFP cycles n=8,114 (84.5%). The mean age was higher for EFP population (35.3 ± 3.5) as compared to OFP (32.8 ± 5.5 ; $p < 0.001$). In the OFP group, 1271 (85.4%) patients and in the EFP group 7591 (93.5%) patients were able to cryopreserve either oocytes or embryos. Patients in the OFP group were more likely to cryopreserve embryo (40.7%) as compared to EFP group (7.2%), $p < 0.001$. Higher number of patients in the OFP group 571 (38.5 %) returned for embryo transfer as compared to EFP group 986 (12.2%), $p < 0.001$. When considering outcomes for patients who had a transfer, pregnancy rates, intrauterine pregnancy (IUP) rates, and live birth rates did not vary significantly. Birth weight and gestational age also did not vary significantly between the two groups.

Conclusions:

Our findings highlight that although patients in the OFP group may exhibit different preservation strategies and return rates, the overall reproductive success remains consistent between OFP and EFP groups.

Financial Support: N/A

Table 1: Comparison of characteristics of patients who are categorized as Oncofertility Fertility Preservation (OFP) patients and Elective Fertility Preservation (EFP) patients presenting for their first retrieval.

Demographics	Oncofertility Patients (OFP) (n=1,483)	Elective FP Patients (EFP) (n=8,114)	p value
Age at cycle day 1	32.8 (5.5)	35.3 (3.5)	<0.001
Number of patients with oocytes frozen	667 (45.0%)	7,007 (86.3%)	<0.001
Number of patients with embryos frozen	604 (40.7%)	584 (7.2%)	<0.001
Number of mature (MII) oocytes retrieved	10.3 (8.8)	10.7 (8.6)	0.914
Number of embryos frozen for patients who froze embryos	2.14 (3.8)	3.9 (0.1)	<0.001
Number of patients with no transfer	912 (61.5 %)	7,128 (87.8%)	<0.001
Number of patients who proceeded to transfer	571 (38.5 %)	986 (12.2%)	<0.001
Outcomes	Oncofertility Patients (OFP) (n=566)	Elective FP Patients (EFP) (n=978)	
Number of transfers with positive pregnancy rate (% per total FETs)	448 (79.2%)	804 (82.2%)	0.139
Clinical pregnancy rate per total FETs	417 (73.7%)	757 (77.4%)	0.098
Live birth rate per total FETs	381 (67.3%)	638 (65.2%)	0.406
Birth weight (Singletons only) (g) (Mean (SD))	3,270 (619.9)	3,203 (601.4)	0.100
Gestational age at delivery in weeks (singletons only) (Mean (SD))	38.1 (2.22)	38.1 (2.02)	0.881

All values were presented as mean +/- SD or percentage (%) as appropriate. T-tests were used to compare means between the two groups and Chi Squared test was used to compare frequencies.