

# PRIOR EXPOSURE TO CHEMOTHERAPY DOES NOT REDUCE THE IN-VITRO MATURATION POTENTIAL OF OOCYTES OBTAINED FROM OVARIAN CORTEX IN CANCER PATIENTS

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## Abstract Body

Objective: To study the effect of chemotherapy exposure on in-vitro maturation (IVM) potential of immature oocytes retrieved from the ovarian cortex following ovarian tissue cryopreservation (OTC).

methods: A retrospective cohort study in a university-affiliated tertiary medical center. A total of 230 chemotherapy naïve (n=171) and chemotherapy exposed (n=59) patients aged 1-39 years with attempted retrieval of oocytes from the ovarian tissue and the medium in which following OTC for fertility preservation between 2002 and 2021. We examined In vitro maturation rates in the chemotherapy naïve and exposed groups, with subgroup analysis of a 1:1 chemotherapy exposed group matched for age at OTC and type of malignancy.

Results: While the number of retrieved oocytes and percentage of patients with at least one oocyte retrieved was higher in the chemotherapy naïve group ( $8.7 \pm 7.9$  vs.  $5.5 \pm 7.3$  oocytes and 87.1% vs. 74.6%,  $p=0.003$  and  $p=0.024$ ; respectively), IVM outcomes were comparable between the groups. IVM rate was only found to correlate with age ( $p=0.01$ ) and menarche status ( $p=0.003$ ). Subgroup analyses done for the pre- and post-pubertal age groups separately showed similarly improved oocytes retrieval potential in the chemotherapy naïve group but similar IVM success rates of the oocytes collected. An age and type of malignancy matched (1:1) chemotherapy naïve and exposed groups were created (28 patients in each group) and this comparison demonstrated similar IVM rate ( $35.4 \pm 30.1\%$  vs.  $31.0 \pm 25.2\%$ ,  $p=0.533$ ) and number of matured oocytes ( $2.7 \pm 3.0$  vs.  $3.0 \pm 3.9$  oocytes,  $p=0.772$ ). Time from chemotherapy to IVM was longer in patients with successful retrieval of oocytes compared to those with no oocytes retrieved ( $33.5 \pm 73.1$  vs.  $5.7 \pm 10.0$  weeks,  $p=0.006$ ). Type of chemotherapy was not associated with IVM rate ( $p=0.351$ ).

Conclusions: Prior exposure to chemotherapy decreases the number of oocytes collected from the ovarian tissue and media following OTC, but does not affect the immature oocytes potential for IVM. Age and menarche status are independently associated with IVM success. IVM should be considered, after age consideration, as a viable option for fertility preservation even after exposure to chemotherapy.