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| **Live birth rate and utilization rate of eggs and embryos following fertility preservation (FP) in 879 female cancer patients over 19 years** *D. Khalife1, S. Ali1, Y. Khalaf1, N. Reddy1, J. Kopeika1 1Guy's and St Thomas' NHS Foundation Trust, Assisted Conception Unit, London, United Kingdom*  **Study question:**  We aim to investigate the rate of women proceeding to FP at the time of cancer diagnosis, the return, utilization and live birth rates after cancer treatment.  **Summary answer:**  Nearly half of newly diagnosed cancer patients proceed to FP and return for follow-up within 21 months post-cancer treatment. The livebirth rate (LBR) is 72.1%.  **What is known already:**  FP is an established part of cancer services in many countries. It is used now more and more frequently. However, very little is published about long term utilization of gametes/embryos after FP. In male population of cancer patients concern is being raised that in spite of “routine” storage of sperm, less than 10% of patients return to use the stored gametes. Not much information is found for female cancer survivors.  **Study design, size, duration:**  A prospective cohort study was conducted on 879 young women diagnosed with cancer who sought FP counseling at the Assisted Conception Unit (ACU) at Guy’s and St Thomas’ Hospital (GSTT), London, United Kingdom between January 2000 and December 2019.  **Participants/materials, setting, methods:**  Data on 879 cancer patients were analyzed. Baseline characteristics include age, AMH, AFC, and cancer type. The primary outcome measure was total LBR. The secondary outcomes were return and utilization rates which were calculated as the number of patients who returned for follow-up and those who undergone embryo transfer. Means and frequencies were used to describe continuous and categorical variables respectively. Student t-test analysis was used with *p*<0.05 considered being statistically significant.  **Main results and the role of chance:**  A total of 879 cancer patients received FP counseling at GSTT with breast cancer being the most common malignant disease accounting for 63.1% of the cases. The mean age, AMH, and BMI were 33.8 ± 7.8 years, 18.8 ± 20.5 pmol/L and 23.7 ± 4.2 kg/m2 respectively. A total of 373 patients (42.4%) underwent FP of whom 40.7 % opted for embryo cryopreservation, 53.4% for oocyte cryopreservation, 5.1% had both and 0.76% opted for ovarian tissue cryopreservation in a different facility.  As for the return rate, 33.8% (297/879) of cancer patients returned for follow-up for assessment of ovarian function, menopausal symptoms, Hormone Replacement Therapy, and fertility treatment. Until today, utilization rate among those who had frozen gametes is16.4 % (61/373) and the overall LBR is 72.1% (44/61) of which 9.1% (4/44) are twin births. The miscarriage rate is 12.2% (8/61). The overall mean time to follow-up is 21.2 ± 19 months (range 1-132 months), with 66% of returning patients doing so within 2 years after cancer diagnosis.  Patients with breast cancer were more likely to return to use their gametes (27/61: 44.3%) and had significantly higher LBR (19/27: 70.3%) in comparison to patients with lymphoma (3/8: 37.5%) (p-value <0.001).  **Limitations, reasons for caution:**  Although we are certain of capturing the outcome of those who had fertility treatment, we can’t be as certain of capturing all births resulting from natural conception.  A proportion of patients may need a longer time to be able to attempt pregnancy, thus the calculated LBR can be underestimated.  **Wider implications of the findings:**  This is a demonstration of how FP can be effective. Over nearly two decades of follow-up, 1 in 6 patients who underwent FP utilized their stored gametes/embryos with a good outcome. This is the first published account of the utilization rate after FP and the longest reported period.  **Trial registration number:**- **Study funding:** - **Funding source:** - |