OUTCOMES OF EFFECTIVE CRYOPRESERVATION. A TWO-YEAR ASSESSMENT OF SURVIVAL RATES OF VITRIFIED AND WARMED BLASTOCYSTS. THE EXPERIENCE OF AN IVF CLINIC IN A DEVELOPING COUNTRY

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ABSTRACT

OBJECTIVE- To determine if the implementation of routine vitrification, and warming procedures can produce excellent survival rates especially in a developing country

MATERIALS AND METHODS-This study was conducted at Medical Art Center (MART), a private fertility clinic in Lagos, Nigeria. Participants included infertile couples going through frozen embryo transfers after prior failed in-vitro fertilization (IVF) cycles and in some cases, patients susceptible to OHSS with previous freeze all cycles. We performed vitrification with Medicult vitrification and warming media (Origio/Medicult, Målov, Denmark) using the McGill cryoleaf protocol as previously described by the manufacturer (Medicult, Denmark).

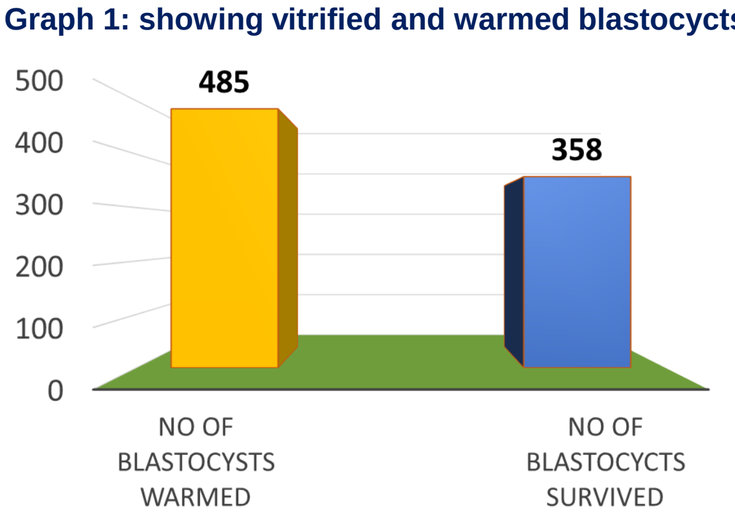
RESULTS- A total of 146 vitrification cycles were carried out for patients who went through frozen embryo transfers within the study period (Oct 2015-Dec 2017). In 171 FET cycles, 485 vitrified blastocysts were warmed with 358 blastocysts surviving the procedure.The freeze-thaw survival rate was 73.8%, and the average survival rate per freeze-thaw method was 80.5%. The total number of embryos transferred was 343 (average of 2.1 embryos per patient). 166 embryo transfers were performed. 2 FET cycles required re-vitrification of embryos without a transfer taking place, and only 3 patients had no surviving embryos.

BACKGROUND

Cryopreservation of oocytes and embryos by vitrification is currently the method of choice employed by most facilities that practice assisted reproductive technology (ART) and there are several studies reporting impressive outcomes (1,2). This specialized technique, however, is operator-dependent, so results do vary amongst embryologists and clinics (3). In Nigeria, vitrification is rapidly gaining widespread popularity as many hospitals are gradually incorporating this technique into their ART practice. This study aims to show the success of an IVF clinic in a developing country at implementing conventional vitrification and warming protocols with survival rates of vitrified-warmed blastocysts reassessed

RESULTS

Graph 1: showing vitrified and warmed blastocycts



Graph 2: showing vitrification and warming cycles

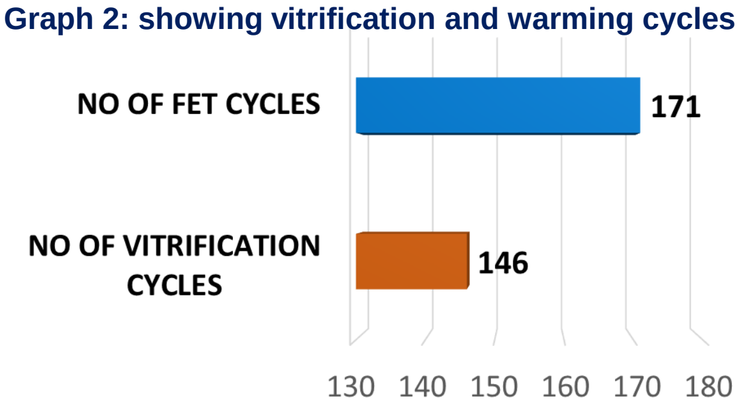


Table 1: Showing all results

PARAMETERS	RESULTS
Number of vitrification cycles	146
Number of FET cycles	171
Number of vitrified / warmed blastocysts	485
Number of surviving blastocysts	358
Freeze-thaw survival rate	73.8%
Average survival rate per freeze-thaw	80.5%.
Number of embryo transfers performed	166
Number of embryos transferred	343
Average number of embryos transferred	2.1 embryos per patient
Number of cycles with no transfer (re-vitrification)	2
Number of cycles with no transfer (no surviving embryo)	3
Number of biochemical pregnancies	53 (32%)

LIMITATIONS

Clinical pregnancy outcomes following embryo transfer were not included. The total number of vitrified embryos within the study period (warmed and not warmed) was not calculated. Furthermore, embryos were not categorized into either donor embryos, embryos derived from donor eggs or own patient embryos.

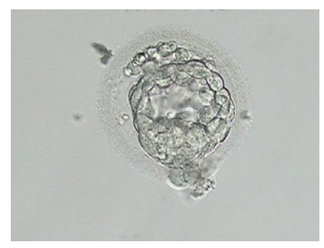
METHODS

This retrospective study analyzed frozen embryo cycles for infertile couples undergoing IVF treatment at Medical Art Center, Nigeria over a period of two years from October 2015 to December 2017. All couples who had blastocysts vitrified and subsequently warmed for transfer within this time period were included in the study. Open system vitrification was done using the Mcgill cryoleaf and Medicult vitrification cooling media. Patients were prepped for FET and in the morning of the 5th day of progesterone use, embryos were warmed using Medicult vitrification warming media in a protocol previously described in (4). Blastocysts were kept in an incubator for at least 2 hours and survival assessed before embryo transfer.

Pic 1: Vitrification media

Pic 2: Warming media

Pic 3: Cryoleaf



Pic 4: Warmed blastocyst

CONCLUSIONS

Our study supports existing reports highlighting excellent outcomes with vitrification. We were able to achieve high embryo survival rates; therefore, we have adopted Vitrification as the only method of choice for cryopreserving embryos. It may be recommended to other IVF clinics looking to improve their freeze-thaw survival rates.

REFERENCES

1. Outcomes of vitrified early cleavage-stage and blastocyst-stage embryos in a cryopreservation program: evaluation of 3,150 warming cycles. *Fertil Steril*, 2012, 98(5):1138–1146.
2. Outcomes of vitrified donor oocytes: implantation rates are increased when blastocysts are vitrified prior to embryo transfer. *Fertil Steril*, 2018, 109(3):e33–e34
3. Quantitative analysis of operator-dependent variability in blastocyst vitrification with a High Security Vessel (HSV) vitrification system
4. Comparison of vitrification and slow freezing for cryopreservation of cleavage stage embryos and its impact on clinical outcome. *Int J Res Med Sci*. 2015 Oct;3(10):2751-2756