

Implementation of Only Blastocyst Stage Embryo Transfers Among All Age Groups of Patients Undergoing *In Vitro* Fertilization (IVF) Treatment Cycles: An Approach to Improve IVF Outcome

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Objective: To evaluate IVF treatment cycle outcomes before and after implementing only blastocyst stage embryo transfers among patients of all age groups.

Design: IRB approved retrospective study at an academic hospital based IVF clinic.

Materials and Methods: After controlled ovarian hyper-stimulation and fertilization in vitro, zygotes produced were cultured under standard embryo culture conditions. Under ultrasound guidance, Day 3 or Day 5 embryos were transferred in appropriately prepared uterus. Our study included 2874 patients of all age groups from two different time periods (P1= 1/1/2007-9/5/2014; P2= 9/6/2014-12/31/2017). During P2, all patients regardless of their age, diagnosis, and number of embryo(s) in culture were offered embryo transfer only at blastocyst stage. Also, patients having only morulae and/or early blastocysts did not have embryo transfer during P2. These slow developing embryos were cultured to D6 and were cryopreserved if developed to more advanced stage. Patients using donor gametes, testicular/epididymal sperm, or undergoing preimplantation genetic testing (PGT) were excluded from this study. Means and standard deviations were computed for continuous measures and frequency distributions for categorical variables. For univariable comparisons of study groups (day-3 transfers vs. day-5 transfers), Pearson’s chi-squared test was used to compare study groups on categorical outcomes. T-tests were used to compare study groups on continuous outcomes.

Results:

	P-1	P-2	P-Value
Number of Retrievals	2121	753	-
Number of Transfers	2016	508	-
D3 (%)	64.7	4.1	
D5 (%)	35.3	95.9	
Mean (\pm SD) patient age	35.0 \pm 4.7	35.3 \pm 4.2	0.18
Mean (\pm SD) embryos transferred	2.1 \pm 1.1	1.3 \pm 0.5	<0.001
eSET (%)	28.1	58.3	<0.001
Implantation rate (heartbeats/embryo transferred)	30.1	44.0	<0.001
Ongoing pregnancy	42.1	45.9	0.127
Ongoing multiple gestations (%)	14.2	4.2	<0.001
No transfer due to slow development	Not tracked	17.7%	-