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Title

Is The Incidence of Retained Embryos Similar in Fresh Versus Frozen ET's?

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Objective:
The presence of a retained embryo(s) in the embryo transfer (ET) catheter is an uncommon event, occurring in 1-8% of all ART treatment cycles. Although a fresh IVF cycle approach has been the first line approach for many clinics, extended embryo culture and preimplantation screening is supporting the implementation of freeze-all strategies. Increased embryo manipulation and expansion could theoretically alter normal morphokinetics and adhesion and thereby affect the incidence of retained embryos. This study sought to evaluate the incidence of embryo retention in fresh versus cryopreserved embryo transfers.

Design:
Retrospective cohort analysis

Materials and Methods:
Patients undergoing an IVF cycle with PGD (qPCR-based CCS) from July 2010 to February 2016 were included. Patients were segregated into Fresh and FET groups. Only the first cycle of each patient was included. Only euploid embryos were transferred. The proportion of retained embryos and the clinical outcomes were compared. Categorical variables were assessed by chi-square or Fisher's exact test for small frequencies, with significance at a p-value of <0.05. Clopper-Pearson interval was used to calculate binomial confidence intervals (CI) of all reported proportions. Adjusted odds ratios (OR) and their 95% CI were calculated. Binary logistic regression analysis was performed to determine if cycle type status influences embryo retention when adjusting for age, day 3 FSH, AMH, BMI and the number of embryos transferred.

Results:
During the study period, we identified 464 fresh and 1558 FET cycles. Overall, age (36.8±4.4 vs. 36.6±4.2), FSH (6.0±3.0 vs. 6.2±3.5), AMH (3.2±2.7 vs. 3.8±4.4), BMI (23.6±4.2 vs. 23.2±4.1) and ET count (1.3±0.4 vs. 1.2±0.4) were similar between fresh and FET cycles, respectively.

Embryo retention was statistically lower during a FET cycle when compared to a fresh cycle (0.4 vs. 2.4%), interpreted as 85% less probability for a screened embryo(s) to be retained in the catheter during a FET cycle (OR 0.15 (95% CI 0.1 – 0.4), p<0.001) (Table 1). Pregnancy rate and clinical PR were similar regardless of retention status or type of cycle (Fresh ET vs. FET) (Table 1).

Conclusions:

This study shows that a screened embryo is less likely to be retained in the transfer catheter in a frozen compared to a fresh transfer cycle. Although embryo retention can provoke concern in a patient undergoing the procedure, there does not appear to be a deleterious effect on the outcome of the procedure.

Support:

None.

Table:

	Embryos loaded		Embryos retained				
Fresh (cycles)	453		11		2.4% (95% CI 1.2 – 4.3)	p<0.001	OR 0.15 (95% CI 0.1-0.4)
FET (cycles)	1552		6		0.4% (95% CI 0.1 – 0.8)		
	Retained		No Retained		Retained vs. No Retained		
	Fresh	FET	Fresh	FET	Fresh	FET	
Pregnancy Rate	45.5% (5/11)	50% (3/6)	68.5% (256/374)	73.5% (959/1304)	2.6 (95% CI 0.8 – 8.7), NS	2.8 (95% CI 0.6 – 13.8), NS	
Clinical PR	36.4% (4/11)	50% (3/6)	56.2% (210/374)	60.8% (783/1287) *17 pending	2.2 (95% CI 0.6 – 7.8), NS	1.6 (95% CI 0.3 – 7.7), NS	