DOES THE SEMINAL CRYOPRESERVATION INFLUENCE IN EMBRYONIC KINETICS AND CLINICAL RESULTS?

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Introduction:

Currently, one of the most widespread techniques in assisted reproduction is seminal cryopreservation Different studies have suggested that cryopreservation causes loss of sperm quality and may even affect the viability of the embryo and consequently the clinical outcomes. However, other studies with frozen semen show discrepancies on its effect on clinical outcomes and a few evaluate the influence of seminal cryopreservation on embryonic quality.
Nowadays, time-lapse incubators have been introduced in laboratories that help evaluate embryos continuously, allowing the detection of any events that occurred during their development.
This provides us a new embryonic selection and evaluation strategy, based on its dividing times and in combination with classical morphological methods.
Is a breakthrough in assisted reproduction laboratories, since until now we could only observe specific events by optical microscopy.

Objective:
To evaluate if embryonic kinetics and morphology are affected by seminal cryopreservation and to study its effect on clinical outcomes.

Materials and Methods:
A retrospective study. With time-lapse technology we analyzed the embryonic kinetics of a total of 1027 embryos from 114 patients undergoing oocyte donation program at the IVI Alicante center, from June 2013 to December 2014.
The mean age of the patients was 41.42 years with a mean BMI of 23.88 and a mean of donated oocytes of 12.66. We divided the study into two groups "Fresh Semen" and "Frozen Semen" and Embryoscope® evaluated the embryonic kinetics and clinical variables of all cycles.
Statistical analysis was used ANOVA test to compare the means of the times and Chi-square to compare the clinical data with a value of $p < 0.05$ significant.

Results:

The division times were obtained by analyzing a total of 1027 embryos, of which 574 belonged to the "Fresh Semen" group and 453 to the "Frozen Semen" group.

Clinical outcomes were obtained from a total of 114 patients, 63 from the "Fresh Semen" group and 51 from the "Frozen Semen" group.

Development time

	FRESH SEMEN (h)	FROZEN SEMEN(h)	p

Clinical results

	FRESH SEMEN	FROZEN SEMEN	p

PN	9.18	7.69	**0.01**
t2	28.35	27.82	0.13
t3	38.58	37.97	0.12
t4	41.28	40.34	**0.04**
t5	52.71	51.69	0.11
t6	56.62	56.05	0.38
t7	60.00	59.92	0.90
t8	63.59	64.04	0.59
t9+	73.19	73.51	0.75
tM	87.08	85.91	0.17
tSB	104,99	103,19	0.29
tB	101,14	100,48	0.44
tEB	113,81	113,69	0.90
tHB	111,40	115,29	0.24

FERTILIZATION (%)	81.09	82.27	0.59
CYCLE PERFORMANCE* (%)	51.17	43.06	**0.03**
GESTATION (%)	70.00	64.00	0.46
IMPLANTATION (%)	44.86.	46.91	0.75
MISCARRIAGE (%)	29.00	20.00	0.23
LIVE BIRTH (%)	35.00	40.00	0.80

* Cycles with transfer + freezing

Embryo quality

Day 3	FRESH SEMEN	FROZEN SEMEN	p
NUMBER OF CELLS	7.99	7.83	0.32
FRAGMENTATION (%)	4.53	4.72	0.53
SYMETRY 1 (%)	37.20	34.90	0.59

DAY 5 MCI	FRESH SEMEN	FROZEN SEMEN	p
a	6.6	6.2	0.80
b	65.6	6.8	0.80

DAY 5 TROFOECTODERM	FRESH SEMEN	FROZEN SEMEN	p
a	5.6	3.9	0.61
b	54.4	54.7	0.61

c	21.2	19.8	0.80
d	6.6	8.3	0.80

c	29.8	32.1	0.61
d	10.2	9.2	0.61

73.8% of the embryos included in "fresh semen" group and 72.2% of the embryos included "frozen semen" group developed until day 5 presenting the following morphological characteristics

DAY 6 ICM	FRESH SEMEN	FROZEN SEMEN	p
a	0.0	1.2	0.06
b	22.6	20.2	0.06
c	33.6	38.7	0.06
d	24.4	29.2	0.06

DAY 6 TROFOECTODERM	FRESH SEMEN	FROZEN SEMEN	p
a	1.4	1.2	0.99
b	22.2	21.9	0.99
c	42.1	43.8	0.99
d	34.3	33.,1	0.99

84.1% of the embryos included in "fresh semen" group and 80% of the embryos included in "frozen semen" group that developed from day 5 to day 6 had the following morphological characteristics

Conclusions:

No significant differences were found except in PN and t4 when we analyze the embryo division time. However, we observed that the embryos from the fresh semen group had a slower division than the frozen semen until day 3 and is in tBH when inverted being faster than fresh semen.
When analyzing the embryonic quality in D3, we did not find significant differences in number of cells, fragmentation and symmetry. There are also no significant differences in the embryonic quality of D5 and D6.

Regarding clinical outcomes, we only found significant differences in cycle performance, being higher with fresh semen.

In view of our results, we conclude that the cryopreservation of semen does not compromise the embryonic viability nor the results in TRA.