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Title

Fertilization Rates Are Not Improved by Use of ICSI Versus Conventional Insemination in IVF Cases Using Donor Sperm

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Objective:

Although embryologists agree that semen parameters are crucial when determining the optimal mode of insemination, the effect of conventional insemination versus intracytoplasmic sperm injection (ICSI) on a cycle's fertilization rates utilizing donor sperm is limited within the literature. This study sought to determine if the mode of donor sperm insemination by IVF patients has any adverse effects to the rate of fertilization.

Design:

Retrospective

Materials and Methods:

Patients who underwent an IVF cycle utilizing anonymous donor sperm were included. PGS split insemination cases were excluded. Fertilization rate was categorized as Normal: >70%, Low: <20% and Failed: 0%. Cohorts were analyzed according to the insemination method. Data was analyzed using student's T test, chi square, linear and binary logistic regression.

Results:

A total of 704 patients underwent 1070 cycles. Of these, 31.9% (n=341) had normal fertilization rate, 5.6% (n=60) had a low fertilization rate and 2.8% (n=30) had failed fertilization.

Female patients with Failed Fertilization were older than those with Low Fertilization or Normal Fertilization (41.3 vs. 39.1 vs. 37.5, $p<0.05$, respectively) and had less oocytes inseminated (4.2 vs. 11.5 vs. 12.2, $p<0.05$, respectively). When raw data was analyzed by insemination method, low fertilization rate was higher with ICSI when compared to conventional (9.1% (25/389) vs. 7.9% (35/681)); and failed fertilization was also higher with ICSI than in conventional insemination (3.3% (13/389) vs. 2.5% (17/681)). When only considering patients with ≤5 oocytes retrieved, the proportion of patients with no fertilization was similar with both methods: conventional 11.8% (15/127) vs. ICSI 10.5(9/85). When conventional insemination cases were analyzed with a binary logistic regression analysis, for each extra

oocyte retrieved the odds of fertilization >20% increased 0.06%; and for each 1 year increase in age the odds of fertilization >20% decreased 0.08%. For ICSI cases, for each extra oocyte retrieved the odds of fertilization increased 0.14%; and for each 1 year increase in age the odds of fertilization decreased 0.12%. After adjusting for age and oocytes inseminated, the odds of Low Fertilization were observed similar between groups: OR 1.05 (95% CI 0.611 – 1.809), p=0.8.

Conclusions:

This study shows that fertilization rates are correlated with patient's age and with the numbers of the oocytes inseminated, but not with the method of insemination.

Support:

None.

Table:

	0%		<20%		>70%	
	Conventional (n=17)	ICSI (n=13)	Conventional (n=23)	ICSI (n=15)	Conventional (n=237)	ICSI (n=104)
Age	40.9±3.9	41.8±1.9	38.3±6.4	40.3±5.5	37.1±6.6	38.5±5.7
BMI	25.6±6.5	24.8±5.1	25.6±6.1	23.3±4.0	25.8±5.1	25.9±5.7
D3FSH	9.2±5.6	8.6±4.4	8.3±3.7	9.1±5.4	6.8±3.7	7.0±3.4
Oocytes Retrieved	4.5±4.8	3.8±2.3	12.9±7.3	9.3±4.7	12.3±7.9	12.0±8.3
Day 1 Ongoing	0	0	1.5±0.7	1.3±0.6	10.0±6.2	9.5±6.5
Day 5 Ongoing	0	0	0.3±0.5	0.5±0.5	4.2±4.2	5.3±5.7
ET Count	0	0	1.1±0.8	0.7±0.6	2.6±1.6	1.3±1.8
SA Initial Total Motile	15.9±13.5	9.5±5.6	16.4±14.8	11.6±7.9	18.7±24.2	15.8±22.5
SA Initial Motility	42.0±9.7	40.8±12.4	42.1±11.3	42.9±19.4	47.2±12.1	40.4±14.6
SA Initial Concentration	57.2±29.7	42.5±26.5	59.8±31.9	50.7±17.7	60.2±23.3	51.6±25.3