EMBRYOGLUE® IMPROVES PREGNANCY AND IMPLANTATION RATES: RESULTS FROM A META-ANALYSIS ON ALMOST 10,000 EMBRYO TRANSFERS

Shu Hashimoto[1], Hubert Joris[2], Yoshiharu Morimoto [3]

[1, 3] IVF Namba Clinic, Osaka, Japan ; [2] Vitrolife Sweden AB, Gothenburg, Sweden

INTRODUCTION

The Cochrane reports published in 2010 and 2014 including almost 4000 cycles showed improved pregnancy rates after the use of high concentrations of hyaluronic acid in embryo transfer medium (1) as well as live birth rates (2). A number of clinics in Japan evaluated the use of the transfer medium EmbryoGlue and presented results at different scientific meetings between 2010 and 2013. This is a meta-analysis of these different studies.

METHOD

The use of EmbryoGlue was compared with standard transfer medium at the respective clinics. Embryos were transferred on day 3 or at the blastocyst stage either fresh or after cryopreservation. For the statistical analysis, numbers were compared using a 2x2 Chi square test with p-values <0.05 considered statistically significant. For the meta-analysis the fixed or random effect model was applied when appropriate.

RESULTS

The use of EmbryoGlue resulted in increased pregnancy and implantation rates following a meta-analysis involving results of 23 and 11 studies respectively. The studies included involved 9,923 and 4,841 events respectively. Table 1 summarizes numbers and relevant statistics for pregnancy and implantation for overall results but also for transfers using fresh or cryopreserved embryos and cleavage-stage embryos or blastocysts. In all groups, pregnancy and implantation rates were significantly higher when using EmbryoGlue as transfer medium. Analysis of miscarriage rates showed no difference. (p=0.4, OR 0.89, CI 0.72-1.11). The overall pregnancy, implantation and miscarriage rate is presented in Figure 1.

	Overall		Fresh cycles		Cryo cycles		Cleavage-stage		Blastocysts	
	Pregnancy	Implantation	Pregnancy	Implantation	Pregnancy	Implantation	Pregnancy	Implantation	Pregnancy	Implantation
Studies included	23	11	7	3	22	11	9	4	16	8
EmbryoGlue®	39,8% (1923/4828)	38,6% (793/2057)	37,1% (224/603)	33,4% (100/299)	40,2% (1657/4117)	39,4% (693/1758)	32,5% (563/1732)	26,8% (217/809)	44,4% (1116/2510)	46,1% (576/1248)
Control	33,3% (1699/5095)	30,3% (844/2784)	25,0% (171/683)	20,1% (89/442)	39,6% (1451/4185)	32,2% (755/2342)	22,3% (376/1682)	17,7% (199/1119)	39,4% (1153/2927)	38,7% (645/1665)
p-value (Chi)	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001
OR 95 % CI	1.32 (1.15-1.51)	1.50 (1.17-1.91)	1.68 (1.30-2.18)	2.26 (1.23-4.17)	1.28 (1.11-1.46)	1.43 (1.14-1.79)	1.57 (1.27-2.01)	1.71 (1.00-2.91)	1.18 (1.05-1.31)	1.36 (1.06-1.73)

Table 1: Numbers of abstracts and numbers of cases included for determination of pregnancy and implantation for overall results as well as for subgroups summarizing transfers with fresh or cryopreserved embryos and transfers with cleavage-stage embryos or blastocysts .

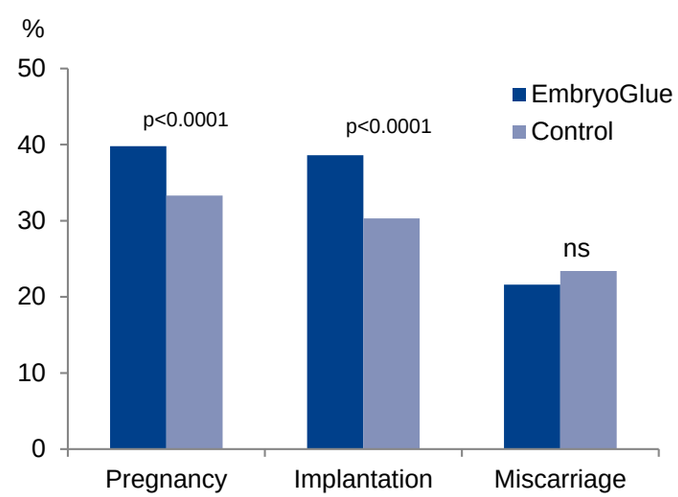

Figure 1. Overall results for pregnancy, implantation and miscarriage.

DISCUSSION

The effect of hyaluronan during development and implantation has been shown in different species (3, 4, 5). The introduction of hyaluronan in human IVF also had a positive effect on embryo development and cryosurvival (6). It has also been shown that embryo viability is positively affected when using recombinant albumin (7). Therefore, a combined effect of hyaluronic acid and recombinant albumin may be involved in the observed positive effect.

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CONCLUSIONS

A meta-analysis of Japanese studies, including almost 10,000 cycles shows that EmbryoGlue® improves implantation resulting in increased pregnancy rates confirming findings from the Cochrane reports.

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