

## INTRODUCTION

The quality of the in vitro culture conditions for embryos is known to be one of the most important factors in the success of in vitro fertilization. Autologous endometrial co-culture is a technique used to enhance the development of the embryo using the patient's own endometrial cells. The mechanism behind autologous endometrial co-culture is not fully understood.

## OBJECTIVE

We conducted a clinical study (RCT) in patients undergoing IVF with D5 embryo transfer. Our objective is to evaluate the effectiveness of autologous endometrial co-culture in improving the quality of the available embryos and pregnancy outcome.

## METHOD

We recruited patients between 18 and 38,12 years of age, with ovulatory cycle, and doing stimulated in vitro fertilization at the clinique ovo. We recruited 207 patients between April 2013 and March 2015. We analyzed 85 patients who had D5 embryo transfer and/or blastocysts freezing at D5 and/or D6.

Figure 1 : Endocell protocol

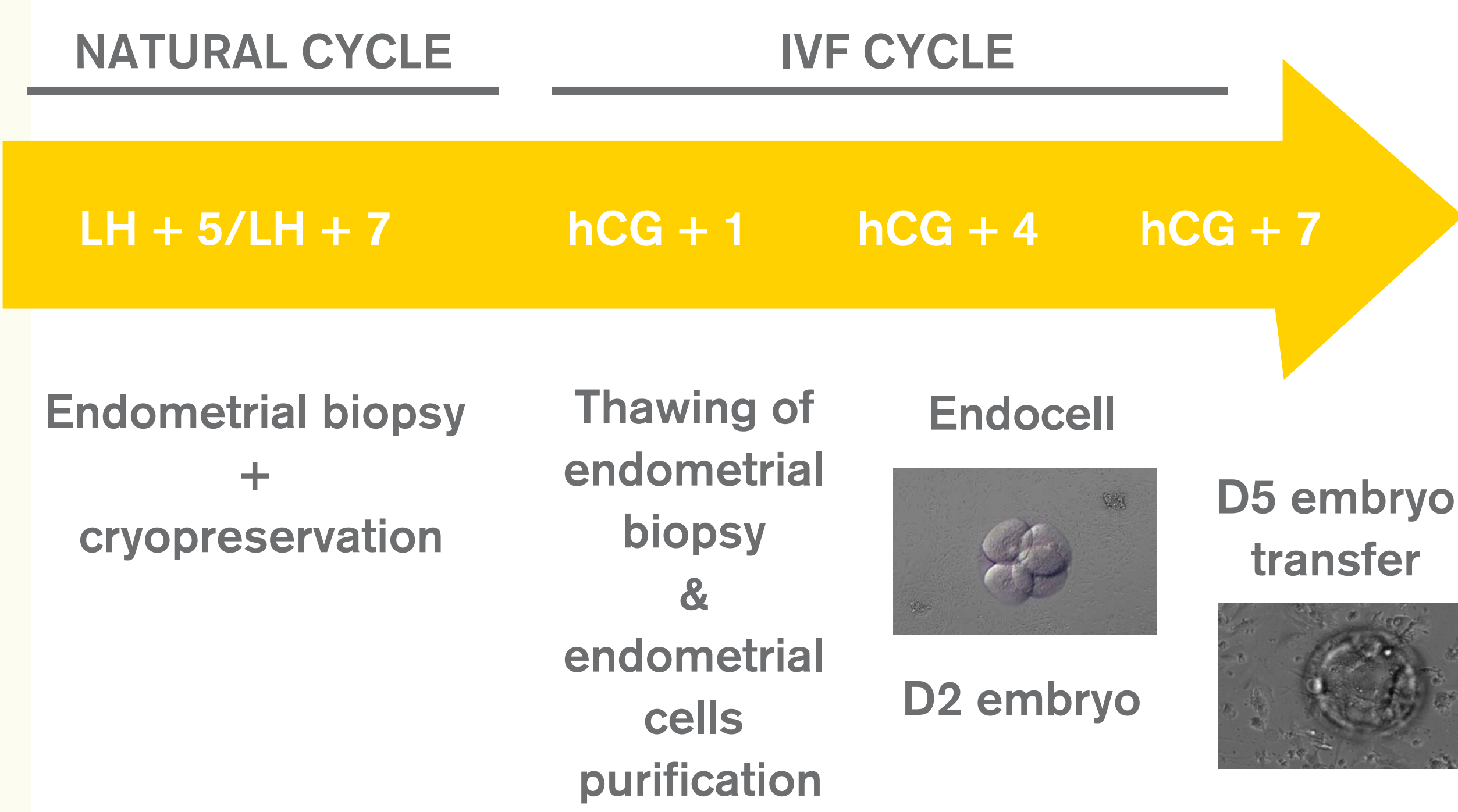


Figure 2 : Study design



For qualification of the embryos, we use the Alpha-ESHRE 2011 scale. The Student's t-test and the Kh<sup>2</sup> test were used for the statistics.

## RESULTS

Table 1. Demographic description of the population in the study

	Endocell	Control	P value
Age (mean ± sem)	33,0 ± 0,59 (n= 37)	32,8 ± 0,64 (n= 48)	> 0,05
Age of husbands (mean ± sem)	37,5 ± 0,97	36,9 ± 0,94	> 0,05
Average ranks of IVF attempts	1,50	1,62	> 0,05
IVFc (number of patient)	7	14	> 0,05
ICSI + PICSI (number of patient)	2	29	> 0,05
FIV/ICSI (50/50) (number of patient)	5	5	> 0,05

Table 2 : Blastocyst rate and pregnancy rate

	Endocell		Control		P value
	Number	Rate (%)	Number	Rate (%)	
Number of patients	37	----	48	----	----
Embryo number in prolonged culture at day 2	219	----	261	----	----
Blastulation rate (D5 and D6)	139	63,5	178	68,2	> 0,05
<b>Useful blastocyst</b>	<b>106</b>	<b>76,3</b>	<b>108</b>	<b>60,7</b>	<b>&lt; 0,05</b>
Number of useful blastocysts per patient	2,8	----	2,2	----	----
Number of embryo transfer	39	----	43	----	----
Implantation rate (positive BhCG)	24	61,5	23	53,5	> 0,05
Clinical pregnancy rate (positive fetal heart)	19	48,7	21	48,8	> 0,05

A useful blastocyst is a blastocyst which has a good quality and can be transferred or frozen. Therefore, for this study, all embryo at blastocyst stage which were transferred or frozen were considered useful.

## CONCLUSION

The data revealed that a co-culture system on endometrial cells improves by approximately 16% the number of useful blastocysts for fresh transfer or cryopreservation compared with conventional culture media.

The co-culture system of endometrial cells could potentially lead to a better physiological environment and explain the increase in useful blastocysts rate (decrease in levels of free radicals...).

In conclusion, the use of Endocell significantly enhanced the quality of blastocysts.

Since some patients are still in the process of embryo transfer, we do not have the pregnancy rates for the study and control groups at this point.

## RÉFÉRENCES

Eyheremendy V. et al., Beneficial effect of autologous endometrial cell coculture in patients with repeated implantation failure, Fertility and Sterility Vol. 93, No. 3, February 2010, pages 769-773.

Kattal N. et al., Role coculture in human in vitro fertilization: a meta analysis, Fertility and Sterility Vol. 90, No. 4, October 2008, pages 1069-1076.

Spandorfer S. et al. Autologous Endometrial Coculture in patients with a previous history of poor quality embryos, Journal of Assisted Reproduction and Genetics, Vol. 19, No. 7, July 2002, pages 309-312.