

RAPID-i IS AN EFFECTIVE SYSTEM FOR HUMAN EMBRYO VITRIFICATION AT BOTH THE BLASTOCYST AND CLEAVAGE STAGE

Dr. Nina Desai and her research team have studied the closed vitrification system Rapid-i from Vitrolife and presented their results on several international congresses. At ESHRE 2013 in London Dr. Desai presented clinical data including live birth outcomes as well as a comparison between Rapid-i and the open carrier Cryoloop. The study has now been published in Reproductive Biology and Endocrinology¹ and the following text is a summary of the article.

Background

Successful vitrification is not only depending on sufficient cooling and warming rates but is also a very operator dependent cryopreservation method. The cooling rate of a closed vitrification device, such as Rapid-i, is much lower than that of an open device, still it may be important to use such a closed system to circumvent the potential risks of contamination conferred with direct contact between embryos and liquid nitrogen. To minimize operator stress and variation it is also important to select a carrier that is easy to use.

Methods

The Rapid-i carrier was introduced in the laboratory after several years of vitrification with Cryoloop. The comparison between the devices is retrospective. Vitrification was carried out on day 3 or on days 5/6 and expanding blastocysts were collapsed. All embryos underwent assisted hatching after warming and were morphologically assessed immediately after warming and 2 hours later. Embryo transfers were performed in EmbryoGlue®. Rapid-i was used in 95 vitrification-warming cycles

and Cryoloop was used in 161 cycles.

A total of 486 vitrified-warmed embryos were assessed and 92% of them were transferred. Patients' ages in the four groups were similar, ~34 years.

Results

Survival rates, clinical pregnancy rates (CPR), implantation rates (IR) and miscarriages rates were similar between Rapid-i and Cryoloop. There were no significant differences between carriers for vitrification at either cell stage. See Table 1.

Conclusions

The authors conclude that "Rapid-i offers an excellent alternative to existing open vitrification devices for both day 3 embryos and for blastocysts" at the same time as it prevents direct contacts between embryos and liquid nitrogen. They state that the above data has paved the way toward transitioning to a closed vitrification system. They also write that "the ease of loading and unloading played an important role in the selection and acceptance of Rapid-i as opposed to other commercially available closed vitrification devices."

Table 1.	Cleavage		Blastocyst	
	Rapid-i	Cryoloop	Rapid-i	Cryoloop
No. of vitrified embryos warmed	92	139	92	163
No. of intact embryos on warming	91 (99%)	137 (99%)	89 (97%)	148 (91%)
No. of transfers	43	70	51	85
No. of embryos surviving and transferred	85	130	88	143
Mean no. of embryos transferred	2.0±0.5	1.9±0.4	1.7±0.5	1.7±0.5
Implantation rate	37%	35%	49%	38%
Clinical pregnancy rate	47%	49%	59%	46%
Deliveries + ongoing pregnancies	15+3	29+2	16+9	26+7

1. Desai N et al. The new Rapid-i vitrification device is an effective system for human embryo vitrification at both the blastocyst and cleavage stage. Reproductive Biology and Endocrinology 2013; 11; 41.