

# Blastocysts Vitrification during 2 consecutive years: Before and After its start

## Significant delivery rate increase within the 1<sup>st</sup> year

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### Study question

After systematic blastocysts slow freezing (SF), is the introduction of the vitrification (VF) will increase our results when it is proposed for all patients and performed by all members of the team ?

### Summary answer

After a one year-period of training for all the technical team (n=6), significant increase in delivery rate can be obtained with blastocysts vitrified, as soon as the first year when it is compared to SF the year before with the same embryo culture systems, the same endometrial preparation and the same transfer policy.

### What is known already

Blastocysts VF can give better results than SF. However a learning curve is described for a technique needing skill and practice for all the members of the team. Therefore it is suggested that this technique cannot be proposed for all patients at the beginning of the procedure.

### Study design

Retrospective study comparing the outcomes of thawed blastocysts transfer between 2012 (SF only) and 2013 (combination of SF and VF: 51% and 49% respectively).

### Participants, methods

We used a slow freezing protocol with glycerol and sucrose (Origio) in 2012 and start vitrification for all patients in 2013 with ethylene glycol and dimethylsulfoxide (Irvine) in closed system with high-security straws (CryoBio System). The main outcomes measures were thawed blastocysts survival rates and delivery rates.

### Main results and the role of chance

	2012	2013	
Couples (n)	234	291	
Age (years)	34 ± 5	33 ± 4	ns
Thawing cycle (n)	292	369	
Thawed Embryos (n)	447	577	
Survival rate (%)	76%	75%	ns
Transferred Embryos (mean)	1.2 ± 0.6	1.2 ± 0.6	ns
Ongoing pregnancy (n)	52	108	
Ongoing preg./thawing	18%	29%	p<0.001
Delivery/thawing	13%	23%	p<0.01

	2013 only		
	SF	VF	
Couples (n)	150	141	
Age (years)	34 ± 4	34 ± 4	ns
Thawing cycle (n)	190	179	
Thawed Embryos (n)	300	277	
Survival rate (%)	74%	83%	p<0.05
Transferred Embryos (mean)	1.1 ± 0.6	1.2 ± 0.6	ns
Ongoing pregnancy (n)	43	65	
Ongoing preg./thawing	23%	36%	p<0.001
Delivery/thawing	18%	27%	p<0.001

### Limitations, reasons for caution

Confounding factors (*remaining frozen embryos per couple, rate of thawed embryos the year of freezing, previous pregnancy rate before thawing*) showed similar values between both groups. However, it is obvious that vitrified blastocysts had a shorter storage duration than slow frozen embryos.

### Wider implications of the findings

After a training of the whole team, a new procedure can be quickly beneficial to all patients with successful results. Although our SF program of blastocysts gave significant results, the VF procedure showed its superiority in our team.