



BLASTOCOELE EXPANSION STATUS AT TIME OF TRANSFER AFFECTS CLINICAL PREGNANCY OUTCOME FOLLOWING SINGLE FROZEN EUPLOID BLASTOCYST TRANSFER

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Backgrounds and aims

From our experience of blastocyst cryopreservation since the use of Cryotech, we have achieved 100% survival rates (n>3100). However, blastocoele re-expansion following warming often varies (1). In this study, we investigate the effect of blastocoele expansion status at time of transfer on the clinical pregnancy outcome following single frozen euploid blastocyst transfer.

Methods

A total of 250 euploid blastocysts of $\geq 4AB$ and above (Gardner's criteria) underwent vitrification and subsequent warming using the Cryotec Method for single blastocyst transfer cycles between January and July 2018 in Alpha International Fertility Centre. The mean age of patients was 31.11 ± 6.35 years old [range: 18-43]. Blastocoele re-expansion was assessed using light microscopy at two time points; directly after warming and at the time of embryo transfer. The categories for blastocoele expansion were fully expanded (FE), partially expanded (PE) and collapsed (CL). The recovery or shrinkage of the cavity size were documented. Clinical pregnancy is defined as the presence of an intrauterine gestational sac under ultrasound scanning 5 to 6 weeks after the embryo transfer.

Conclusions

Blastocoele expansion status at the time of transfer affects the clinical pregnancy outcome and is irrespective of the expansion status directly after warming.



Results

All the 250 euploid blastocysts warmed for transfer survived, where 173 were fully expanded, 54 were partially expanded and 23 were collapsed at the time of transfer.

Table 1: Clinical outcome of blastocysts with different blastocoele expansion status following single frozen euploid blastocyst transfer.

Blastocoele expansion status	No. of blastocysts	Clinical Pregnancy Rates	Miscarriage Rates	Significance (P-value) *statistically significant
Fully Expanded (a)	173	67.63% (n=117/173)	12.82% (n=15/117)	a-b (p=0.74)
Partially Expanded (b)	54	64.81% (n=35/54)	20.00% (n=7/35)	a-c (p=0.005)*
Collapsed (c)	23	34.78% (n=8/23)	12.50% (n=1/8)	b-c (p=0.023)*
Recovery of blastocoele expansion	154	67.53% (n=104/154)	Recovery is defined as: CL → PE or FE PE → FE	
Shrinkage of blastocoele	11	45.45% (n=5/11)	Shrinkage is defined as: FE → PE or CL PE → CL	

As shown in Table 1, clinical pregnancy rates were comparable between FE (CPR=67.63%; n=117/173) and PE blastocysts (CPR=64.81%; n=35/54) but was significantly lower, $p < 0.05$, for CL blastocysts (CPR=34.78%; n=8/23). Blastocysts that demonstrated recovery of expansion post-warm achieved similarly high CPRs (67.53%; n=104/154) whereas blastocysts that shrunk showed a trend of reduced CPRs (45.45%; n=5/11). Additionally, collapsed blastocysts which remained collapsed had the least potential for clinical pregnancy at 28.57% (n=4/14).