

DOAÇÃO DE ÓVULOS: BANCO DE OVÓCITOS LEVA REALMENTE AOS MESMO RESULTADOS DE DOAÇÃO A FRESCO?

Daniela Paes de Almeida Ferreira Braga, DVM, M.Sc.



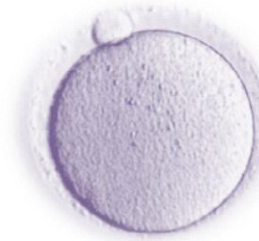
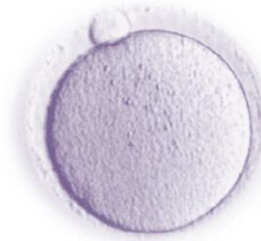
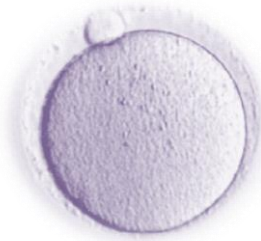
FERTILITY[®]
MEDICAL GROUP

DOAÇÃO DE ÓVULOS

OVODOAÇÃO

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DOAÇÃO DE ÓVULOS A FRESCO

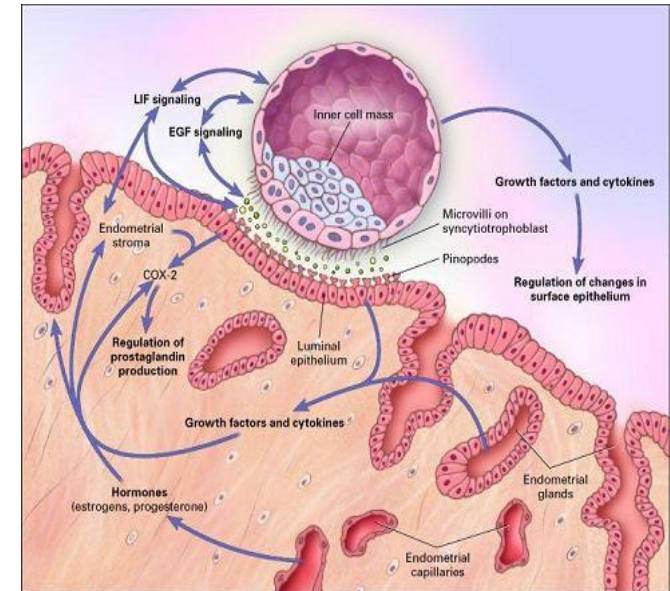


Altas taxas de
gestação

Alta qualidade
oocitária

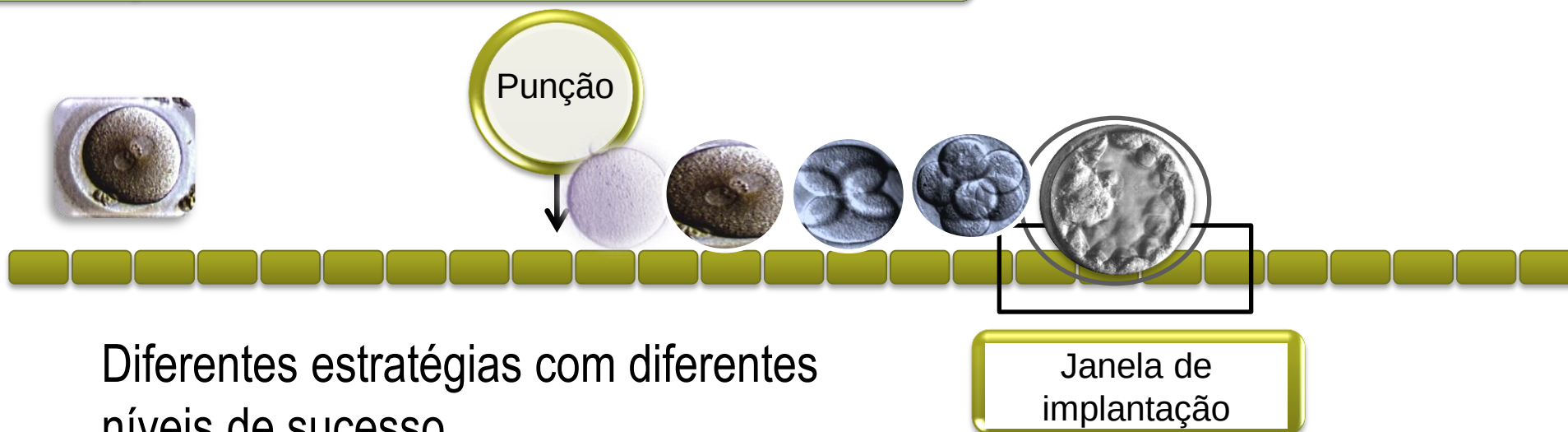
Doadoras
jovens

Doadoras
saudáveis



Fonte: The cell

DOAÇÃO DE ÓVULOS A FRESCO



Diferentes estratégias com diferentes níveis de sucesso

2008 Guidelines for gamete and embryo donation: a Practice Committee report

Practice Committee of the American Society for Reproductive Medicine, and the Practice Committee of the Society for Assisted Reproductive Technology

The American Society for Reproductive Medicine, and the Society for Assisted Reproductive Technology, Birmingham, Alabama

The 2008 *Guidelines for Gamete and Embryo Donation* provide the latest recommendations for evaluation of potential sperm, oocyte, and embryo donors, incorporating recent information about optimal screening and testing for sexually transmitted infections (STIs), genetic diseases, and psychological assessments. This revised document incorporates recent information from the U.S. Centers for Disease Control and Prevention, the U.S. Food and Drug Administration, and the American Association of Tissue Banks, with which all programs offering gamete and embryo donation services must be thoroughly familiar. (Fertil Steril® 2008;90:S30–44. ©2008 by American Society for Reproductive Medicine.)

Diário Oficial da União - Seção 1

ISSN 1677-7042

103



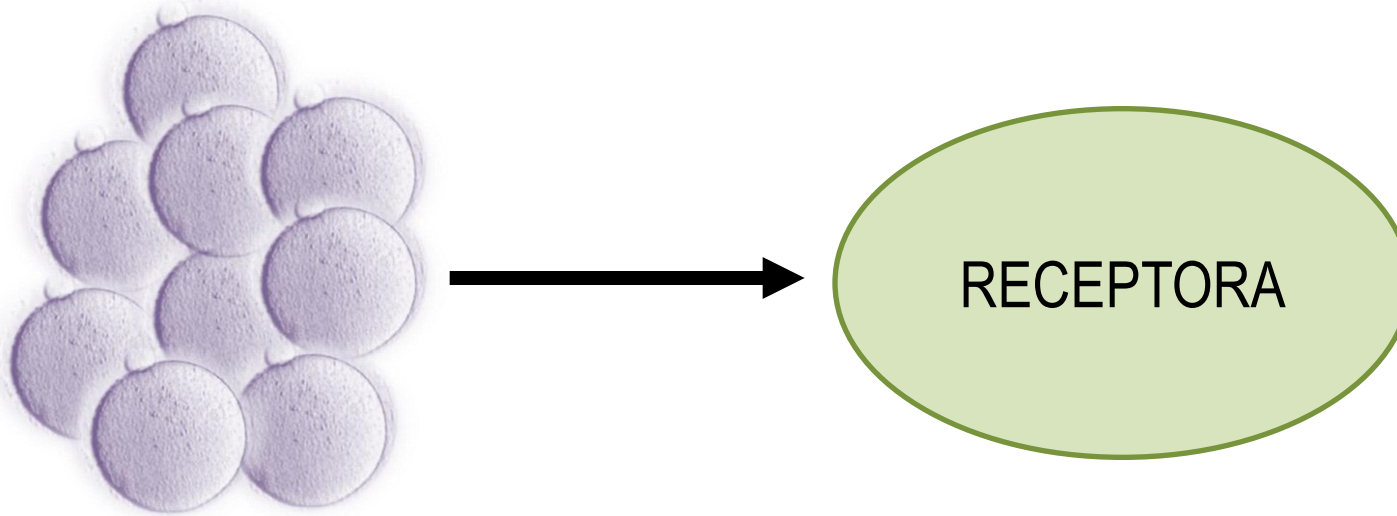
§2º Doadoras de oócito a fresco não são submetidas à quarentena nem à repetição dos testes em prazo de 6 (seis) meses, devendo os resultados dos testes laboratoriais ter prazo máximo de 5 (cinco) dias antes do procedimento da coleta oocitária."(NR)

Art. 20 Os doadores de sêmen, oócitos e embriões devem ser selecionados com base em sua idade e condição clínica.

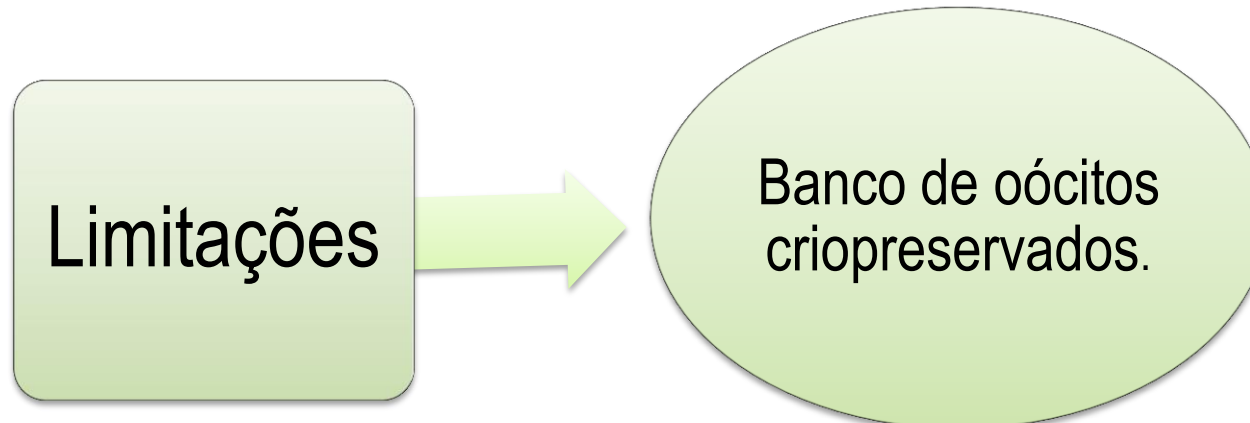
§3º São critérios de exclusão definitiva de doadores a triagem laboratorial reagentes, positiva ou inconclusiva para as seguintes infecções:

I- *Treponema pallidum* (sífilis);
II - HIV 1.

DOAÇÃO DE ÓVULOS A FRESCO

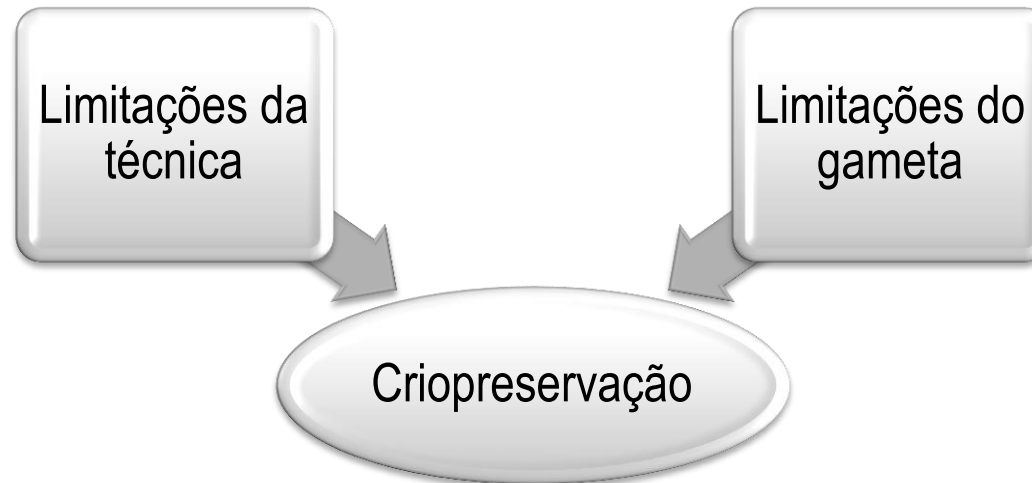


- Dificuldade de se sincronizar múltiplas receptoras



CRIOPRESERVAÇÃO DE ÓVULOS

Oócitos: difícil criopreservação

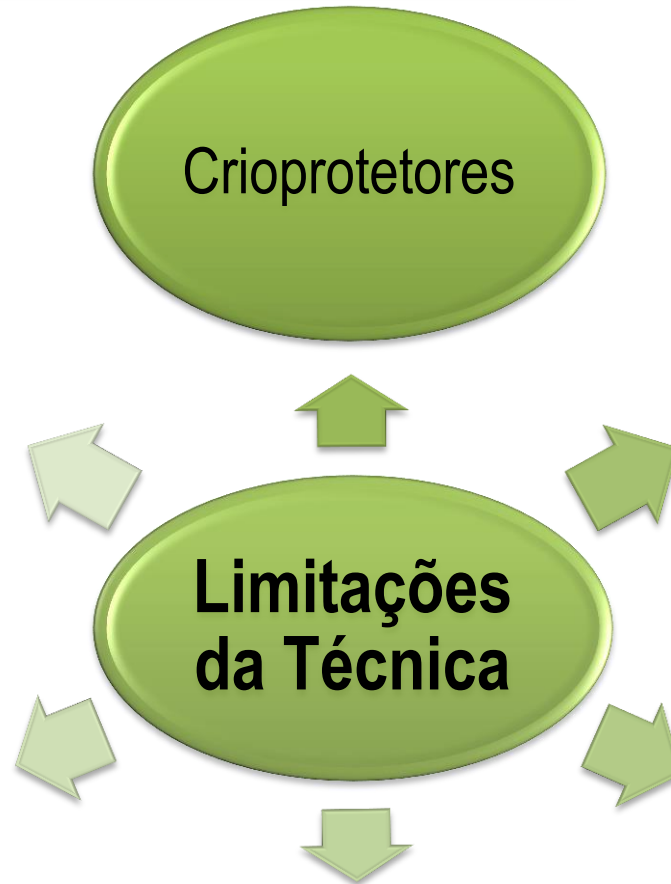


Chen et al., 1986 → Congelamento lento

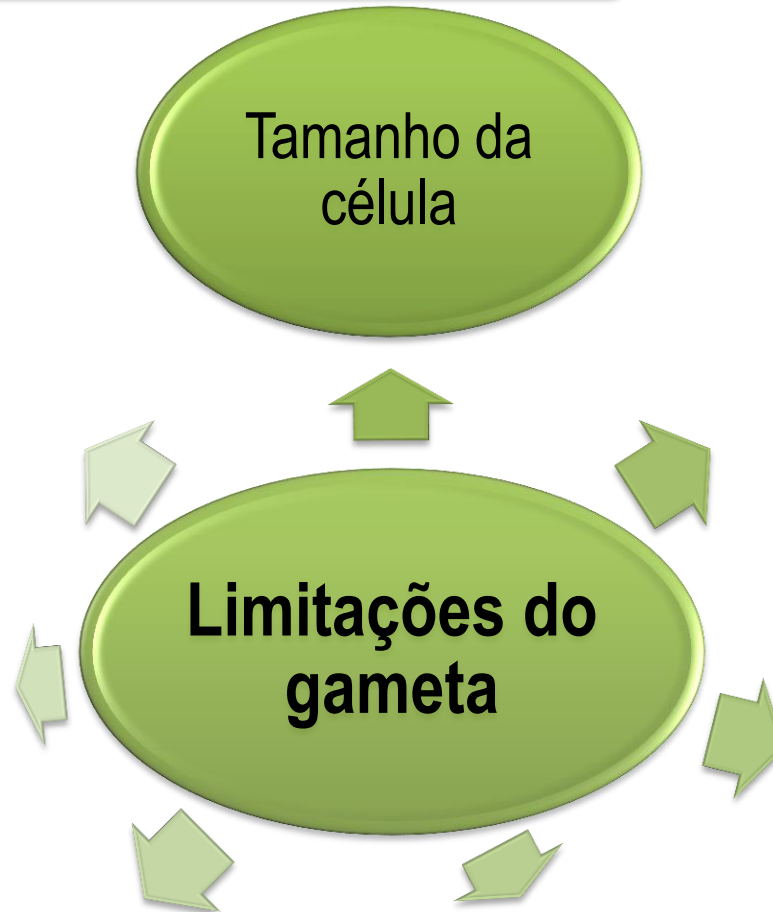
Kuleshova et al., 1999 → Vitrificação

1986 -2005 → **APLICAÇÃO CLÍNICA**

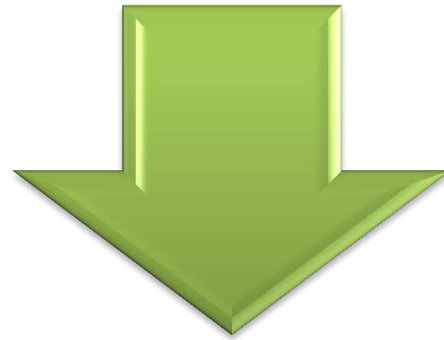
CRIOPRESERVAÇÃO DE ÓVULOS



CRIOPRESERVAÇÃO DE ÓVULOS



DOAÇÃO DE ÓVULOS



Limitações
inerentes a
doação de
óvulos frescos



Limitações
inerentes a
criopreservação
do óvulo



CRIOPRESERVAÇÃO DE ÓVULOS



Fusos meióticos

Ultra-estruturas
celulares

Perfil gênico (mRNA)

Perfil metabólico

SEGURANÇA

Fusos meióticos



Ultra-estruturas
celulares



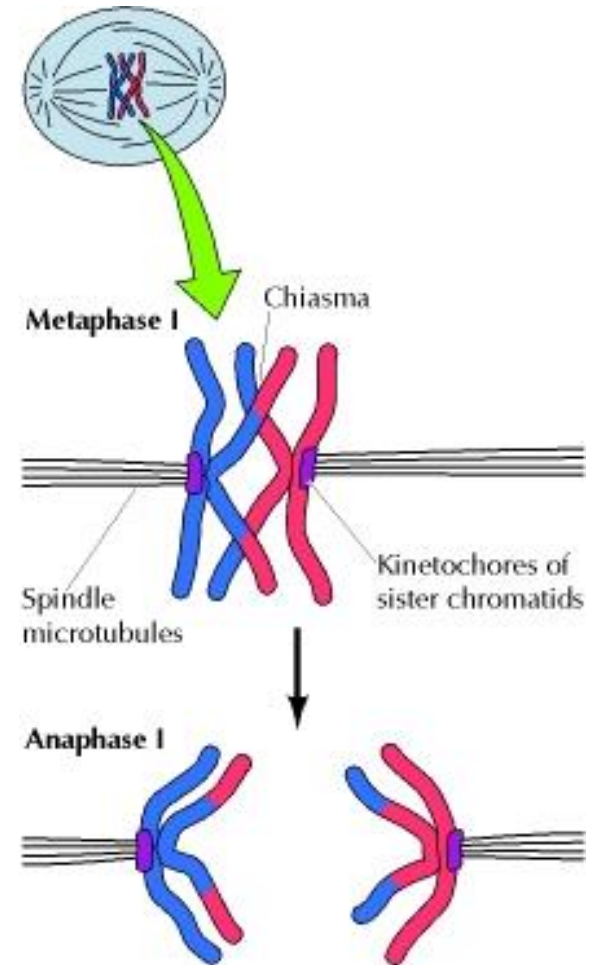
Perfil gênico (mRNA)



Perfil metabólico



Aneuploidia



Fonte: The cell

SEGURANÇA

Oocyte vitrification does not increase the risk of embryonic aneuploidy or diminish the implantation potential of blastocysts created after intracytoplasmic sperm injection: a novel, paired randomized controlled trial using DNA fingerprinting

Eric J. Forman, M.D.,^{a,b} Xinying Li, Ph.D.,^a Kathleen M. Ferry, B.S.,^a Katherine Scott, M.S.,^a Nathan R. Treff, Ph.D.,^{a,b} and Richard T. Scott Jr., M.D.^{a,b}

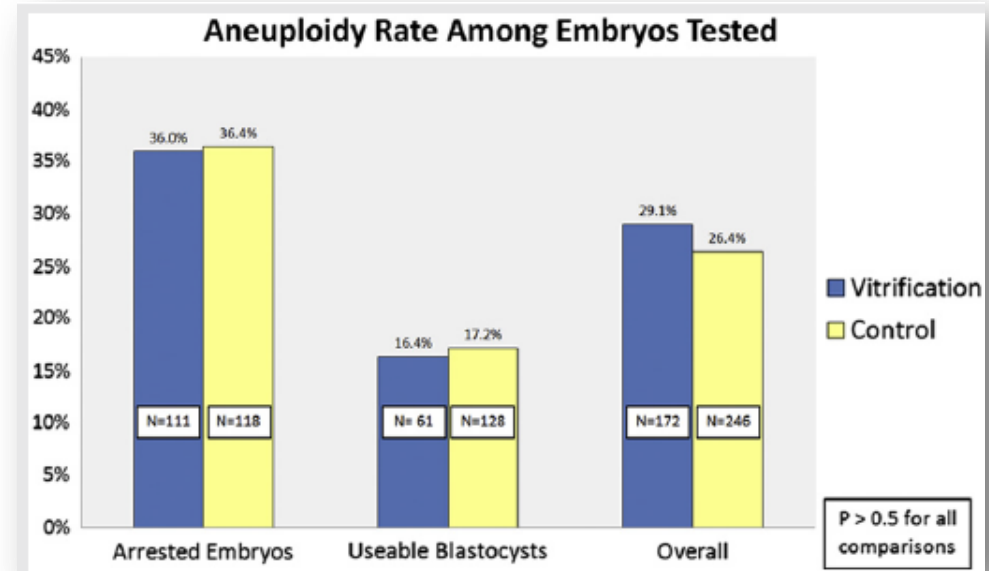
^a Reproductive Medicine Associates of New Jersey, Morristown; and ^b Division of Reproductive Endocrinology, Department of Obstetrics, Gynecology and Reproductive Sciences, UMDNJ-Robert Wood Johnson Medical School, New Brunswick, New Jersey

Fertility and Sterility® Vol. 98, No. 3, September 2012 0015-0282/\$36.00

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doi:10.1016/j.fertnstert.2012.04.028

- ✓ Criopreservação não aumenta o risco de aneuploidias
- ✓ Criopreservação não diminui a implantação de blastocistos em ciclos de ICSI.



CARACTERÍSTICAS PERINATAIS

Obstetric and perinatal outcome in 200 infants
conceived from vitrified oocytes  *Vol 16, No 5, 2008 608-610*

RI-Cheng Chian^{1,4}, Jack YJ Huang¹, Seang Lin Tan¹, Elkin Lucena², Angela Saa², Alejandro Rojas², Luis Arturo Ruvalcaba Castellón³, Martha Isolina García Amador³, Jorge Eduardo Montoya Sarmiento³

- ✓ Não existe diferença no peso ao nascer ou de anomalias congênitas em bebês provenientes de oócitos criopreservados

Over 900 oocyte cryopreservation babies
born with no apparent increase in congenital
anomalies  *Vol 18 No 6, 2009 769-776*

N Noyes^{1,4}, E Porcu², A Borini³

- ✓ Criopreservação não aumenta a incidência de anomalias congênitas

CRIOPRESERVAÇÃO DE ÓVULOS



Achados a curto
prazo

Dados de longo
prazo



Mature oocyte cryopreservation: a guideline

The Practice Committees of the American Society for Reproductive Medicine and the Society for Assisted Reproductive Technology

Society for Reproductive Medicine and Society for Assisted Reproductive Technology, Birmingham, Alabama

Fertility and Sterility® Vol. 99, No. 1, January 2013

There is good evidence that fertilization and pregnancy rates are similar to IVF/ICSI with fresh oocytes when vitrified/warmed oocytes are used as part of IVF/ICSI for young women. Although data are limited, no increase in chromosomal abnormalities, birth defects, and developmental deficits has been reported in the offspring born from cryopreserved oocytes when compared to pregnancies from conventional IVF/ICSI and the general population. **Evidence indicates that oocyte vitrification and warming should no longer be considered experimental.** This document replaces the document last published in 2008 titled, "Ovarian Tissue and Oocyte Cryopreservation," Fertil Steril 2008;90:S241-6. (Fertil Steril® 2013;99:37-43. ©2013 by American Society for Reproductive Medicine.)

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DOAÇÃO DE ÓVULOS

ORIGINAL ARTICLES: ASSISTED REPRODUCTION

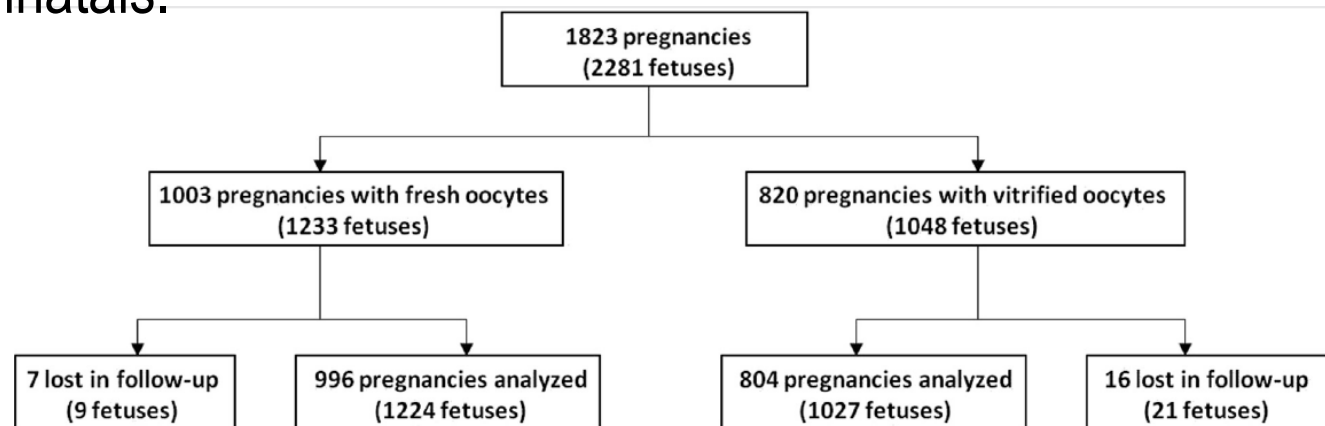
Obstetric and perinatal outcome of babies born from vitrified oocytes

Ana Cobo, Ph.D., Vicente Serra, M.D., Nicolás Garrido, Ph.D., Inés Olmo, M.D., Antonio Pellicer, M.D., and José Remohí, M.D.

Instituto Valenciano de Infertilidad, Universidad de Valencia, Valencia, Spain.

Fertility and Sterility® Vol. 102, No. 4, October 2014 0015-0282/\$36.00
Copyright ©2014 American Society for Reproductive Medicine, Published by Elsevier Inc.
<http://dx.doi.org/10.1016/j.fertnstert.2014.06.019>

- ✓ Não existe qualquer indício que a criopreservação de oócitos aumente a incidência de problemas perinatais.



ACHADOS CLÍNICOS

- Décadas passadas: Primeiros relatos sobre criopreservação de oócitos: técnica ineficiente

Human Reproduction Vol.16, No.3 pp. 411–416, 2001

Human oocyte cryopreservation: new perspectives regarding oocyte survival

R.Fabbri^{1,3}, E.Porcu¹, T.Marsella¹, G.Rocchetta², S.Venturoli¹ and C.Flamigni¹

¹IVF Center, Human Reproductive Medicine Unit, Institute of Obstetrics and Gynecology, and ²Department of Biology, Bologna, 40138 Bologna, Italy

FERTILITY AND STERILITY®
VOL. 82, NO. 3, SEPTEMBER 2004
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Published by Elsevier Inc.
Printed on acid-free paper in U.S.A.

Pregnancies and births after oocyte cryopreservation

Andrea Borini, M.D.,^a Maria Antonietta Bonu, B.Sc.,^a Giovanni Coticchio, Ph.D.,^a
Veronica Bianchi, B.Sc.^a Monica Cattoli, M.D.,^a and Carlo Flamigni, M.D.^b

Tecnobios Procreazione, and University of Bologna, Bologna, Italy

Congelamento lento:
Gestação 22 – 25%

ACHADOS CLÍNICOS



Melhora dos
resultados



Modificações
do método
original



Técnica
ineficiente

Efficiency of oocyte cryopreservation: a meta-analysis

Kutluk Oktay, M.D.,^a Aylin Pelin Cil, M.D.,^a and Heejung Bang, Ph.D.^b

^aFertility Preservation Program at Center for Reproductive Medicine and Infertility and ^bDepartment of Public Health,
Weill Medical College of Cornell University, New York, New York

Fertility and Sterility® Vol. 86, No. 1, July 2006

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- Gestação: 20%
- Gestação por oócito descongelado: 2,3%
- Implantação: 10%

ACHADOS CLÍNICOS

- Introdução e desenvolvimento da vitrificação: resultados mais promissores

IN VITRO FERTILIZATION

Comparison of concomitant outcome achieved with fresh and cryopreserved donor oocytes vitrified by the Cryotop method

Ana Cobo, Ph.D.,^a Masashigue Kuwayama, Ph.D.,^b Sonia Pérez, Ph.D.,^a Amparo Ruiz, M.D.,^a Antonio Pellicer, M.D.,^a and José Remohí, M.D.^a

^a IVI Universidad de Valencia, Valencia, Spain; and ^b Kato Ladies Clinic, Nushishinjuku, Shinjuku, Tokyo, Japan

Fertility and Sterility® Vol. 89, No. 6, June 2008
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TABLE 3

Embryo quality.

	Vitrified	Fresh	P value
Cleavage rate day 2 embryos (%)	161/171 (94.2)	176/180 (97.8)	.083
No. of cell day 2 embryos (mean ± SD)	3.8 ± 1.1	3.9 ± 1.5	.567
Good quality day 2 embryos (%)	136/161 (84.4)	126/176 (71.5)	.005
Cleavage rate day 3 embryos (%)	125/161 (77.6)	149/176 (84.6)	.098
No. of cell day 3 embryos (mean ± SD)	6.9 ± 2.3	6.9 ± 2.7	.558
Good quality day 3 embryos (%)	101/125 (80.8)	120/149 (80.5)	.956
No. of embryo undergoing extended culture	78	143	
Blastocyst rate No. (%)	38/78 (48.7)	68/143 (47.5)	.869
Good quality blastocysts No. (%)	24/32 (81.1)	42/60 (70)	.612

Cobo. Clinical outcome of oocyte vitrification. Fertil Steril 2008.

How does vitrification affect oocyte viability in oocyte donation cycles? A prospective study to compare outcomes achieved with fresh versus vitrified sibling oocytes

M. Solé^{1,2,*}, J. Santaló², M. Boada¹, E. Clua¹, I. Rodríguez³, F. Martínez¹, B. Coroleu¹, P.N. Barri¹, and A. Veiga^{1,4}

¹Reproductive Medicine Service, Department of Obstetrics, Gynecology and Reproduction, Institut Universitari Dexeus, Gran Via Carles III, Barcelona 08028, Spain ²Unit of Cellular Biology, Faculty of Sciences, Universitat Autònoma de Barcelona, Barcelona, Spain ³Unit of Biostatistics, Department of Obstetrics, Gynecology and Reproduction, Institut Universitari Dexeus, Barcelona, Spain ⁴Barcelona Stem Cell Bank, Center of Regenerative Medicine, Barcelona, Spain

Table III Clinical outcomes of cycles performed with fresh and vitrified sibling donor oocytes.

	Fresh oocytes (n = 99)	Vitrified oocytes (n = 99)
Transferred embryos (mean ± SD)	1.82 ± 0.44	1.90 ± 0.34
Clinical pregnancy rate/ transfer (%)	47 (47.5)	53 (53.5)
Implantation rate (%)	33.3	34.0
Ongoing pregnancy rate/ transfer (%)	39 (39.4)	44 (44.4)
Miscarriage rate (%)	9 (19.1)	11 (20.8)
Live birth rate/transfer (%)	38 (38.4)	42 (43.4)
Multiple pregnancy rate (%)	27.7	20.8

n.s., non-significant.

Table II Characteristics of the recipients of fresh versus vitrified sibling oocytes and their embryological data (mean ± SD unless stated otherwise).

	Fresh oocytes	Vitrified oocytes
Number of recipients/cycles	99	99
Age (years)	42.1 ± 4.84	42.2 ± 4.47
BMI (kg/m ²)	24.1 ± 4.78	23.2 ± 3.98
Male factor (%)	25.3	24.2
Oocytes received	11.1 ± 2.53*	10.0 ± 1.68*
Oocyte survival after warming (%)	N/A	85.6
Number of oocytes inseminated	11.1 ± 2.53**	8.6 ± 2.12**
Fertilization rate (%)	80.7	78.2
Ongoing embryo (%)	71.0	68.2
Good-quality embryo (%)	54.1	49.8
Recipients with frozen embryos [n (%)]	91.9	83.8

*P < 0.05.

**P < 0.01.

ACHADOS CLÍNICOS

Clinical application of oocyte vitrification: a systematic review and meta-analysis of randomized controlled trials

Ana Cobo, Ph.D.,^a and César Diaz, M.D.^b

^a Instituto Valenciano de Infertilidad, and ^b La Fe University Hospital, Valencia, Spain

Fertility and Sterility® Vol. 96, No. 2, August 2011

✓ Fertilização, desenvolvimento embrionário e gestação comparáveis.

TABLE 3

Risk of bias assessment.					
Parameter	Authors/year (reference)				
	Smith et al. 2010 (34)	Rienzi et al. 2010 (10)	Cao et al. 2009 (33)	Cobo et al. 2008 (5)	Cobo et al. 2010 (6)
Study period	Jan 2005–Apr 2009	Sep 2008–Mar 2009	Not stated	Dec 2006–Nov 2007	Nov 2008–Sep 2009
Country	Brazil	Italy	China	Spain	Spain
Intervention	Vitrification vs. SF	Vitrification vs. fresh	Vitrification vs. SF	Vitrification vs. fresh	Vitrification vs. fresh
Design	Two parallel arms	Two parallel arms	Two parallel arms	Two parallel arms	Two parallel arms
Randomization method	Random number generator	Random number generator	Not stated	Random number generator	Random number generator
Unit of randomization	Patient (own-eggs cryopreservation)	Sibling oocyte	Not stated	Sibling oocyte	Patient (recipients of an oocyte donation program)
Allocation concealment	Random number generator	Central randomization	Not stated	Central randomization	Central randomization
Blinding level	Open label	Open label	Open label	Double blinded	Triple blind
Sample size calculation	One sample size was determined by the number of warmings and thawings within a specific time	Noninferiority of vitrification basis (17% max absolute difference of fertilization rate); n = 111 oocytes/group	Not stated	Equivalence test for the proportion of zygotes/MII oocytes (mean 0.75 ± 0.18 /MII oocyte. Equivalence defined as $\pm 5\%$; n = 222 oocytes/group	Superiority of fresh cycles basis (12% min absolute difference of ongoing pregnancy rate); n = 287 patients/group
Conflict of interest	The main author is a member of the Scientific Advisory Board of Medicult	Not stated	None	None	None

Cobo. Meta-analysis of the use of oocyte vitrification. Fertil Steril 2011.

ACHADOS CLÍNICOS

Six years' experience in ovum donation using vitrified oocytes: report of cumulative outcomes, impact of storage time, and development of a predictive mode for oocyte survival rate

Ana Cobo, Ph.D., Nicolás Garrido, Ph.D., M.Sc., Antonio Pellicer, M.D., and José Remohí, M.D.

IVI-Valencia, Institut Universitari IVI, Valencia, Spain

Fertility and Sterility® Vol. 104, No. 6, December 2015 0015-0282/\$36.00

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<http://dx.doi.org/10.1016/j.fertnstert.2015.08.020>

TABLE 2

Clinical outcome.

Variable	n (%)
No. of cycles	3,467
MII oocytes injected/donation cycle (mean)	37,725 (10.9)
Fertilization rate	26,869 (71.2)
No. of fresh ETs/donation cycle	3,050/3,467 (87.9) ^a
Mean no. of embryos replaced (mean)	5,695 (1.9)
Implantation rate (no. of sacs/no. of embryos transferred)	29.0 (2,220/5,695)
Clinical pregnancy rate/transfer	1,678/3,050 (55.0)
Clinical pregnancy rate/cycle	1,678/3,467 (48.4)
Clinical miscarriage	274 (16.3)
Ectopic pregnancy	22 (1.3)
Ongoing pregnancy/transfer	1,382 (45.3)
Ongoing pregnancy/cycle	1,382 (39.9)
Delivery rate/donation cycle	1,357/3,467 (39.1)

✓ 3610 ciclos de vitrificação e aquecimento: 42 172 oócitos maduros

TABLE 1

Survival and clinical outcome according to storage time.

Storage time, months	No. of WP	No. of surviving oocytes (SR/WP)	95% CI	CPR/WP	95% CI	OPR/WP	95% CI	IR	95% CI
≤6	2,312	24,427 (90.1)	89.1–90.5	0.090 (47.5)	45.5–49.5	902 (39.4)	37.4–41.4	39.7	37.9–41.5
>6 and ≤12	646	6,855 (90.2)	89.1–90.9	0.296 (45.1)	41.3–48.9	237 (36.1)	32.4–39.8	37.9	35.7–40.1
>12 and ≤18	315	3,495 (91.1)	90.1–92.1	0.135 (42.7)	37.3–48.2	117 (37)	31.7–42.3	38.1	35.3–40.9
>18 and ≤24	184	1,938 (94.3)	93.3–95.3	0.090 (46.4)	39.4–53.4	75 (38.7)	31.9–45.5	38.4	34.3–42.4
>24 and ≤36	123	1,153 (87.5)	85.1–89.5	0.056 (45.5)	36.7–54.3	40 (32.5)	24.2–40.8	35.6	21.9–41.3
>36 and ≤48	23	160 (88.4)	83.1–93.1	0.07 (30.4)	11.6–49.2	7 (30.4)	11.6–49.2	36	21.9–50.1
>48 and ≤60	6	45 (91.8)	84.1–99.5	0.03 (50)	6.2–93.8	3 (50)	10–90.1	100	100–100
>60	1	14 (93.3)		0.01 (100)		1 (100)		50	–
Total	3,610	38,087 (90.3)		0.0678 (46.5)		1,382 (38.3)		39	

Note: Data are expressed as means and proportions with their corresponding 95% CI. No statistical differences were observed while comparing each outcome parameter according to all categories of storage time. SR = survival rate; WP = warming procedures; CPR = clinical pregnancy rate (%).

Cobo. Six years of experience in ovum donation. Fertil Steril 2015.

ACHADOS CLÍNICOS

Autor	Ano	Receptora	Oócitos vitrificados	Taxa de sobreviv	Taxa de Fertilização		Taxa de blastocisto		Taxa de Implantação	
					Vitri	Fresco	Vitri	Fresco	Vitri	Fresco
Cobo et al.	2008	30	231	96,9	76,3	82,2	48,7	47,5	40,8	-
Nagy et al.	2009	19	153	89,0	87,0	67,0	68,0	-	55,3	47,4
Cobo et al.	2010	600	3826	92,5	74,2	73,3	-	-	39,9	40,9
Garcia et al.	2011	119	283	89,4	76,1	87,5	41,3	45,3	43,9	42,9
Trokoudes et al.	2011	77	210	91,4	84,4	86,6	-	-	24,7	25,6
Stoop et al.	2012	20	123	90,2	77,5	-	-	-	33,3	
Solé et al.	2013	198	-	85,6	78,2	80,7	-	-	34,0	33,3

ACHADOS CLÍNICOS

Letters

Vitaly A. Kushnir, MD
David H. Barad, MD, MS
David F. Albertini, PhD
Sarah K. Darmon, PhD
Norbert Gleicher, MD

RESEARCH LETTER

Outcomes of Fresh and Cryopreserved Oocyte Donation

JAMA August 11, 2015 Volume 314, Number 6

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✓ Controle de variáveis de confusão?

Table. Outcomes of Fresh and Cryopreserved Donor Oocyte Cycles Reported to the Society for Assisted Reproductive Technology in 2013

	Fresh Donor Oocytes			Cryopreserved Donor Oocytes			P Value
	No.	Per ^a	% (95% CI)	No.	Per ^a	% (95% CI)	
Live birth per recipient start	4425	8921	49.6 (48.6-50.6)	962	2227	43.2 (41.2-45.3)	<.001
Live birth per embryo transfer	4418	7875	56.1 (55.0-57.2)	960	2038	47.1 (45.0-49.3)	<.001
Canceled cycles	1046	8921	11.7 (11.1-12.4)	189	2227	8.5 (7.4-9.7)	<.001
Mean No. of embryos transferred	1.7	NA	(1.7-1.7) ^b	1.6	NA	(1.6-1.7) ^b	.001

Abbreviation: NA, not applicable.

^a Per started recipient cycle, the live birth rates were 49.6% with fresh vs 43.2% with cryopreserved oocytes (difference, 6.4% [95% CI, 4.1%-8.7%]; $P < .001$).

Per embryo transfer, the live birth rates were 56.1% with fresh vs 47.1% with cryopreserved oocytes (difference, 9.0% [95% CI, 6.6%-11.4%]; $P < .001$).

^b Indicates the 95% CI for the mean.

OUTRAS APLICAÇÕES

J Assist Reprod Genet (2017) 34:479–486
DOI 10.1007/s10815-016-0868-0



ASSISTED REPRODUCTION TECHNOLOGIES

The accumulation of vitrified oocytes is a strategy to increase the number of euploid available blastocysts for transfer after preimplantation genetic testing

Sandrine Chamayou¹ • Maria Sicali¹ • Carmelita Alecci¹ • Carmen Ragolia¹ • Annalisa Liprino¹ • Daniela Nibali¹ • Giorgia Storaci¹ • Antonietta Carri • Antonino Guglielmino¹

J Assist Reprod Genet (2013) 30:1465–1470
DOI 10.1007/s10815-013-0103-1

ASSISTED REPRODUCTION TECHNOLOGIES

Accumulation of oocytes from a few modified natural cycles to improve IVF results: a pilot study

Ermanno Greco • Katarzyna Litwicka • Cristiana Arrivi • Maria Teresa Varricchio • Daniela Zavaglia • Cecilia Mencacci • Maria Giulia Minasi

- ✓ Vitrificação de oócitos sugerida como uma estratégia para melhorar os resultados de ciclos de reprodução assistida que não apenas casos de ovulação

Reproductive BioMedicine Online (2012) 24, 424–432



ELSEVIER

ARTICLE

Accumulation of oocytes: a new strategy for managing low-responder patients

A Cobo^{a,*}, Nicolás Garrido^b, Juana Crespo^c, Remohí José^c, Antonio Pellicer^c

OUTRAS APLICAÇÕES

Fertility preservation 3

Fertility preservation for age-related fertility decline

Dominic Stoop, Ana Cobo, Sherman Silber

Lancet 2014; 384: 1311-19



- ✓ Criopreservação social de oócitos:
Preservação da fertilidade em antecipação ao declínio por idade.



How does vitrification affect oocyte viability in oocyte donation cycles? A prospective study to compare outcomes achieved with fresh versus vitrified sibling oocytes

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Table I Donor baseline characteristics and stimulation parameters (mean ± SD).

Number of donors	99
Age (years)	26.1 ± 4.33
BMI (kg/m ²)	21.7 ± 2.88
Days of stimulation	8.5 ± 2.59
Total dose of gonadotrophin IU	1515.0 ± 714.92
Number of oocytes retrieved	24.9 ± 5.73

Outros países

Pacientes jovens e férteis

Doação compartilhada:
Idade avançada
Fator de infertilidade

Brasil

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human
reproduction

ORIGINAL ARTICLE Embryology

Embryo development of fresh ‘versus’ vitrified metaphase II oocytes after ICSI: a prospective randomized sibling-oocyte study

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Table II Clinical outcomes of cycles performed with vitrified/warmed oocytes

	Patients included (N = 40)
Number of warmed oocytes (mean ± SD)	3.1 ± 0.30
Number of embryos transferred (mean ± SD)	2.3 ± 0.88
Number of embryo transfer performed (%)	39/40 (97.5)
Clinical pregnancy rate per cycle (%)	15/40 (37.5)
Clinical pregnancy rate per transfer (%)	15/39 (38.5)
Ongoing pregnancy rate per cycle (%)	12/40 (30.0)
Ongoing pregnancy rate per transfer (%)	12/39 (30.8)
Implantation rate (%)	19/93 (20.4)
Ongoing implantation rate (%)	16/93 (17.2)

Table III Primary and secondary outcomes measures: fertilization, pronuclear morphology, embryo development and embryo morphology of fresh and vitrified sibling oocytes

	Fresh ICSI	Vitrified/Warmed ICSI (%)	Absolute difference (%) (95% CI)	OR (95% CI)	P
Fertilization (2PN) per sibling oocyte	100/120 (83.3) ^b	95/124 (76.6) ^a	−6.73 (−16.6 to 3.39)	0.65 (0.33 to 1.29)	0.20
Fertilization (2PN) per injected oocyte	100/120 (83.3) ^b	95/120 (79.2) ^b	−4.17 (−14.0 to 5.7)	0.76 (0.37 to 1.53)	0.50
Normal 2PN morphology	96/100 (96.0) ^c	86/95 (90.5) ^c	−5.47 (−13.4 to 1.84)	0.39 (0.08 to 1.49)	0.16
1PN oocytes	3/120 (2.5) ^b	6/120 (5.0) ^b	2.5 (−2.82 to 8.22)	2.05 (0.42 to 12.9)	0.50
3PN	1/120 (0.83) ^b	2/120 (1.66) ^b	0.83 (−3.09 to 5.1)	2.01 (0.10 to 119.9)	1
Degenerated oocytes post-ICSI	1/120 (0.83) ^b	4/120 (3.34) ^b	2.51 (−1.75 to 7.47)	4.08 (0.39 to 203.5)	0.37
Day 2 embryo development	100/100 (100) ^c	93/95 (97.9) ^c	−2.11 (−7.3 to 1.9)	0.0 (0.00 to 0.23)	0.24
Excellent quality embryos	52/100 (52.0) ^d	49/95 (51.6) ^d	−0.43 (−14.2 to 13.3)	0.98 (0.53 to 1.79)	0.90
Good quality embryos	38/100 (38.0) ^d	41/95 (43.2) ^d	5.16 (−8.49 to 18.6)	1.24 (0.67 to 2.28)	0.47
Fair/poor quality embryos	10/100 (10.0) ^d	3/95 (3.16) ^d	−6.84 (−14.6 to 0.42)	0.29 (0.05 to 1.19)	0.10

Embryo development and gestation using fresh and vitrified oocytes

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Table II Fertilization, pregnancy and implantation rates of fresh and vitrified/thawed human oocytes.

	Fresh oocytes (Group 1)	Vitrified/thawed oocytes (Group 2)	P
No. of cycles	79	46	0.191
Patients age*	34.2 ± 4.5	35.4 ± 5.0	
No. of fresh oocytes	906	—	
No. of thawed oocytes	—	252	
No. of surviving thawed oocytes (%)	—	214 (84.9%)	0.876
No. microinjected oocytes	413	214	
No. of fertilized oocytes (%)	336 (81.3%)	173 (80.8%)	
No. of transferred embryos*	3.57 ± 1.03	3.46 ± 1.34	
No. of blastomeres*	6.86 ± 2.07	6.35 ± 2.26	0.010**
Total of grade I and II embryos (%)	158 (47.0%)	69 (39.9%)	0.125
Pregnancy rate per transfer (%)	41 (51.9%)	21 (45.6%)	0.500
Implantation rate (%)	21.3%	14.9%	0.089

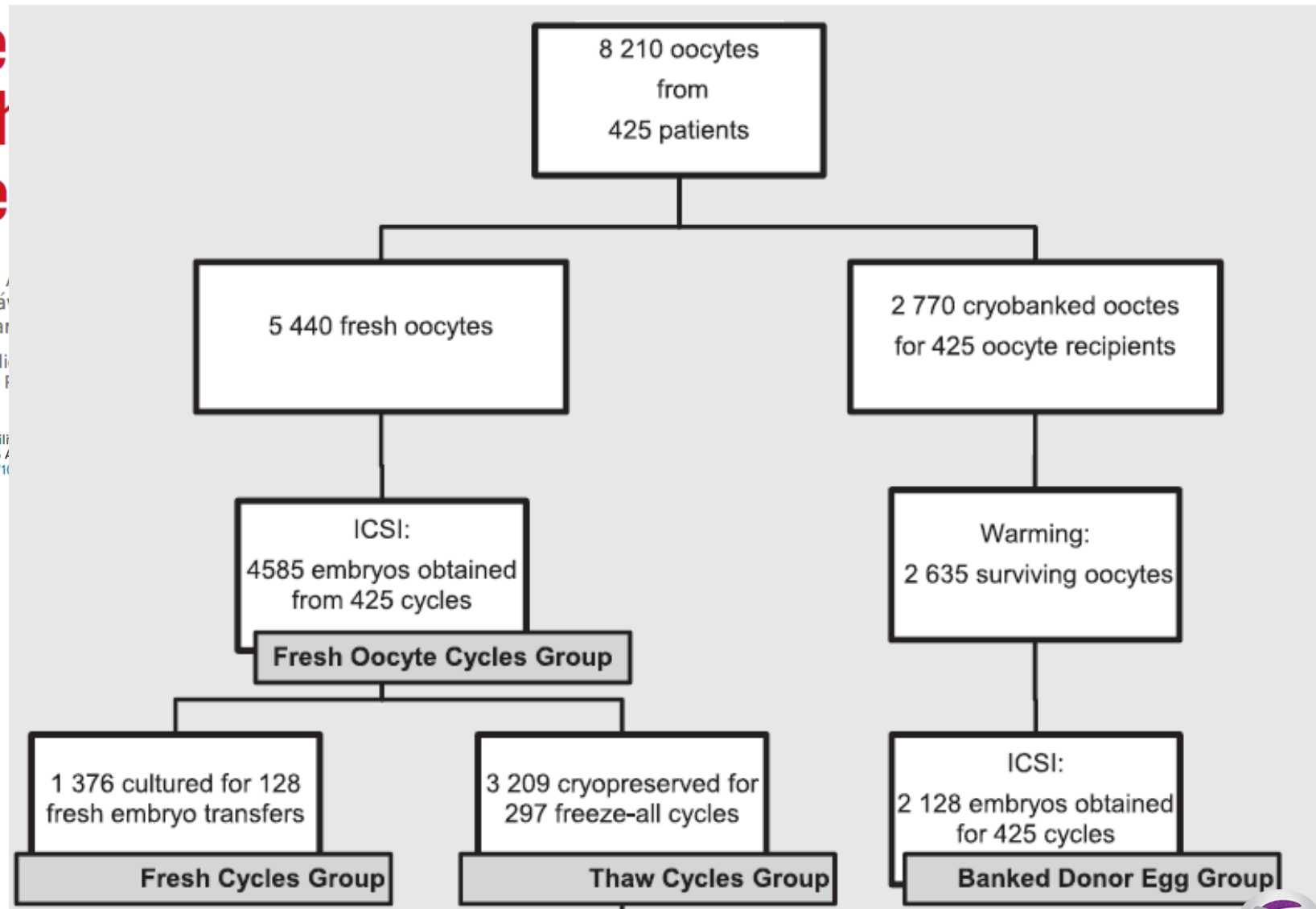
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TABLE 1

Comparison of the characteristics of patients and cycles, embryo quality on days 2 and 3, and blastocyst formation rate of the Fresh Oocyte Cycles Group and the Banked Donor Egg Group.

Variable	Group		P value
	Fresh oocyte cycles	Banked donor egg	
Cycles (n)	425	425	
Embryos (n)	4,585	2,128	
Female age (y)	31.3 ± 3.3	41.4 ± 5.5	< .001
Male age (y)	35.1 ± 5.5	41.2 ± 7.2	< .001
No. of follides	33.7 ± 12.9	—	NC
Sperm concentration (×10 ⁶ /mL)	46.5 ± 51.0	44.3 ± 39.9	.477
Sperm progressive motility (%)	44.0 ± 15.5	45.4 ± 16.8	.212
Sperm morphology (%)	1.5 ± 2.3	1.4 ± 1.8	.484
No. of oocytes	25.8 ± 9.7	—	NC
No. of metaphase II oocytes	19.4 ± 7.8	—	NC
Oocyte survival rate (%)	—	94.4%	NC
Injected oocytes	12.8 ± 4.8	4.3 ± 1.3	NC
Embryos	10.8 ± 4.3	3.4 ± 3.0	NC
Fertilization rate	85.4 ± 14.4	80.2 ± 18.2	< .001
Transferred embryos	1.6 ± 1.0	1.8 ± 1.1	< .001
High-quality embryos on D2, % (n)	43.2 (1,984/4,585)	31.5 (670/2,128)	< .001
High-quality embryos on D3, % (n)	38.6 (1,770/4,585)	30.7 (655/2,128)	< .001
Blastocyst formation, % (n)	41.1 (1,885/4,585)	36.6 (779/2,128)	< .001

TABLE 2

Comparison of oocyte/embryo survival rate, total usable embryos rate, and clinical outcomes considering the status of transferred embryos.

Variable	Group			P value
	Fresh cycles (n = 128)	Thaw cycles (n = 297)	Banked donor egg (n = 425)	
Oocyte/embryo survival rate	NA	98.6 (3,165/3,209) ^b	95.1 (2,635/2,770) ^a	< .001
Total usable embryos rate	36.4 (501/1,376) ^c	NA	39.7 (846/2,128) ^d	.047
Pregnancy rate	39.8 (51/128) ^e	71.4 (212/297) ^f	49.6 (211/425) ^g	< .001
Miscarriage rate	9.4 (5/53)	10.8 (23/212)	12.8 (21/164)	.679
Implantation rate	37.2 ± 41.1 ^h	67.3 ± 38.4 ⁱ	43.0 ± 41.0 ^j	< .001

Note: Data presented as % (n/N) or mean ±SD. Fresh oocytes and fresh embryos = fresh cycles group; fresh oocytes and vitrified embryos = thaw cycles group; and vitrified oocytes (banked donor egg group). Superscripts: a ≠ b; c ≠ d; e ≠ f ≠ g; h ≠ i ≠ j. NA = not applicable.

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TABLE 3

Regression analyses results for the effect of oocyte cryopreservation, embryo cryopreservation, and fresh embryo transfers on pregnancy and implantation.

Variable	Experimental group		
	Fresh cycles	Thaw cycles	Banked donor egg
Implantation			
Fresh cycles	—	RC = 11.5% ^a	RC = 3.5% ^a
Banked donor egg	—	RC = 5% ^a	—
Pregnancy			
Fresh cycles	—	OR: 1.83; ^a CI: 1.35–2.48 ^a	OR: 1.24; ^a CI: 1.16–1.38 ^a
Banked donor egg	—	OR: 1.27; ^a CI: 1.17–1.44 ^a	—

Note: Regression coefficient (RC), odds ratio (OR), or 95% confidence interval (CI) after adjustment for endometrial thickness, serum progesterone level on human chorionic gonadotropin (hCG) trigger, serum estradiol level on hCG trigger, total dose of follicle-stimulating hormone used for ovarian stimulation, and the quality of transferred embryos, using binary logistic regression or linear

Doadoras submetidas a EOC: efeito no endométrio?

CONCLUSÕES

- Os benefícios práticos do uso de bancos de oócitos vitrificados, em programas de doação de óvulos, são inúmeros como: flexibilidade, eficiência, facilidade e segurança;
- A criopreservação de oócitos, por meio da vitrificação ganha espaço em centros de reprodução, com excelentes resultados em programas de ovodoação;
- A criopreservação de oócitos parece ser uma boa alternativa, comparável a FIV com oócitos frescos, em programas de doação compartilhada de óvulos;
- Porém mais estudos, nessa população, são necessários antes que possamos indicar a criopreservação de óvulos para todos os casos de ovodoação em nosso país.



**“When you get back, tell your hotshot scientists
that we’ve been reproducing with frozen
sperm and eggs for years!”**

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