



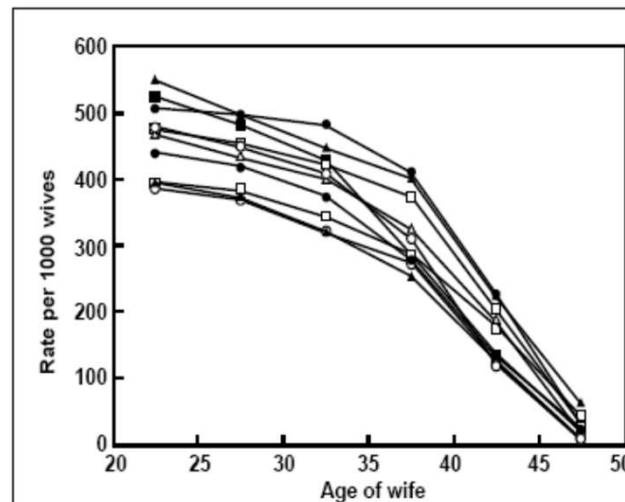
# ¿Es la vitrificación la solución a los problemas de edad?

Clara González Llagostera  
GI Preservación de la Fertilidad



## Fertilidad natural y edad

Figure 2. Natural fertility by age



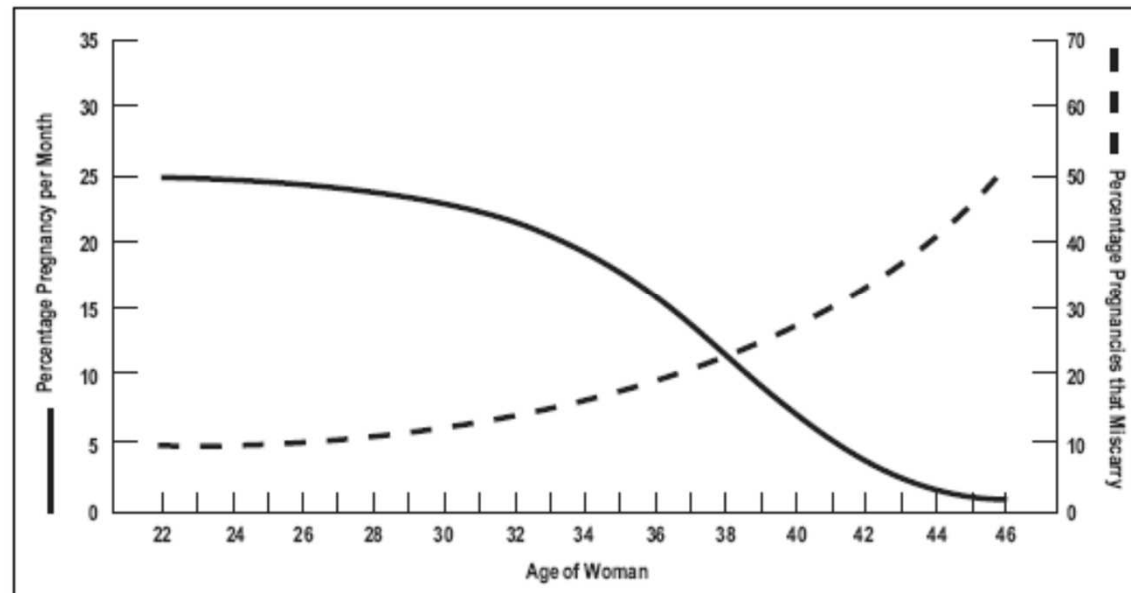
The ten populations (in descending order at age 20 to 24) are Hutterites, marriages 1921-30 (▲); Geneva bourgeoisie, husbands born 1600-49 (■); Canada, marriages 1700-30 (●); Normandy, marriages 1760-90 (○); Hutterites, marriages before 1921 (□); Tunis, marriages of Europeans 1840-59 (△); Normandy, marriages 1674-1742 (●); Norway, marriages 1874-76 (□); Iran, village marriages, 1940-50 (▲); Geneva bourgeoisie, husbands born before 1600 (○).

Menken J, Trussell J, Larsen U. Age and infertility. Science 1986; 233(4771):1389-1394.4 Reprinted with permission from AAAS.



## Fertilidad natural y edad

Figure 1. Natural conception: schematic demonstrating trends in pregnancy and miscarriage rates according to age



Reproductive Ageing: Guidelines for First Line Physicians for Investigation of Infertility Problems (Canadian Fertility and Andrology Society;2004). Used with permission.



## Técnicas de reproducción asistida y edad

**Analysis of 2,386 consecutive cycles of in vitro fertilization or intracytoplasmic sperm injection using autologous oocytes in women aged 40 years**

**La edad es el factor más importante que determina la tasa de éxito en las TRA**

**121,744 Women Embarking on Their First IVF Cycles**

Siladitya Bhattacharya\*, Abha Maheshwari, Jill Mollison

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of



## Diminished effect of maternal age on implantation after preimplantation genetic diagnosis with array comparative genomic hybridization

Gary L. Harton, B.S.,<sup>a</sup> Santiago Munné, Ph.D.,<sup>b</sup> Mark Surrey, M.D.,<sup>c</sup> Jamie Grifo, M.D., Ph.D.,<sup>d</sup> Brian Kaplan, M.D.,<sup>e</sup> David H. McCulloh, Ph.D., H.C.L.D.,<sup>d</sup> Darren K. Griffin, Ph.D.,<sup>f</sup> and Dagan Wells, Ph.D.,<sup>g,h</sup> for the PGD Practitioners Group<sup>1</sup>

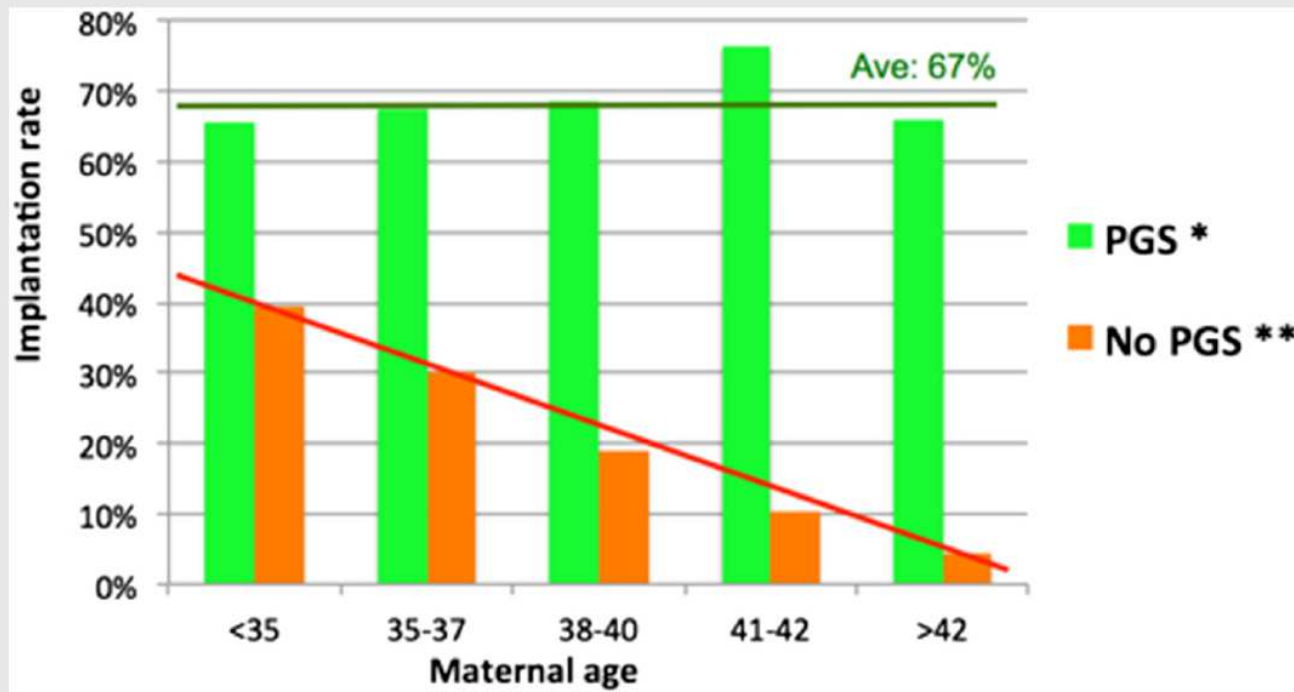
**TABLE 1**

Comparison of implantation rate and aneuploidy rate between biopsy at day 3 or day 5/6 by SART age group.

Age group (y)	Day 3 biopsy		Age group (y)	Day 5/6 biopsy	
	Implan. <sup>a,b</sup> (+Sac)	Aneuploidy rate <sup>c,d</sup>		Implan. <sup>a,b</sup> (+Sac)	Aneuploidy rate <sup>c,d</sup>
<35	40.6% (73/180)	53.1% (530/999)	<35	51.1% (119/233)	31.7% (306/966)
35–37	43.6% (44/101)	68.2% (420/616)	35–37	54.2% (65/120)	44.2% (237/536)
38–40	42.1% (59/140)	73.7% (659/894)	38–40	47.2% (59/125)	43.1% (324/751)
41–42	31.6% (18/57)	85.8% (460/536)	41–42	40.4% (19/47)	76.3% (200/262)
>42	7/30	92.6% (340/367)	>42	5/18	84.8% (112/132)
<i>P</i> value	NS	<.001	<i>P</i> value	NS	<.001
Total	39.6% (201/508)	70.6% (2409/3412)	Total	49.2% (267/543)	47.8% (1179/2467)



# PGS



Implantation rates after transfer of euploid embryos are independent of maternal age. \* 2,532 cycles of PGD-A by aCGH with known outcome to 8/2015 from Harton et al. (2) and unpublished data; \*\* 2013 SART data.

Munné. *Conceptions. Fertil Steril* 2016.

La preservación de la fertilidad por motivos sociales se ha propuesto como una opción a tener en cuenta.





## Vitrificación ovocitos. Resultados obstétricos y perinatales.

Obstetric and perinatal outcomes.	Fresh oocytes (N = 996)	Vitrified oocytes (N = 804) <sup>a</sup>	P value
<b>Pregnancy outcome</b>			
1 <sup>st</sup> trimester bleeding	287 (28.8)	267 (33.2)	.045
Invasive procedures <sup>b</sup>	94 (9.4)	124 (15.4)	< .001
Anemia (Hb <11 g/dL)	61 (6.1)	52 (6.5)	NS
Gestational cholestasis	18 (1.8)	19 (2.4)	NS
Diabetes	94 (9.4)	75 (9.3)	NS
2 <sup>nd</sup> & 3 <sup>rd</sup> trimester bleeding	62 (6.2)	69 (8.6)	NS
PROM <37 wk	64 (6.4)	44 (5.5)	NS
Pregnancy-induced hypertension	122 (12.2)	103 (12.8)	NS
Urinary tract infection	77 (7.7)	38 (4.7)	< .03
<b>Delivery outcome</b>			
Weeks at delivery	38.2 (38.0–38.4)	38.2 (38.0–38.4)	NS
Preterm births (<37 wk)	226 (22.7)	175 (21.8)	NS
Very preterm births (<34 wk)	61 (6.1)	37 (4.6)	NS
Cesarean section	608 (61.0)	546 (67.9)	< .001
Puerperal problems	69 (6.9)	51 (6.4)	NS
	<b>(N = 1,224)</b>	<b>(N = 1,027)<sup>a</sup></b>	
<b>Neonatal outcome</b>			
Female neonates	580 (47.4)	553 (53.8)	< .003
Birth weight (g)	2,871 (2,834–2,908)	2,859 (2,818–2,901)	NS
Birth weight female neonate (g)	2,843 (2,816–2,870)	2,823 (2,810–2,876)	NS
Birth weight male neonate (g)	2,893 (2,851–2,934)	2,843 (2,816–2,871)	NS
LBW (<2,500 g)	341 (27.8)	277 (27.0)	NS
VLBW (<1,500 g)	30 (2.5)	24 (2.3)	NS
SGA (birth weight <10 <sup>th</sup> percentile)	208 (17.0)	201 (19.6)	NS
Neonatal height (cm)	48.8 (48.7–49.0)	48.9 (46.6–49.1)	NS
Apgar score at 1 min	8.9 (8.8–8.9)	8.8 (8.7–8.9)	NS
Apgar score at 5 min	9.6 (9.5–9.6)	9.6 (9.5–9.6)	NS
Apgar score at 10 min	9.6 (9.5–9.7)	9.6 (9.5–9.7)	NS
Birth defects	17 (1.4)	17 (1.7)	NS
Major malformations	10 (0.8)	7 (0.7)	NS
Minor malformations	7 (0.6)	10 (1.0)	NS
Admission to NICU	175 (14.3)	145 (13.1)	NS
Days at the NICU	12.6 (10.5–14.7)	12.3 (10.0–14.5)	NS
Perinatal mortality <sup>c</sup>	2 (0.2)	2 (0.2)	NS

Note: Values expressed as N (%) or mean (95% confidence interval [CI]). Hb = hemoglobin; LBW = low birth weight; NICU = neonatal intensive care unit; NS = not significant; PROM = premature rupture of membranes; SGA = small for gestational age; VLBW = very low birth weight.

<sup>a</sup> There were three sets of triplets.

<sup>b</sup> Chorionic villous sampling or amniocentesis; no abnormal results found.

<sup>c</sup> One stillbirth and one neonatal death in each group.

Cobo. Pregnancy outcome with vitrified oocytes. Fertil Steril 2014.





## ¿Cuándo vitrificar?

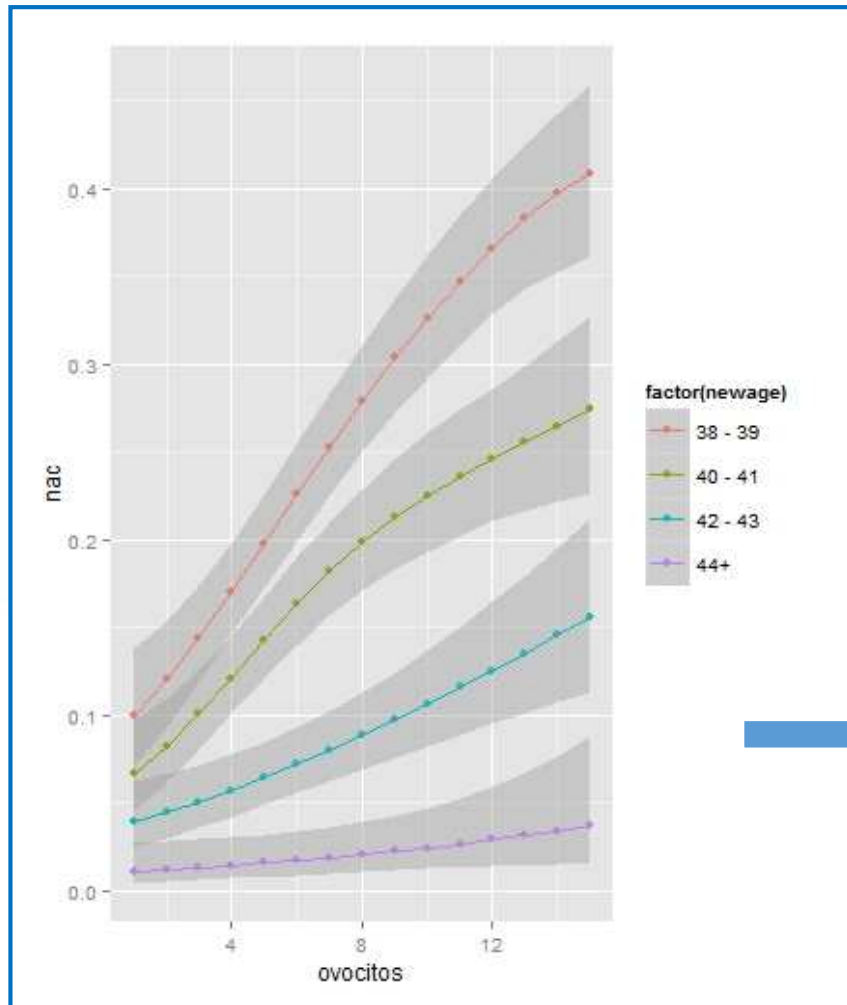
Survival and clinical outcomes according to age at time of vitrification, n (%).

Age, y	Patients, n	Cycles, n	Survival rate, n (%)	CPR/cycle, n (%)	CPR/ET, n (%)	OPR/cycle, n (%)	OPR/ET, n (%)	Live births/patients, n (%)
Survival and clinical outcomes in patients aged <35 y and ≥36 y at vitrification								
≤35	32	41	257/272 (94.6) <sup>a</sup>	24/41 (58.5) <sup>a</sup>	24/39 (61.5) <sup>a</sup>	21/41 (51.2) <sup>a</sup>	21/39 (53.9) <sup>a</sup>	16/32 (50) <sup>a</sup>
≥36	105	150	750/910 (82.4) <sup>b</sup>	47/150 (31.3) <sup>b</sup>	47/118 (39.8) <sup>b</sup>	27/150 (18.0) <sup>b</sup>	27/118 (22.9) <sup>b</sup>	24/105 (22.9) <sup>b</sup>
Total	137	191	1,007/1,182 (85.2)	71/191 (37.1)	71/157 (45.2)	48/191 (25.1)	48/157 (30.5)	40/137 (29.2)
Survival and clinical outcomes according to different groups of age at vitrification								
≤29	6	9	59/62 (94.5) <sup>a</sup>	6/9 (66.6) <sup>a</sup>	6/9 (66.6) <sup>a</sup>	6/9 (66.6) <sup>a</sup>	6/9 (66.6) <sup>a</sup>	6/6 (100) <sup>a</sup>
30–34	20	23	155/161 (96.1) <sup>a</sup>	14/23 (60.9) <sup>a</sup>	14/21 (66.7) <sup>a</sup>	13/23 (56.5) <sup>a</sup>	13/21 (61.9) <sup>a</sup>	9/20 (45) <sup>b</sup>
35–39	84	127	601/734 (81.8) <sup>b</sup>	48/127 (37.8) <sup>b</sup>	48/112 (42.9) <sup>b</sup>	27/127 (21.3) <sup>b</sup>	27/112 (24.1) <sup>b</sup>	24/84 (28.5) <sup>b</sup>
≥40	27	32	192/225 (85.3) <sup>b</sup>	3/32 (9.8) <sup>c</sup>	3/15 (20) <sup>c</sup>	2/32 (6.3) <sup>c</sup>	2/15 (13.3) <sup>b</sup>	1 (3.7) <sup>c</sup>
Total	137	191	1,007/1,182 (85.2)	71/191 (37.1)	71/157 (45.2)	48/191 (25.1)	48/157 (30.5)	40/137 (29.2)

Note: Abbreviations as in Table 1.

<sup>a,b,c</sup> Different superscripts in the same column indicate statistical differences ( $P < .05$ ).

Cobo. Oocyte vitrification for elective FP. Fertil Steril 2016.



## ¿Cuándo vitrificar?

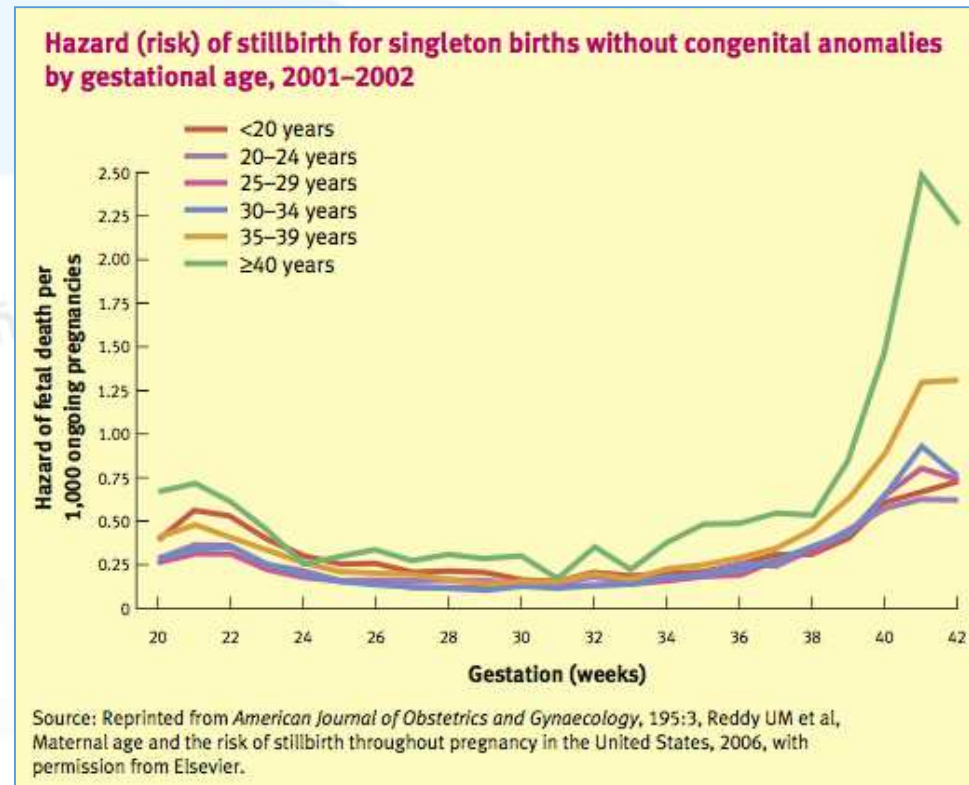
Num. ovocitos	4	8	12
38-39 a	16%	27%	36%
40-41 a	12%	19%	24%
42-43 a	5%	8%	12%
≥44 a	1%	2%	2%



## Riesgos obstétricos y edad



Aborto  
Diabetes  
HTA  
Pre eclampsia  
Prematuridad  
Bajo peso al nacer  
Placenta previa  
Metrorragia





## INFERTILITY

### **Fertility and aging: do reproductive-aged Canadian women know what they need to know?**

*Karla L. Bretherick, Ph.D.,<sup>a,b</sup> Nichole Fairbrother, Ph.D.,<sup>b,c</sup> Luana Avila, B.Sc.,<sup>a,b</sup> Sara H. A. Harbord, M.Sc.,<sup>a,b</sup> and Wendy P. Robinson, Ph.D.<sup>a</sup>*

¿La mujer es consciente de la disminución de la fertilidad ?

Encuesta a 360 mujeres.

Conocen el problema pero lo infravaloran.

Importante la educación/información.



## Conclusiones

- Las técnicas de reproducción asistida **mitigan el efecto de la edad** en la fertilidad pero no pueden compensar los riesgos obstétricos inherentes.
- La preservación de la fertilidad debe ofrecerse como una **medida preventiva**, informando a las pacientes que no existe garantía total de éxito.
- Los centros de reproducción asistida que ofrecen programas de preservación de la fertilidad, deben poseer **experiencia validada** en vitrificación de ovocitos.
- Profesionales de la reproducción asistida, obligación de **promover en la sociedad** el efecto de la edad en la fertilidad femenina. *Bretherick et al 2010*