

Experience from Public Health System : French CECOS experience



Dominique ROYERE
Médecine et Biologie de la Reproduction
Cecos de Tours, France

Historical perspective (2)

- To understand what was the context of AID in the mid nineties, it may useful to remember some positions
- Academy of Moral and Political Sciences "introducing in a family fraudulently a child who will share the same name from the man whose he will consider to be the son has to be considered as a breach to marriage, family and society"
- Arguments like violation of natural law, assimilation to adultery, mercenary and unfairness were often adressed.

Historical perspective (1)

- First Cecos (Centre d'Etude et de Conservation du Sperme humain) created in 1973 in Paris (Georges David)
- At that time, such alternative to male infertility was often expensive and always source of culpabilisation
- Fundamental basis were gratuity of sperm donation and availability to men who already fathered

Historical perspective (3)

- Legitimacy of gamete donation was obviously linked to paternal filiation based on alternative to biological filiation
- Public health system offered the opportunity to manage gamete donation with transparency in regard to both practical aspects and epidemiological evaluation while preserving its confidentiality
- Previous fathering for the donor aimed to clearly differentiate between his own lineage and the recipients'

Juridical and regulating perspective (1)

- First law on BioEthics in 1994, revised in 2004, to be revised in 2010
- Classified both gamete and embryo donation in the same principle of gratuitous act and anonymity as for any human tissue or organ
- Established the legal conditions for statement on parental relationship

Organization and management (1)

- Donors recruitment
- Sperm banking for donors
- Epidemiological follow up
- Regulation of use of donor sperm
- Self preservation for patients in sterilizing conditions

Organization and management (2)

- Executive committee
- Genetics committee
- Ethical committee
- Psychology committee
- Scientific committee

Incidence of birth defects after artificial insemination with frozen donor spermatozoa: a collaborative study of the French CECOS Federation on 11 535 pregnancies

Human Reproduction vol 11 no 10 pp 2309-2323, 1996

Table 5. Outcomes of pregnancies

Parameter	n	(%)
Gestations ending	11 000	
- Intrauterine sex transfer (N)	21	
Pregnancies with known outcome	11 331	
- Ectopic pregnancies (N)	59	
- Fetal losses (N)	171	
- Medical terminations (N)	64	
Deliveries (n = 10 871)		
- Multiple pregnancies (N)	44	

Table 12. Incidence of birth defects from 9794 births and 10 871 fetuses after artificial insemination

	No. affected	n
Malformations		
- Cardiac	11	38
- Lung*	23	26
- Urology	13	12
- Central	54	4
- Otorhinolarynx	13	10
- Central nervous	12	10
- Musculoskeletal	54	4
- Facial	13	10
- Associated malformations (non-chromosomal)	13	38
Chromosomal anomalies		
- Karyotype	13	10
- Others	11	13
- Not determined†	61	1

*Including congenital tuberculosis of the lung and hydrocephalus.
 †Including congenital hydrocephalus.
 ‡Chromosomes with chromosomal anomaly not studied.

Table 13. Incidence of trisomy 21 (per thousand) according to maternal and donor ages in 9794 births and 10 871 fetuses after genetic diagnosis

Age (years)	Maternal age	Donor age
<35	1.6	1.6
35-39	4.9	2.3
>39	21.6	4.1
Significance	P < .001	P < 0.05

Table 14. Incidence of trisomy 21 (per thousand) as a function of maternal and donor ages in 9794 births and 10 871 fetuses after prenatal diagnosis

Maternal age (years)	Donor age (years)	
	<38	≥38
<38	1.3	2.4
≥38	4.4	23.1

Relationship with the age of the mother when the donor age is kept constant, P < 0.005. Relationship with the age of the donor when maternal age is kept constant, P = 0.05.

Human Reproduction vol 11 no 10 pp 2314-2323, 1996

Prevalence of chromosomal abnormalities in phenotypically normal and fertile adult males: large-scale survey of over 10 000 sperm donor karyotypes

C. Baré¹, J. Berthou¹, J.-L. Brisson¹, Jean Pierre Siffert² and the Genetics Commission of the French Federation of CECOS

Hum Reprod 2014, Vol. 29, Suppl. 1, 189-190, 2014

BACKGROUND: Sperm donors represent an appropriate population for evaluating the frequency of chromosomal abnormalities in phenotypically normal and fertile adult males. **METHODS:** A large multicentric retrospective study was made within the French CECOS (Centre d'Etude et de Conservation des Ovules et du Sperm) for collecting cytogenetic, biological and familial data in sperm donors over a 15 year period. **RESULTS:** As a whole, 10 202 karyotypes have been recorded. Thirty-eight karyotype abnormalities (0.37%) have been diagnosed including 21 balanced chromosomal rearrangements (0.2%). These results are in agreement with those obtained in most large-scale studies performed in selected testicular. Sperm parameters were known for all men carrying an abnormal karyotype and showed normal sperm counts, suggesting that these types of chromosomal aberrations have no or poor consequences on spermatogenesis. Available familial data did not reveal any particular history of malformations, mental retardation or fetal losses. **CONCLUSION:** This study is the first large-scale cytogenetic study made in normal and fertile males and shows that the frequency of chromosomal aberrations is not influenced by a previous normal fertility or by an unusual familial history when compared to that found in leuk.

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Table III Comparison between frequency of chromosomal aberrations that led a normal phenotype or both in an large series with the present study

Authors	Number males	Reproductive indications	Biological indications	Adjusted frequency	CECOS	Study chromosomal
Wolfe et al. ¹	11 900 (149 males)	0/0/0 (0/0/14/0/0)	10/1/0/0	0.003	1111/1 (10 males/0.9%)	Unreported
CECOS ²	10 202 (154 males)	0/0/0 (0/0/1/0/0/0)	11/0/0/0	0	5/0/0 (0 males/0.0%)	Unreported
Wolfe et al. ¹	11 900 (154 males)	0/0/0 (0/0/1/0/0/0)	11/0/0/0	0	5/0/0 (0 males/0.0%)	Unreported
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¹Wolfe et al. (1991) and ²CECOS (1991)

How can the genetic risks of embryo donation be minimized?

Proposed guidelines of the French Federation of CECOS (Centre d'Etude et de Conservation des Ovules et du Sperm)

Patrice Eyraud¹, François Thépaut¹, Florence Falluina¹, Christine Francaumont^{1,2}, Brigitte Simon-Bouy¹, Pierre Janssens¹, Jean-Luc Brisson¹, Jean-Pierre Siffert^{1,2} and the Commission de Génétique de la Fédération Française des CECOS

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Table 1. Minimal rules to be considered for embryo donation

Type of genetic risk	Recommendations for embryo donation	
	Exclusion	Decision within an of the Committee
Genetic risk in one or both biological parents	X	
Advanced maternal structural chromosomal rearrangement	X	
Advanced maternal chromosomal rearrangement		X
Indication for a prenatal or preimplantation genetic diagnosis	X	
Related parents		X
Genetic risk in the biological father	X	
Y chromosome microdeletion	X	
Age > 40 years	X	
Genetic risk in the biological mother	X	
Age > 38 years	X	
Genetic risk related to a previous pregnancy in the biological parents		X
Unexplained malformations in a child at birth	X	

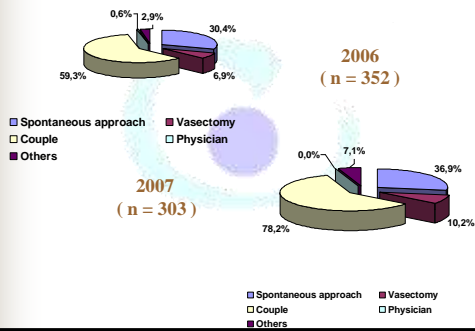
Between 1973 and 2002

- 64,146 couples
- 15,459 for 2 or 3rd
- 15,135 donors
- 9,302 accepted
- 38,409 children born
- 14,227 men / Self Preservation before sterilizing treatment
- Among them 10% will ask for using their cryopreserved sperm

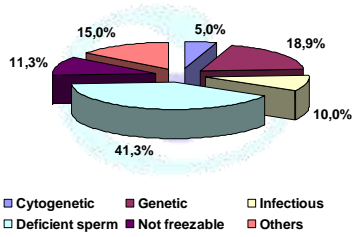
Sperm Donors

	Presented Donors	Accepted Donors	Sero at 6M undone
2003	332	222 (66.9 %)	18
2004	361		34
2005	403	221 (54.8 %)	34
2006	352	205 (58.2 %)	70
2007	303	182 (60.0%)	62

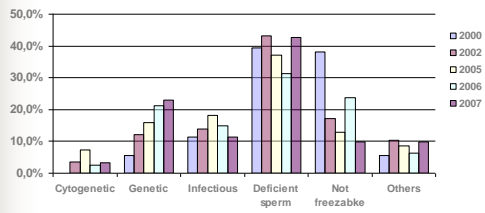
Donors Recruitment



Denied sperm donations 2007 (n=81)



Follow-up of reasons for SD denying (2000 – 2007)



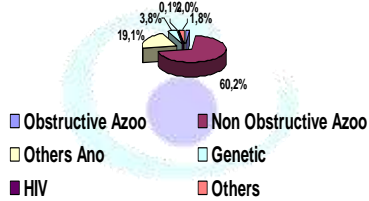
AID Applications for 2007

First parental project 1 356
 Additional parental project 414

ICI et IUI / Donor 2007

	IIC	IUI
Cycles	986	4 512
Grossesses	127	868
Tx Grossesses (%)	12,9	19,2
Pail. / Gros.	11.0	9.4

AID Applications for 2007
Factors (n=1 770)



IVF D & ICSI D 2007

	FIV	ICSI
Cycles	484	450
Transfers	408	418
Pregnancies	159	124
Preg / cycle (%)	32.9	27.6
Frozen Emb Tr Pregnancies	109 25	121 28
Preg / FET (%)	22.9	33,8
Pail. / Gros.	5,7	3,8

Pregnancies follow-up of ART/ D 2007

	IIC	IUI	FIV	ICSI	Total
Pregnancies	127	868	159	152	1 306
Lost Fup	13	36	1	11	61
SA	27 (21,3%)	113 (13,0%)	25 (15,7%)	25 (16,4%)	190
EctPrg	1	15	3	0	19
MedTerm	0	5	0	1	6
Birth × 1	101	598	105	101	905
Birth × 2	5 (4,7%)	99 (14,2%)	25 (19,2%)	15 (12,9%)	144
Birth × 3	0	3	0	3	6
Male	59	393	75	49	576
Female	51	411	75	66	603
Stillbirth	0	3	2	2	7
Anomalies	1	6	1	1	9

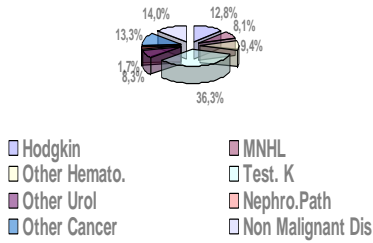
Self Preservation of sperm

- Before sterilizing treatment
- During ART procedure

Factors implied in Sperm self-preservation before Ster Trt 2007

	Patient	Straws	Str/Pat.
Hodgkin	357	8,859	24.8
LMNH	225	4,744	21.1
Others Hémato.	261	5,321	20.4
K. Test.	1,010	25,450	25.2
Others urol	231	5,478	23.7
Indic. Néphro.	46	991	21.5
Other cancers	370	7,914	21.4
Non malignant diseases	389	7,292	18.7
Total	2,889	66,049	22.9

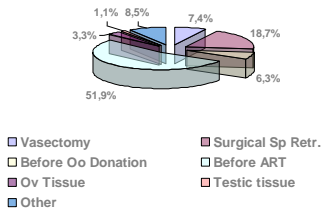
Distribution of pathologies inducing sperm self-preservation before Ster Trt in 2007



Other indications for sperm self-preservation 2007

	Pat.	Pail.	Pail/Pat.
Before vasectomy	187	4,298	23.0
Surgical Sp Retrieval	473	3,556	7.5
Before Oocyte donation	160	1,829	11.4
Before ART	1,309	16,128	12.3
Ovarian tissue	82 (14c.)		
Testicular tissue	28 (4c.)		
Others	215	2,778	12.9
Total	2,344	28,589	12.2

Distribution of factors involved in sperm self-preservation for other purposes than Ster Trt in 2007



ART with self-preserved sperm in 2007

	Pat.	IIC			IIU			FIV			ICSI		
		Cyc	Gros	TG	Cyc	Gros	TG	Cyc	Gros	TG	Cyc	Gros	TG
Steril Trt	312	34	1	2.9	204	30	14.7	21	8	38.1	259	80	30.9
Vasx	5				3	0		1	0		1	1	
ART	571	3	0		303	32	10.6	27	6	22.2	432	74	17.1
Epid. Retr											210	65	31.0
Testic Retr											420	129	30.7

Experience from Public Health System : French Cecos / conclusions

- Commune system of management and regulation
- Transparency for results
- Legal statement (ABM) : anonymity and voluntary unpaid donation
- Epidemiological survey
- Availability of gamete donation to every couple as defined by the Law on BioEthics

Acknowledgments

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- Tours
