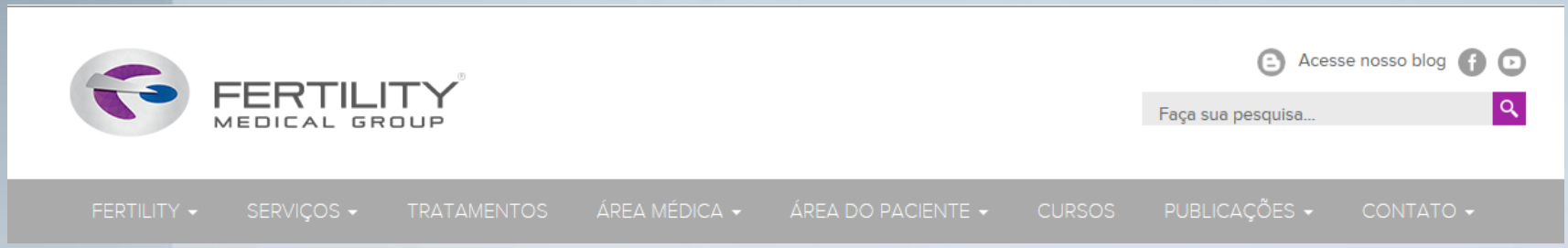
I Encontro da SBRA / MT

O Fator Masculino: Como conduzir e Exames complementares

EDSON BORGES JR.

Fertility Medical Group
Instituto Sapientiae *– Centro de Estudos e Pesquisa em Reprodução Assistida*
Sao Paulo, Brazil

FERTILITY



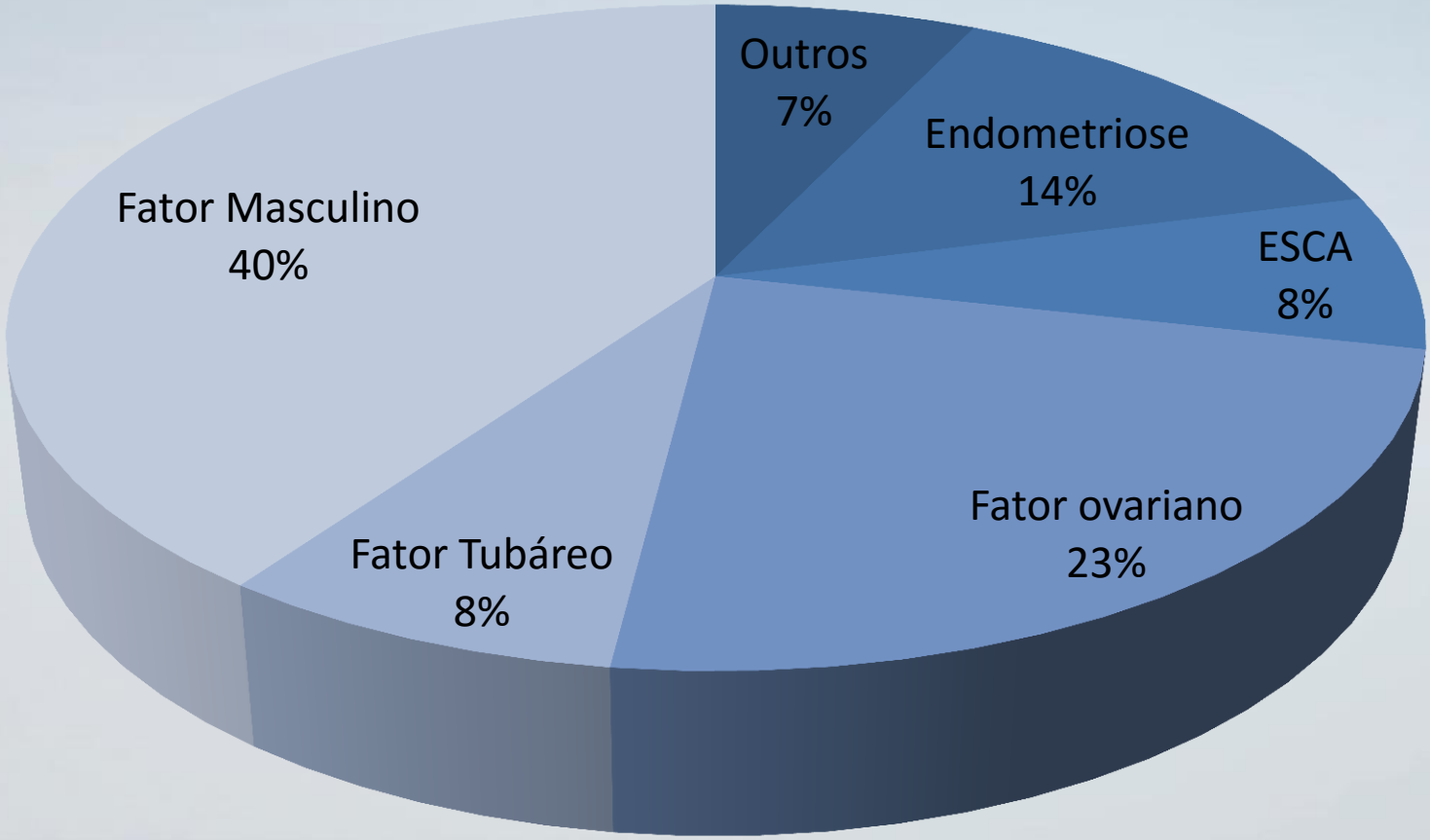
http://fertility.com.br/producao-cientifica-2016/

Roteiro

1. Espermograma OMS 2010
2. Fragmentação DNA do espermatozóide
3. Total Motile Sperm Count (TMSC)
4. Azoospermia e Técnicas de Recuperação de Espermatozóides

1. Idade e Fatores Ambientais nas TRA

Disstribuição dos casos de Infertilidade Fertility 2005 - 2015



FERTILITY

Human Reproduction Update, Vol.16, No.3 pp. 231–245, 2010
Advanced Access publication on November 24, 2009 doi:10.1093/humupd/dmp048

human reproduction update

World Health Organization reference values for human semen characteristics*‡

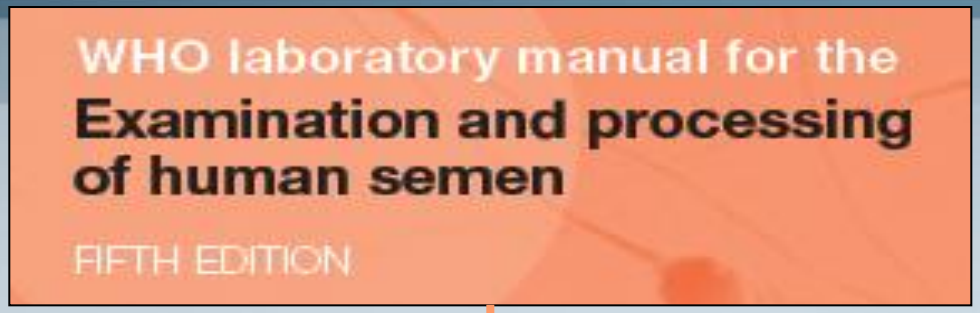
Trevor G. Cooper[1,10], Elizabeth Noonan[2], Sigrid von Eckardstein[3], Jacques Auger[4], H.W. Gordon Baker[5], Hermann M. Behre[6], Trine B. Haugen[7], Thinus Kruger[8], Christina Wang[9], Michael T. Mbizvo[3,†], and Kirsten M. Vogelsong[3,†]

- 4.500 amostras seminais
- 14 países
- 4 continentes

Table II Distribution of values, lower reference limits and their 95% CI for semen parameters from fertile men whose partners had a time-to-pregnancy of 12 months or less

	N	Centiles										
		2.5	(95% CI)	5	(95% CI)	10	25	50	75	90	95	97.5
Semen volume (ml)	1941	1.2	(1.0–1.3)	1.5	(1.4–1.7)	2	2.7	3.7	4.8	6	6.8	7.6
Sperm concentration (10^6/ml)	1859	9	(8–11)	15	(12–16)	22	41	73	116	169	213	259
Total number (10^6/Ejaculate)	1859	23	(18–29)	39	(33–46)	69	142	255	422	647	802	928
Total motility (PR + NP, %)*	1781	34	(33–37)	40	(38–42)	45	53	61	69	75	78	81
Progressive motility (PR, %)*	1780	28	(25–29)	32	(31–34)	39	47	55	62	69	72	75
Normal forms (%)	1851	3	(2.0–3.0)	4	(3.0–4.0)	5.5	9	15	24.5	36	44	48
Vitality (%)	428	53	(48–56)	58	(55–63)	64	72	79	84	88	91	92

*PR, progressive motility (WHO, 1999 grades a + b); NP, non-progressive motility (WHO, 1999 grade c).
The values are from unweighted raw data. For a two-sided distribution the 2.5th and 97.5th centiles provide the reference limits; for a one-sided distribution the fifth centile provides the lower reference limit.



- Volume: ≥ 1,5 ml
- PH: ≥ 7,2
- Cor: branco opaco ou branco acinzentado
- Liquefação: < 30 minutos
- Concentração: ≥ 15x 10^6 / ml
  > 39 milhões / ejaculado
- Motilidade: > 40% (32% A+B)

  A – progressão rápida
  B – progressão lenta
  C – sem progressão
  D – imóveis

- Morfologia: ≥ 4 % Kruger
- Vitalidade: >58%
- Células redondas:
  Leucócitos ≤ 10^6 / ml
- Análise imunológica – espermatozóides móveis aglutinados com as partículas
  MAR test / Imonobeads: positivo ≥ 50%

FERTILITY

Abnormal sperm count and motility on semen analysis are not sufficiently predictive of abnormal Kruger morphology

Sara S. Morelli, M.D.[a]
Aimee Seungdamrong, M.D.[a,b]
David H. McCulloh, Ph.D.[a,b]
Peter G. McGovern, M.D.[a,b]

Fertility and Sterility® Vol. 94, No. 7, December 2010

Abnormal morphology by Kruger's strict criteria cannot be predicted reliably by the presence of other abnormal parameters on semen analysis. Assessment of Kruger morphology therefore remains a necessary component of a complete semen analysis in the workup of the infertile couple. (Fertil Steril® 2010;94:2882–4. ©2010 by American Society for Reproductive Medicine.)

TABLE 1

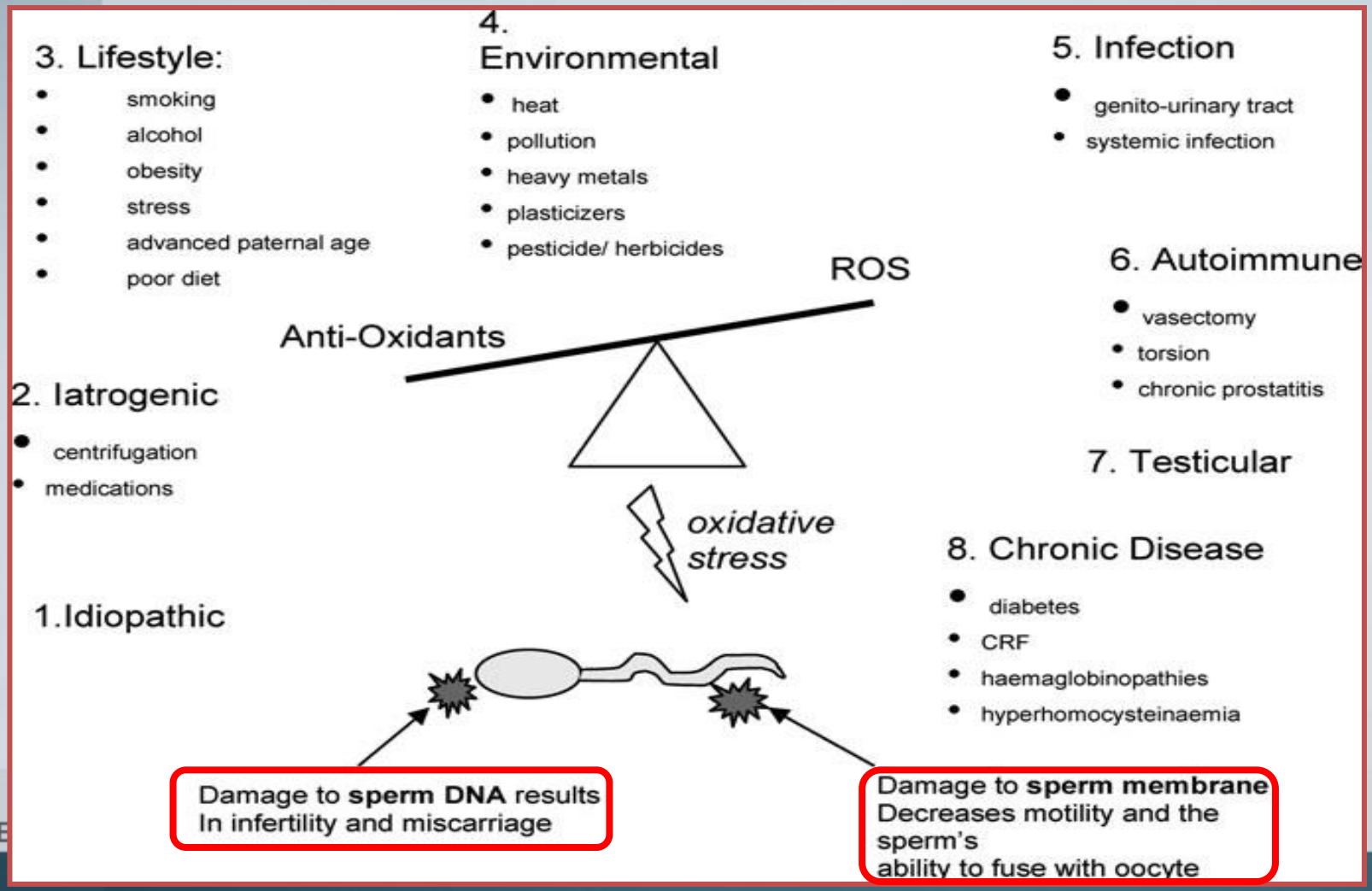
Classification of semen analyses.

Count ($\geq 2 \times 10^7$/mL)	Motility (≥50%)	Kruger morphology (>4%)	No.	Percentage of total
Low	Low	Low	158	11
Low	Low	Normal	58	4
Low	Normal	Low	48	3
Low	Normal	Normal	41	3
Normal	Low	Low	69	5
Normal	Low	Normal	92	7
Normal	Normal	Low	187	14
Normal	Normal	Normal	731	53
Total			1,384	

Morelli. Correspondence. Fertil Steril 2010.

Oxidative stress and male infertility- a clinical perspective

Kelton Tremellen; Human Reproduction Update, Vol.14, No.3 pp. 243–258, 2008



Human Reproduction, Vol.27, No.10 pp. 2908–2917, 2012
Advanced Access publication on July 12, 2012 doi:10.1093/humrep/des261

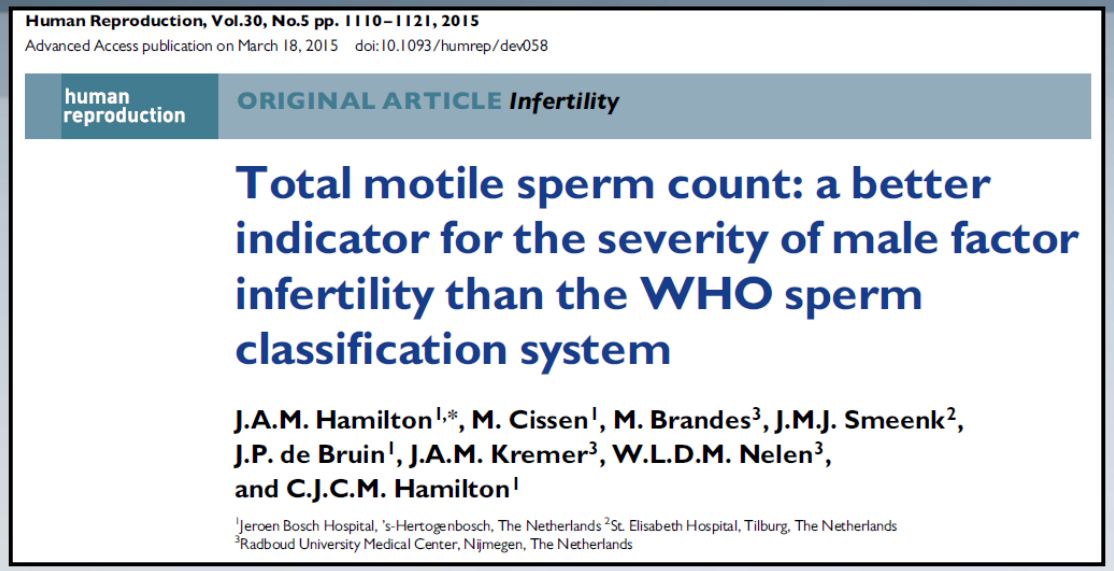
human reproduction

META-ANALYSIS *Andrology*

The effect of sperm DNA fragmentation on miscarriage rates: a systematic review and meta-analysis

Lynne Robinson[1,*], Ioannis D. Gallos[1,2], Sarah J. Conner[1,2], Madhurima Rajkhowa[1], David Miller[3], Sheena Lewis[4], Jackson Kirkman-Brown[1,2], and Arri Coomarasamy[1,2]

- ***16 estudos – 2.969 casais***
- Aumento significativo de ***abortamento*** em homens com aumento da ***fragDNA espermática***: RR =2,16 (1,54 – 3,03)
- TUNEL: RR = 3,94 (2,45 – 6,32)



Human Reproduction, Vol.30, No.5 pp. 1110–1121, 2015
Advanced Access publication on March 18, 2015 doi:10.1093/humrep/dev058

human reproduction

ORIGINAL ARTICLE *Infertility*

Total motile sperm count: a better indicator for the severity of male factor infertility than the WHO sperm classification system

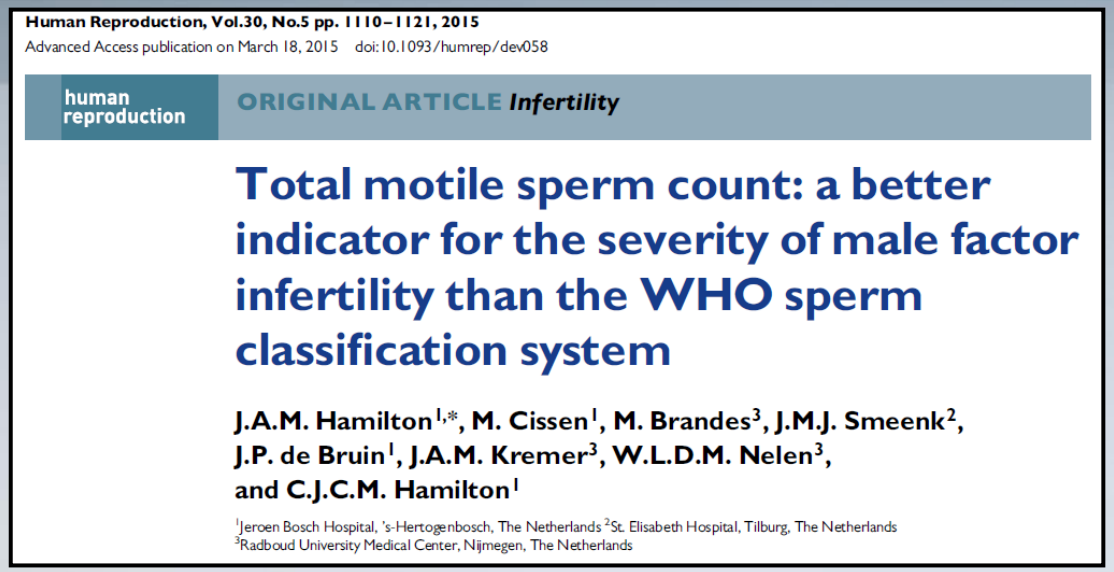
J.A.M. Hamilton[1,*], M. Cissen[1], M. Brandes[3], J.M.J. Smeenk[2], J.P. de Bruin[1], J.A.M. Kremer[3], W.L.D.M. Nelen[3], and C.J.C.M. Hamilton[1]

[1]Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands [2]St. Elisabeth Hospital, Tilburg, The Netherlands [3]Radboud University Medical Center, Nijmegen, The Netherlands

- ***Definição: TMSC = volume x conc/ml x % A+B / 100%***

- ✓ TMSC: pré-processamento seminal
- ✓ WHO e TMSC em gestação espontânea
- ✓ Seguimento de 3 anos
- ✓ TMSC > 20 x $10^{6:}$ normal
- ✓ 1.177 casais

FERTILITY



Human Reproduction, Vol.30, No.5 pp. 1110–1121, 2015
Advanced Access publication on March 18, 2015 doi:10.1093/humrep/dev058

human reproduction ORIGINAL ARTICLE *Infertility*

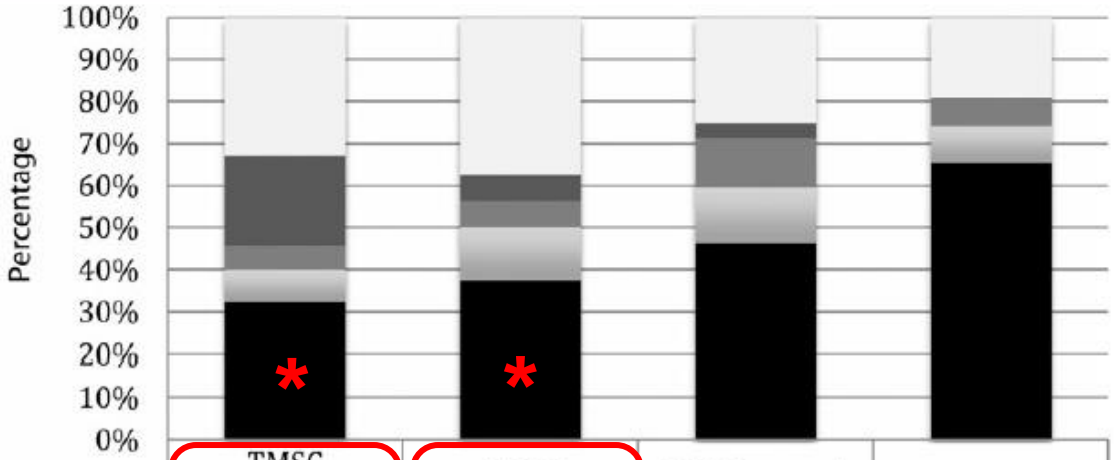
Total motile sperm count: a better indicator for the severity of male factor infertility than the WHO sperm classification system

J.A.M. Hamilton[1,*], M. Cissen[1], M. Brandes[3], J.M.J. Smeenk[2], J.P. de Bruin[1], J.A.M. Kremer[3], W.L.D.M. Nelen[3], and C.J.C.M. Hamilton[1]

[1]Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands [2]St. Elisabeth Hospital, Tilburg, The Netherlands [3]Radboud University Medical Center, Nijmegen, The Netherlands

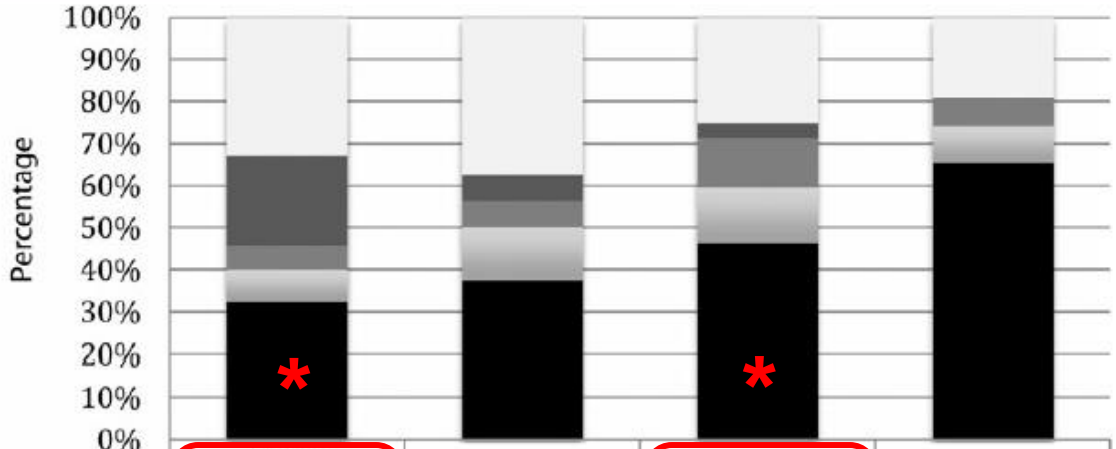
Total Motile Sperm Count: *3 grupos com prognósticos diferentes:*

- TMSC < 5 milhões de espermatozóides
- TMSC 5 - 20 milhões de espermatozóides
- TMSC > 20 milhões de espermatozóides



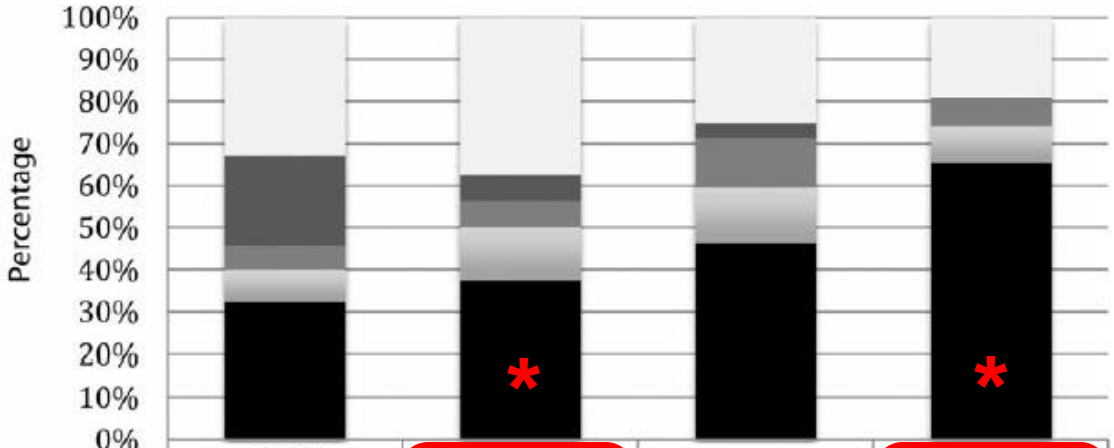
	TMSC abnormal - WHO abnormal	TMSC abnormal - WHO normal	TMSC normal - WHO abnormal	TMSC normal - WHO normal
No pregnancy	205	6	57	59
Pregnancy after ICSI	133	1	8	1
Pregnancy after IVF	36	1	27	20
Pregnancy after IUI	48	2	30	27
Spontaneous	201	6	105	202

Figure 4 Results showing where the TMSC and WHO classification systems overlap or disagree. The bars on the right and left show the outcome if the two systems are in agreement. The middle bars show the outcome if both systems give contradictory results. TMSC normal – WHO normal = 'real unexplained' infertility.



	TMSC abnormal - WHO abnormal	TMSC abnormal - WHO normal	TMSC normal - WHO abnormal	TMSC normal - WHO normal
No pregnancy	205	6	57	59
Pregnancy after ICSI	133	1	8	1
Pregnancy after IVF	36	1	27	20
Pregnancy after IUI	48	2	30	27
Spontaneous	201	6	105	202

Figure 4 Results showing where the TMSC and WHO classification systems overlap or disagree. The bars on the right and left show the outcome if the two systems are in agreement. The middle bars show the outcome if both systems give contradictory results. TMSC normal – WHO normal = 'real un-explained' infertility.



	TMSC abnormal - WHO abnormal	TMSC abnormal - WHO normal	TMSC normal - WHO abnormal	TMSC normal - WHO normal
No pregnancy	205	6	57	59
Pregnancy after ICSI	133	1	8	1
Pregnancy after IVF	36	1	27	20
Pregnancy after IUI	48	2	30	27
Spontaneous	201	6	105	202

Figure 4 Results showing where the TMSC and WHO classification systems overlap or disagree. The bars on the right and left show the outcome if the two systems are in agreement. The middle bars show the outcome if both systems give contradictory results. TMSC normal – WHO normal = 'real un-explained' infertility.

ISSN: 2047-2919

ORIGINAL ARTICLE

Correspondence:
Edson Borges Jr., MD, PhD, Av. Brigadeiro Luis Antonio, 4545, Sao Paulo 01401-002, SP, Brazil.
E-mail: edson@fertility.com.br

*These authors contributed equally to this manuscript.

Keywords:
intracytoplasmic sperm injection, infertility, sperm count, sperm motility, spermatozoa

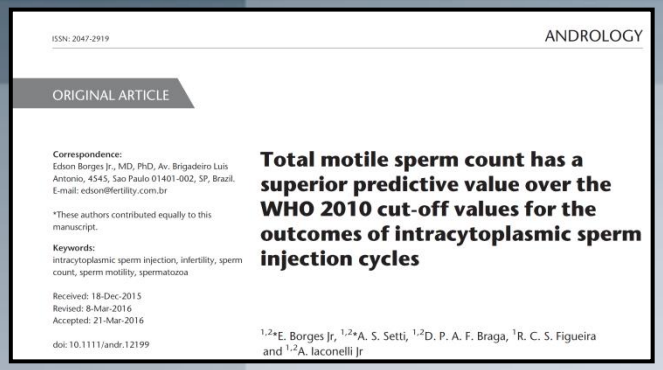
Received: 18-Dec-2015
Revised: 8-Mar-2016
Accepted: 21-Mar-2016

doi: 10.1111/andr.12199

Total motile sperm count has a superior predictive value over the WHO 2010 cut-off values for the outcomes of intracytoplasmic sperm injection cycles

[1,2]*E. Borges Jr, [1,2]*A. S. Setti, [1,2]D. P. A. F. Braga, [1]R. C. S. Figueira and [1,2]A. Iaconelli Jr

- 518 ciclos de ICSI
- OMS / TMSC
- TMSC normal: > 20 milhões



ISSN: 2047-2919 ANDROLOGY

ORIGINAL ARTICLE

Total motile sperm count has a superior predictive value over the WHO 2010 cut-off values for the outcomes of intracytoplasmic sperm injection cycles

Correspondence:
Edson Borges Jr., MD, PhD, Av. Brigadeiro Luis Antonio, 4545, Sao Paulo 01401-002, SP, Brazil.
E-mail: edson@fertility.com.br

*These authors contributed equally to this manuscript.

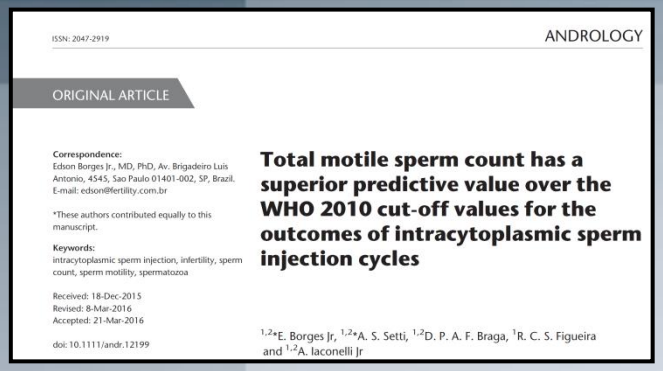
Keywords:
intracytoplasmic sperm injection, infertility, sperm count, sperm motility, spermatozoa

Received: 18-Dec-2015
Revised: 8-Mar-2016
Accepted: 21-Mar-2016

doi: 10.1111/andr.12199

[1,2]*E. Borges Jr, [1,2]*A. S. Setti, [1,2]D. P. A. F. Braga, [1]R. C. S. Figueira and [1,2]A. Iaconelli Jr

- Grupo I: TMSC < 1 milhão de espermatozóides
- Grupo II: TMSC 1 – 5 milhões de espermatozóides
- Grupo III: TMSC 5 – 10 milhões de espermatozóides
- Grupo IV: TMSC 10 – 20 milhões de espermatozóides
- Grupo V: TMSC > 20 milhões de espermatozóides



ISSN: 2047-2919 ANDROLOGY

ORIGINAL ARTICLE

Total motile sperm count has a superior predictive value over the WHO 2010 cut-off values for the outcomes of intracytoplasmic sperm injection cycles

Correspondence:
Edson Borges Jr., MD, PhD, Av. Brigadeiro Luis Antonio, 4545, Sao Paulo 01401-002, SP, Brazil.
E-mail: edson@fertility.com.br

*These authors contributed equally to this manuscript.

Keywords:
intracytoplasmic sperm injection, infertility, sperm count, sperm motility, spermatozoa

Received: 18-Dec-2015
Revised: 8-Mar-2016
Accepted: 21-Mar-2016

doi: 10.1111/andr.12199

[1,2]*E. Borges Jr, [1,2]*A. S. Setti, [1,2]D. P. A. F. Braga, [1]R. C. S. Figueira and [1,2]A. Iaconelli Jr

- OMS: 518 (100%) fator masculino
  - Oligozoospermia: 148
  - Astenozoospermia: 106
  - Teratozoospermia: 361

- TMSC
  - normal: 190 (36,7%): ausência de fator masculino
  - anormal: 328 (63,3%): fator masculino +

FERTILITY

Table 4 Comparison of ICSI outcomes between normal and abnormal TMSC groups

Variables	Normal TMSC group (n = 328)	Abnormal TMSC group (n = 190)	p-value
Paternal age (year-old)	37.4 ± 4.8	38.1 ± 6.1	0.187
Maternal age (year-old)	35.4 ± 3.9	33.5 ± 4.0	<0.001
Number of aspirated follicles	17.8 ± 9.7	20.8 ± 11.2	0.002
Number of obtained oocytes	12.7 ± 7.2	15.1 ± 8.1	0.001
Number of mature oocytes	9.7 ± 5.5	11.2 ± 6.2	0.003
Number of injected oocytes	9.4 ± 4.3	10.2 ± 4.9	0.067
Fertilization rate (%)	84.9 ± 14.4	81.1 ± 15.8	0.016
Number of obtained embryos	8.2 ± 3.8	8.7 ± 4.4	0.204
Number of transferred embryos	2.2 ± 0.6	2.2 ± 0.5	0.469
Implantation rate (%)	25.1 ± 36.0	25.8 ± 35.2	0.832
Pregnancy rate (%)	134/328 (40.9)	94/190 (49.5)	0.060
Miscarriage rate (%)	29/162 (17.9)	23/78 (29.5)	0.041

SD, standard deviation; TMSC: total motile sperm count.

Table 5 Linear and binary regression analysis results for the influences of TMSC and WHO cut-off values on ICSI outcome

Variables	Method	OR or RC	CI or R^2	*p*-value
Fertilization rate	Concentration	3.994	1.4%	0.015
	Motility	0.097	0.0%	0.957
	Progressive motility	2.299	0.5%	0.163
	Morphology	8.735	0.9%	0.047
	TMSC	3.784	1.5%	0.013
	Normal TMSC	−0.253	0.1%	0.592
Formation of high-quality zygotes on D1	Concentration	1.64	1.09–2.46	0.018
	Motility	1.34	0.85–2.12	0.208
	Progressive motility	1.22	0.80–1.85	0.355
	Morphology	0.89	0.65–1.22	0.461
	TMSC	1.13	1.01–1.28	0.049
	Normal TMSC	0.99	0.97–1.02	0.629
Formation of high-quality embryos on D2	Concentration	0.93	0.76–1.09	0.101
	Motility	0.91	0.79–1.06	0.222
	Progressive motility	1.06	0.92–1.22	0.420
	Morphology	0.84	0.60–1.18	0.314
	TMSC	1.18	1.03–1.35	0.013
	Normal TMSC	0.97	0.94–1.01	0.098
Formation of high-quality embryos on D3	Concentration	0.91	0.79–1.06	0.229
	Motility	0.93	0.79–1.09	0.379
	Progressive motility	1.00	0.85–1.17	0.969
	Morphology	1.18	0.83–1.67	0.354
	TMSC	1.12	1.07–1.29	0.037
	Normal TMSC	0.98	0.95–1.02	0.319
Formation of blastocyst on D5	Concentration	1.11	0.97–1.27	0.116
	Motility	1.03	0.90–1.19	0.660
	Progressive motility	0.91	0.70–1.23	0.303
	Morphology	1.13	0.83–1.55	0.427
	TMSC	1.16	1.04–1.26	0.011
	Normal TMSC	1.00	0.97–1.04	0.802
Blastocyst expansion grade on D5	Concentration	0.83	0.66–1.05	0.120
	Motility	1.01	0.79–1.29	0.948
	Progressive motility	1.08	0.85–1.38	0.533
	Morphology	0.99	0.57–1.71	0.962
	TMSC	1.27	1.01–1.60	0.042
	Normal TMSC	1.03	0.98–1.07	0.287

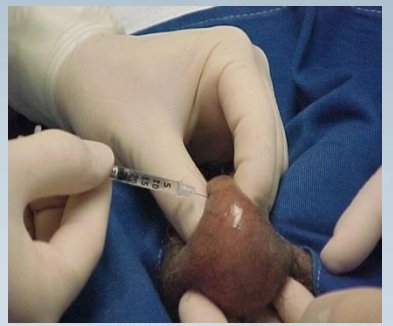
AZOOSPERMIA

- 1% dos homens
- 10 -15% dos homens inférteis

RECUPERAÇÃO DE ESPERMATOZÓIDES NÃO EJACULADOS

ESPERMATOZÓIDES ESPIDIDIMÁRIOS

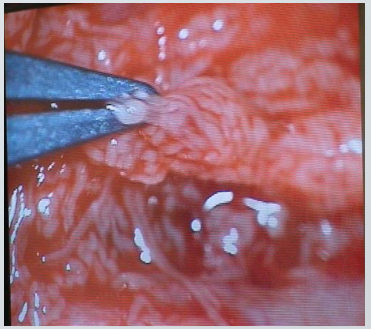
PERCUTANEOUS
EPIDYDIMAL
SPERM
ASPIRATION



ESPERMATOZÓIDES TESTICULARES

TESTICULAR
SPERM
ASPIRATION

Micro
TESTICULAR
SPERM
EXTRACTION



The Aging Male, 13(1):44-50, 2010

informa healthcare

[1]*Fertility – Assisted Fertilization Center, São Paulo, SP, Brazil,* [2]*Sapientiae Institute – Educational and Research Center in Assisted Reproduction, São Paulo, SP, Brazil, and* [3]*Institute of Biotechnology – Caxias do Sul University, Caxias do Sul, RS, Brazil*

ORIGINAL ARTICLE

Edson Borges Jr., *et al*

Assisted reproductive technology outcomes in azoospermic men: 10 years of experience with surgical sperm retrieval

Table II. ICSI outcomes from patients with obstructive azoospermia when the injected spem were retrieved from the testicle (TESA) or epididymis (PESA).

Variable	Study group		
	OA-TESA (n=103)	OA-PESA (n=171)	*p* value
Normal fertilization rate (%)	57.9 ± 9.5 (48.5–67.5)	65.2 ± 4.1 (54.7–69.3)	*0.0017*
Abnormal fertilization rate (%)	13.2 ± 6.3 (6.5–19.5)	12.7 ± 5.3 (7.9–18.0)	0.9437
Fertilization failure rate (%)	28.9 ± 8.9 (20.2–37.8)	22.1 ± 6.0 (15.8–28.1)	0.1081
Non-cleaved rate (%)	9.87 ± 5.9 (4.2–15.8)	7.46 ± 3.9 (3.5–11.4)	0.4406
Pregnancy rate (%)	31.9 ± 9.0 (23.0–41.0)	32.5 ± 7.5 (25.9–40.0)	0.8803
Abortion rate (%)	38.8 ± 9.6 (29.6–48.4)	18.0 ± 5.8 (12.2–23.8)	*0.0387*
Implantation rate (%)	9.4 ± 5.6 (3.8–15.0)	10.5 ± 4.0 (5.5–14.5)	0.6054

Values in percentage expressed as mean ± SD (confidence interval of the frequencies).

The Aging Male, 13(1):44-50, 2010

informa healthcare

[1]*Fertility – Assisted Fertilization Center, São Paulo, SP, Brazil,* [2]*Sapientiae Institute – Educational and Research Center in Assisted Reproduction, São Paulo, SP, Brazil, and* [3]*Institute of Biotechnology – Caxias do Sul University, Caxias do Sul, RS, Brazil*

ORIGINAL ARTICLE

Edson Borges Jr., *et al*

Assisted reproductive technology outcomes in azoospermic men: 10 years of experience with surgical sperm retrieval

Table II. ICSI outcomes from patients with obstructive azoospermia when the injected spem were retrieved from the testicle (TESA) or epididymis (PESA).

Variable	Study group		
	OA-TESA (n=103)	OA-PESA (n=171)	*p* value
Normal fertilization rate (%)	57.9 ± 9.5 (48.5–67.5)	65.2 ± 4.1 (54.7–69.3)	*0.0017*
Abnormal fertilization rate (%)	13.2 ± 6.3 (6.5–19.5)	12.7 ± 5.3 (7.9–18.0)	0.9437
Fertilization failure rate (%)	28.9 ± 8.9 (20.2–37.8)	22.1 ± 6.0 (15.8–28.1)	0.1081
Non-cleaved rate (%)	9.87 ± 5.9 (4.2–15.8)	7.46 ± 3.9 (3.5–11.4)	0.4406
Pregnancy rate (%)	31.9 ± 9.0 (23.0–41.0)	32.5 ± 7.5 (25.9–40.0)	0.8803
Abortion rate (%)	38.8 ± 9.6 (29.6–48.4)	18.0 ± 5.8 (12.2–23.8)	*0.0387*
Implantation rate (%)	9.4 ± 5.6 (3.8–15.0)	10.5 ± 4.0 (5.5–14.5)	0.6054

Values in percentage expressed as mean ± SD (confidence interval of the frequencies).

The Aging Male, 13(1):44-50, 2010

informa healthcare

[1]*Fertility – Assisted Fertilization Center, São Paulo, SP, Brazil,* [2]*Sapientiae Institute – Educational and Research Center in Assisted Reproduction, São Paulo, SP, Brazil, and* [3]*Institute of Biotechnology – Caxias do Sul University, Caxias do Sul, RS, Brazil*

ORIGINAL ARTICLE

Edson Borges Jr., *et al*

Assisted reproductive technology outcomes in azoospermic men: 10 years of experience with surgical sperm retrieval

Table IV. ICSI outcomes when the injected sperm were retrieved from the testicle (TESA) of patients with obstructive (OA) or non-obstructive (NOA) azoospermia.

Variable	Study group		*p* value
	OA-TESA (n=103)	NOA-TESA (n=102)	
Normal fertilization rate (%)	57.9 ± 9.5 (48.5–67.5)	50.4 ± 9.3 (40.3–59.7)	*0.0050*
Abnormal fertilization rate (%)	13.2 ± 6.3 (6.5–19.5)	13.98 ± 6.8 (7.3–20.7)	0.4421
Fertilization failure rate (%)	28.9 ± 8.9 (20.2–37.8)	35.65 ± 11.8 (27.6–47.4)	*0.0023*
Non cleaved rate (%)	9.87 ± 5.9 (4.2–15.8)	16.1 ± 17 (8.9–23.1)	*0.0034*
Pregnancy rate (%)	31.9 ± 9.0 (23.0–41.0)	29.7 ± 9.2 (21.1–38.9)	0.4166
Abortion rate (%)	38.8 ± 9.6 (29.6–48.4)	37.0 ± 9.4 (27.6–46.4)	0.9992
Implantation rate (%)	9.4 ± 5.6 (3.8–15.0)	9.65 ± 6.1 (4.2–15.8)	0.8519

Values in percentage expressed as mean ± SD (confidence interval of the frequencies).

The Aging Male, 13(1):44-50, 2010

informa healthcare

[1]*Fertility – Assisted Fertilization Center, São Paulo, SP, Brazil,* [2]*Sapientiae Institute – Educational and Research Center in Assisted Reproduction, São Paulo, SP, Brazil, and* [3]*Institute of Biotechnology – Caxias do Sul University, Caxias do Sul, RS, Brazil*

ORIGINAL ARTICLE

Edson Borges Jr., *et al*

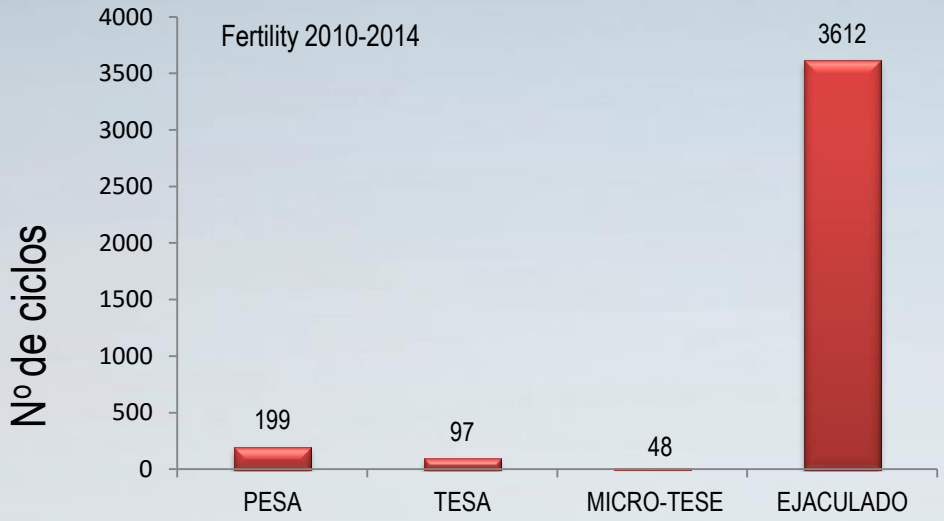
Assisted reproductive technology outcomes in azoospermic men: 10 years of experience with surgical sperm retrieval

Table IV. ICSI outcomes when the injected sperm were retrieved from the testicle (TESA) of patients with obstructive (OA) or non-obstructive (NOA) azoospermia.

Variable	Study group		*p* value
	OA-TESA (n=103)	NOA-TESA (n=102)	
Normal fertilization rate (%)	57.9 ± 9.5 (48.5–67.5)	50.4 ± 9.3 (40.3–59.7)	*0.0050*
Abnormal fertilization rate (%)	13.2 ± 6.3 (6.5–19.5)	13.98 ± 6.8 (7.3–20.7)	0.4421
Fertilization failure rate (%)	28.9 ± 8.9 (20.2–37.8)	35.65 ± 11.8 (27.6–47.4)	*0.0023*
Non cleaved rate (%)	9.87 ± 5.9 (4.2–15.8)	16.1 ± 17 (8.9–23.1)	*0.0034*
Pregnancy rate (%)	31.9 ± 9.0 (23.0–41.0)	29.7 ± 9.2 (21.1–38.9)	0.4166
Abortion rate (%)	38.8 ± 9.6 (29.6–48.4)	37.0 ± 9.4 (27.6–46.4)	0.9992
Implantation rate (%)	9.4 ± 5.6 (3.8–15.0)	9.65 ± 6.1 (4.2–15.8)	0.8519

Values in percentage expressed as mean ± SD (confidence interval of the frequencies).

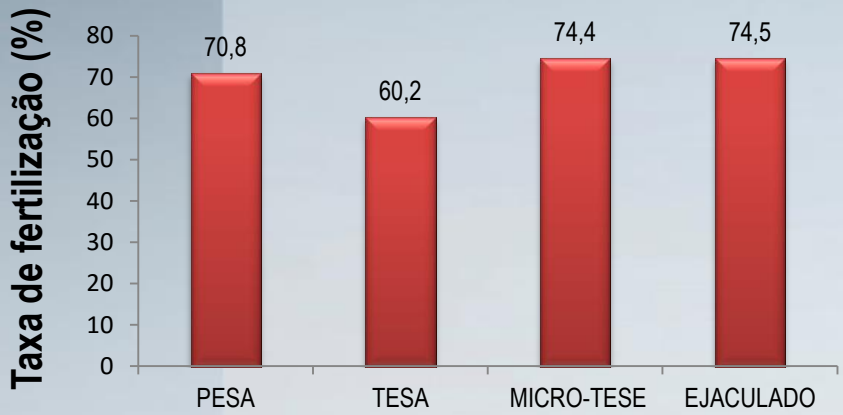
Características gerais dos ciclos de ICSI – *Fertility (2010-2014)*
"Origem do espermatozoide"



Características	PESA	TESA	MICRO-TESE	EJACULADO
Nº de ciclos	199	97	48	3612
Idade média ± DP	34.9 ± 4.6	34.8 ± 5.4	32.2 ± 2.7	35.8 ± 4.7
Nº de folículos aspirados ± DP	20.4 ± 15.4	18.1 ±11.3	15.9 ± 14.4	15.8 ± 12.4
Nº de oócitos recuperados ± DP	14.2 ± 10.8	13.3 ± 9.3	11.0 ± 11.4	11.0 ± 9.0
Nº de oócitos micromanipulados ± DP	9.8 ± 6.4	8.9 ± 5.1	8.0 ± 6.9	7.8 ± 5.8

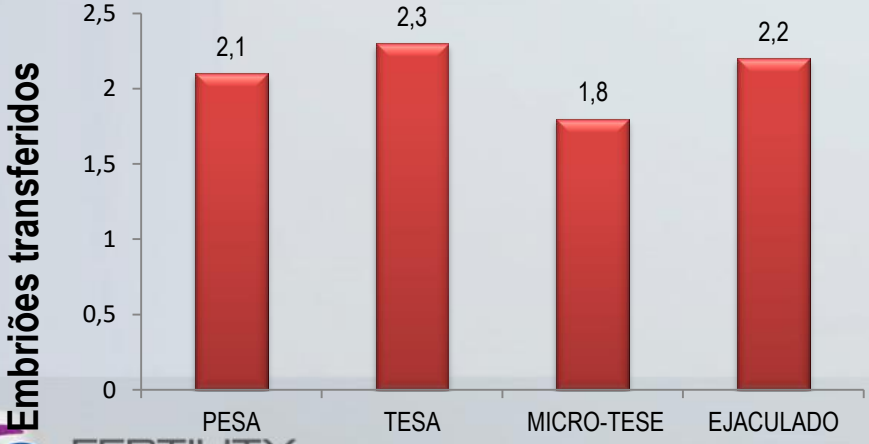
FERTILITY

Resultados clínicos e laboratoriais – *Fertility* (2010-2014)
"Origem do espermatozoide"



COMPARAÇÃO	VALOR DE P
PESA *VS* TESA	**< 0.001**
PESA *VS* MICRO-TESE	> 0.05
PESA *VS* EJACULADO	> 0.05
TESA *VS* MICRO-TESE	> 0.05
TESA *VS* EJACUALDO	**< 0.001**
MICRO-TESE *VS* EJACULADO	> 0.05

ANOVA



COMPARAÇÃO	VALOR DE P
PESA *VS* TESA	> 0.05
PESA *VS* MICRO-TESE	> 0.05
PESA *VS* EJACULADO	> 0.05
TESA *VS* MICRO-TESE	> 0.05
TESA *VS* EJACUALDO	> 0.05
MICRO-TESE *VS* EJACULADO	> 0.05

ANOVA

FERTILITY

Resultados clínicos e laboratoriais – *Fertility* (2010-2014)
"Origem do espermatozoide"

COMPARAÇÃO	VALOR DE P
PESA *VS* TESA	> 0.05
PESA *VS* MICRO-TESE	> 0.05
PESA *VS* EJACULADO	> 0.05
TESA *VS* MICRO-TESE	> 0.05
TESA *VS* EJACUALDO	> 0.05
MICRO-TESE *VS* EJACULADO	> 0.05

QUI-QUADADRO

COMPARAÇÃO	VALOR DE P
PESA *VS* TESA	> 0.05
PESA *VS* MICRO-TESE	> 0.05
PESA *VS* EJACULADO	> 0.05
TESA *VS* MICRO-TESE	> 0.05
TESA *VS* EJACUALDO	> 0.05
MICRO-TESE *VS* EJACULADO	> 0.05

ANOVA

FERTILITY

Falha na recuperação do espermatozoide *Fertility* (2010-2014)

Técnica	Nº Ciclos	Ciclos com ausência de espermatozóide	% de falha
PESA	199	27*	13.5
TESA	97	21	22.6
microTESE	48	21	43.8

*** 100% após TESA**

FERTILITY

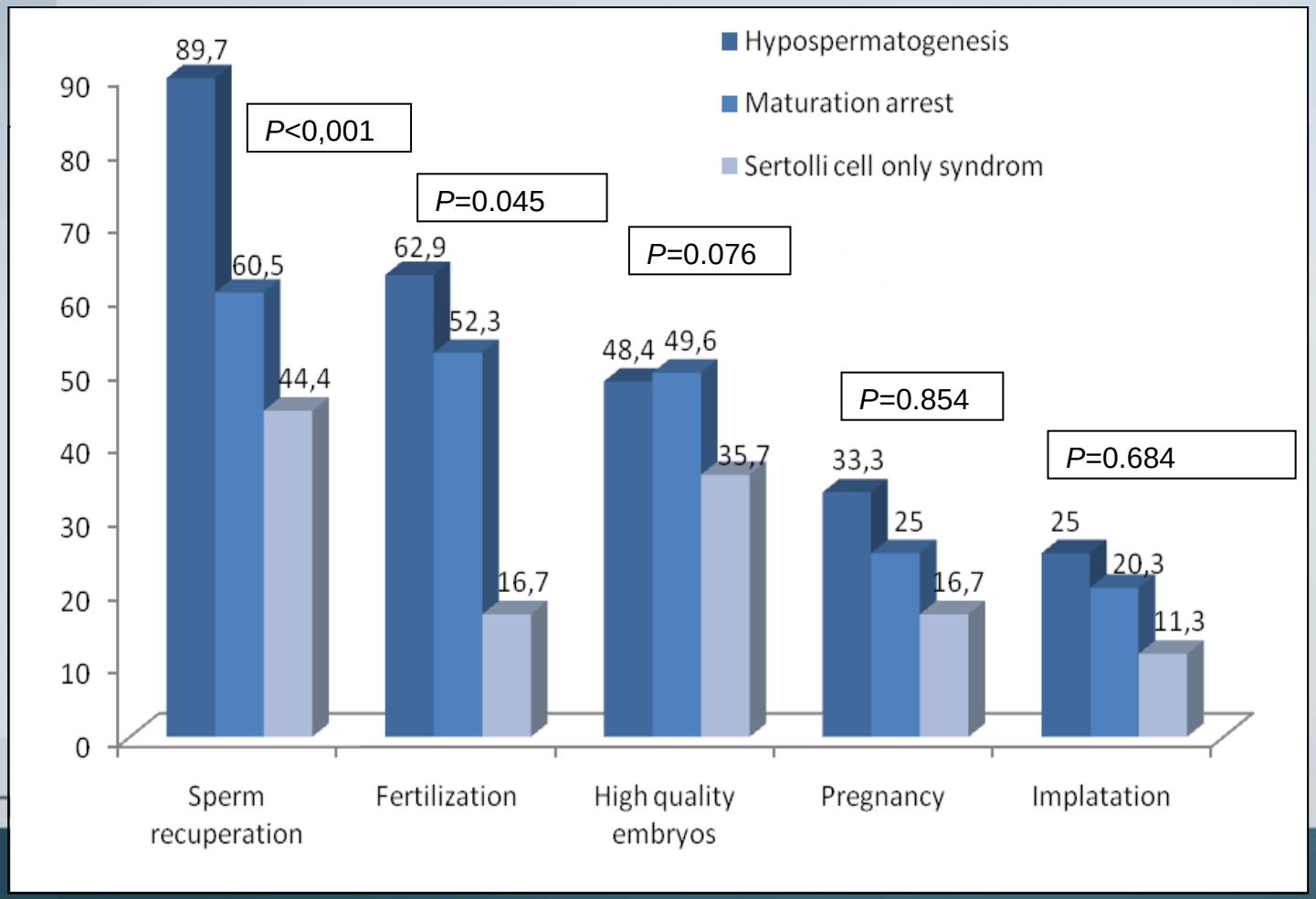
Artigo Original

JBRA Assist. Reprod. | V. 15 | nº5 | Sep-Oct / 2011

The prognostic value of the testicular histopathological pattern for sperm retrieval and intracytoplasmic sperm injection outcomes in non-obstructive azoospermic patients

O valor prognóstico do padrão histopatológico testicular na recuperação de espermatozóides e nos resultados da injeção intracitoplasmática de espermatozóides em pacientes com azoospermia não-obstrutiva

Edson Borges Jr. [a,b], Daniela Paes de Almeida Braga[a,b], Rita de Cássia Savio Figueira[a], Amanda Souza Setti[b], Assumpto Iaconelli Jr [a,b], Fabio Firmbach Pasqualotto[c]



Podem as condições da "vida moderna" interferirem na fertilidade masculina?

- Alimentação / Peso
- Queda da qualidade seminal com o tempo

Food intake and social habits in male patients and its relationship to intracytoplasmic sperm injection outcomes

Fertility and Sterility® Vol. 97, No. 1, January 2012

Daniela Paes de Almeida Ferreira Braga, D.V.M., M.Sc.,[a,b] Gabriela Halpern, M.Sc.,[a] Rita de Cássia S. Figueira, M.Sc.,[a] Amanda S. Setti, B.Sc.,[b] Assumpto Iaconelli Jr., M.D.,[a] and Edson Borges Jr., M.D., Ph.D.[a,b]

Objective: To investigate the influence of the male partner's lifestyle, including eating and social habits, on semen quality and intracytoplasmic sperm injection (ICSI) success.

Design: Observational study.

Setting: Private fertility clinic.

Patient(s): Two hundred fifty male patients undergoing ICSI cycles.

Intervention(s): We recorded dietary and social habits using a food frequency questionnaire adapted to meet specific study objectives. Evaluation of semen parameters and ICSI outcomes were performed.

Main Outcome Measure(s): Frequency of intake of food items and social habits were registered on a scale with five categories ranging from no consumption to repeated daily consumption.

Food intake and social habits in male patients and its relationship to intracytoplasmic sperm injection outcomes

Fertility and Sterility® Vol. 97, No. 1, January 2012

Daniela Paes de Almeida Ferreira Braga, D.V.M., M.Sc.,[a,b] Gabriela Halpern, M.Sc.,[a] Rita de Cássia S. Figueira, M.Sc.,[a] Amanda S. Setti, B.Sc.,[b] Assumpto Iaconelli Jr., M.D.,[a] and Edson Borges Jr., M.D., Ph.D.[a,b]

- *Concentração*: negativamente influenciada pelo IMC e álcool; positivamente influenciada pelo consumo de cereal e no. refeições/dia

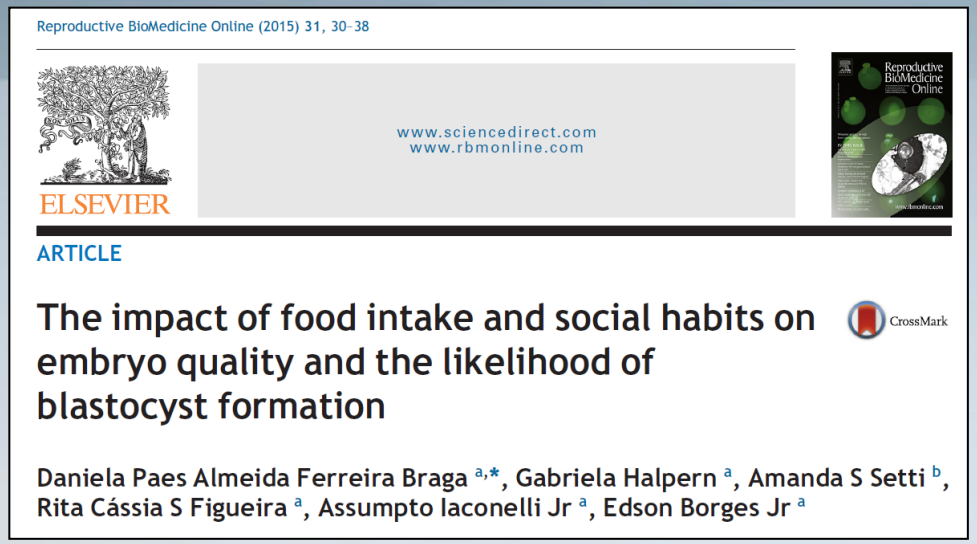
- *Motilidade*: negativamente influenciada pelo IMC, álcool e cigarro; positivamente influenciada pelo consumo de cereal e frutas

Food intake and social habits in male patients and its relationship to intracytoplasmic sperm injection outcomes

Fertility and Sterility® Vol. 97, No. 1, January 2012

Daniela Paes de Almeida Ferreira Braga, D.V.M., M.Sc.,[a,b] Gabriela Halpern, M.Sc.,[a] Rita de Cássia S. Figueira, M.Sc.,[a] Amanda S. Setti, B.Sc.,[b] Assumpto Iaconelli Jr., M.D.,[a] and Edson Borges Jr., M.D., Ph.D.[a,b]

- *Álcool: impacto negativo na fertilização*
- *Carne vermelha e dieta (perda peso)*: impacto negativo na implantação / diminui as chances de gestação



Reproductive BioMedicine Online (2015) 31, 30–38

www.sciencedirect.com
www.rbmonline.com

ELSEVIER

ARTICLE

The impact of food intake and social habits on embryo quality and the likelihood of blastocyst formation

Daniela Paes Almeida Ferreira Braga [a,*], Gabriela Halpern [a], Amanda S Setti [b], Rita Cássia S Figueira [a], Assumpto Iaconelli Jr [a], Edson Borges Jr [a]

- *2659 embriões – 269 pacientes submetidas a ICSI*

- *Qualidade embrionária em estágio de clivagem*: negativamente influenciada pelo álcool e cigarro; positivamente influenciada pelo consumo de cereal, vegetais e frutas

- *Formação de blastocisto*: negativamente influenciada pelo consumo de carne vermelha, perda de peso (dieta), álcool e cigarro; positivamente influenciada pelo consumo frutas e peixes

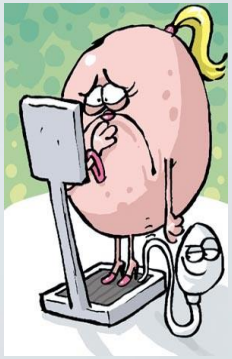
Human Reproduction Update Advance Access published December 12, 2012
Human Reproduction Update, Vol.0, No.0 pp. 1–11, 2012
doi:10.1093/humupd/dms050
human reproduction update

BMI in relation to sperm count: an updated systematic review and collaborative meta-analysis

N. Sermondade[1,2], C. Faure[1,2], L. Fezeu[2], A.G. Shayeb[3], J.P. Bonde[4], T.K. Jensen[5], M. Van Wely[6], J. Cao[7], A.C. Martini[8], M. Eskandar[9], J.E. Chavarro[10,11], S. Koloszar[12], J.M. Twigt[13], C.H. Ramlau-Hansen[14], E. Borges Jr[15], F. Lotti[16], R.P.M. Steegers-Theunissen[13], B. Zorn[17], A.J. Polotsky[18], S. La Vignera[19], B. Eskenazi[20], K. Tremellen[21], E.V. Magnusdottir[22], I. Fejes[23], S. Hercberg[2,24], R. Lévy[1,2†], and S. Czernichow[25,26,*†]

- ***21 estudos, 13.077 homens da população geral e em investigação de infertilidade***

- ***Estudo da relação entre BMI e incidência de oligozoospermia / azoospermia***



- ***Comparados com homens com peso normal:***

❖ Sobpeso: OR= 1,15 (0,93-1,43)

❖ Sobrepeso: OR= 1,11 (1,01-1,21)

❖ Obeso: OR= 1,28 (1,06-1,55)

❖ Obeso mórbido: OR= 2,04 (1,59-2,62)

ORIGINAL ARTICLE

Vol. 41 (4): 757-763, July - August, 2015
doi: 10.1590/S1677-5538.IBJU.2014.0186

Decline in semen quality among infertile men in Brazil during the past 10 years

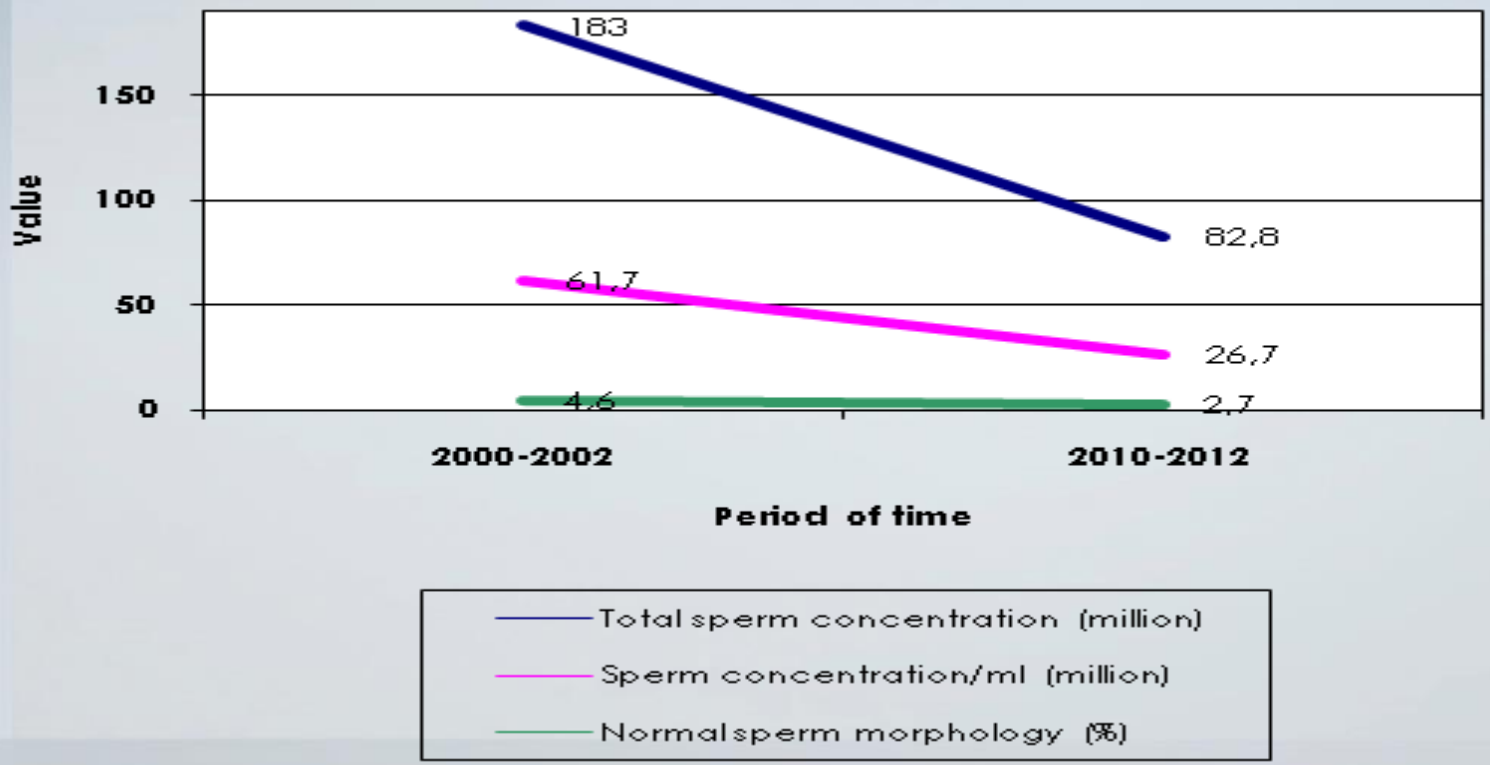
Edson Borges Jr. [1,2], Amanda Souza Setti [1,2], Daniela Paes de Almeida Ferreira Braga [1,2], Rita de Cassia Savio Figueira [1], Assumpto Iaconelli Jr. [1,2]

Table 1 - General characteristics of analyzed semen samples (n=2300).

Variable	Mean	SD	Min	Max
Male age (y-old)	35.7	7.8	15.0	71.0
Days of abstinence	4.2	2.8	0.0	30.0
Semen sample volume (ml)	3.3	1.7	0.1	11.3
Sperm concentration/ml (million)	38.3	46.7	0.0	540.0
Total sperm concentration (million)	116.0	143.0	0.0	984.0
Progressive sperm motility (%)	36.9	18.9	0.0	84.0
Sperm morphology	3.4	2.9	0.0	16.0

values are mean ± SD, unless otherwise noticed. **SD**= standard deviation; **Min**= minimum; **Max**= maximum.


Pacientes submetidos à ASC
2300 amostras
Divisão em grupos
2000-2002 n = 764
2010-2012 n = 1536
Submetidos à ICSI
n = 315
n = 842


Value
150
100
50
0
183
82,8
61,7
26,7
4,6
2,7
2000-2002
2010-2012
Period of time
Total sperm concentration (million)
Sperm concentration/ml (million)
Normal sperm morphology (%)

FERTILITY

Variável	2000-2002 (n=764)	2010-2012 (n=1536)	*p*
Idade masculina (anos)	35.0 ± 8.6	35.3 ± 8.1	0.318
Dias de abstinência	4.2 ± 3.1	4.2 ± 2.7	0.777
Volume da amostra (ml)	3.4 ± 1.8	3.3 ± 1.6	0.473
Concentração/ml (milhão)	61.7 ± 69.4	26.7 ± 27.3	**<0.001**
Concentração total (milhão)	183.0 ± 197.0	82.8 ± 89.5	**<0.001**
Motilidade progressiva (%)	36.4 ± 18.3	36.5 ± 19.2	0.812
Morfologia normal (%)	4.6	2.7	**<0.001**
Azoospermia (%)	38/764 (4.9)	131/1536 (8.5)	**<0.001**
Oligozoospermia grave (%)	114/726 (15.7)	426/1405 (30.3)	**<0.001**

Fertilização	2000-2002 (n=315)	2010-2012 (n=842)	*p*
Taxa de fertilização total (%)	82.5	81.3	0.619
Taxa de fertilização anormal (1PN + 3PN) (%)	12.2	7.8	**<0.001**

DEZ MANDAMENTOS PARA PRESERVAR SUA FERTILIDADE