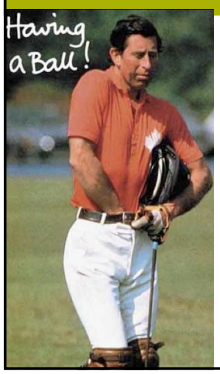
Retrieving sperm in azoospermic patients

ESHRE Campus symposium
Thessaloniki, Greece
1-3 October 2009

Herman Tournaye, M.D. Ph.D.
Centre for Reproductive Medicine Brussels

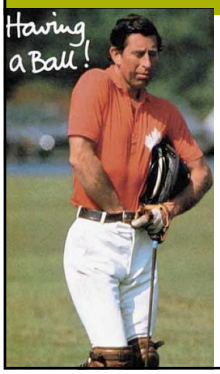
Universitair Ziekenhuis Brussel
Vrije Universiteit Brussel
Centrum voor Reproductieve Geneeskunde

Surgical sperm retrieval: outline of the lecture

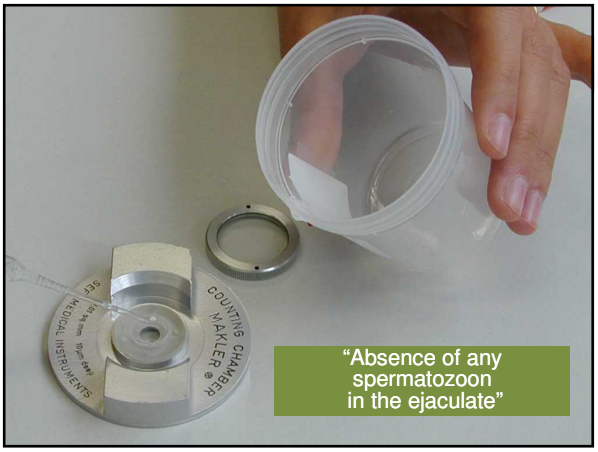


- introduction
- will I retrieve spermatozoa in this patient ?
- what are my patient's chances for a child ?

Surgical sperm retrieval: outline of the lecture



- introduction
- will I retrieve spermatozoa in this patient ?
- what are my patient's chances for a child ?



"Absence of any spermatozoon in the ejaculate"

Cryptozoospermia vs azoospermia

centrifugation of ejaculate
1000xg for 15 min.

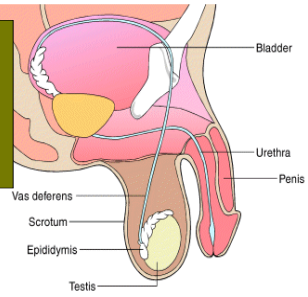
examination of at least 2 ejaculates extended sperm preparation (ESP)

Ron-el et al.,1997

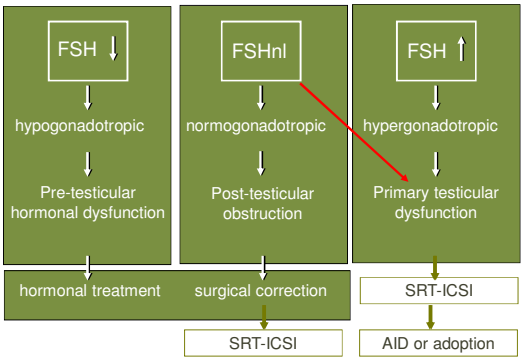
N= 49: in 17 patients (35%) spermatozoa found

Before going for surgery

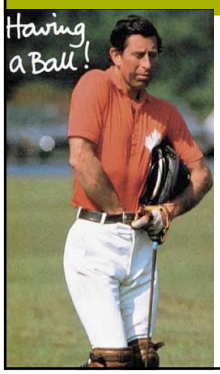
physical examination
biochemical semen markers
TR and Sc ultrasound
hormonal profile
genetic analysis



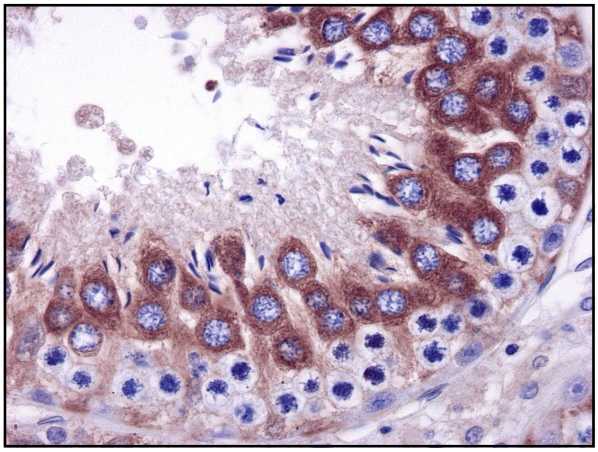
Azoospermia from a clinical viewpoint

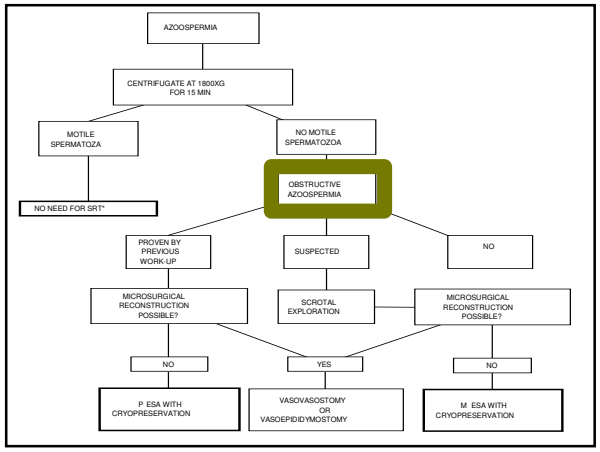


Surgical sperm retrieval: outline of the lecture



- introduction
- will I retrieve spermatozoa in this patient ?
- what are my patient's chances for a child ?





BJU International (2000), **86**, 1043–1049

Population-based outcomes after 28 246 in-hospital vasectomies and 1902 vasovasostomies in Western Australia

C.D.J. HOLMAN, Z.S. WISNIEWSKI*, J.B. SEMMENS, I.L. ROUSE and A.J. BASS
*Centre for Health Services Research, Department of Public Health, The University of Western Australia, Nedlands, *Quality of Surgical Care Committee, Royal Australasian College of Surgeons, Western Australian Branch, Nedlands, Western Australia*

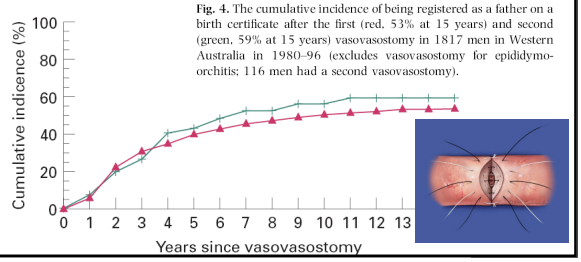


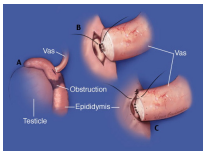
Fig. 4. The cumulative incidence of being registered as a father on a birth certificate after the first (red, 53% at 15 years) and second (green, 59% at 15 years) vasovasostomy in 1817 men in Western Australia in 1980–96 (excludes vasovasostomy for epididymo-orchitis; 116 men had a second vasovasostomy).

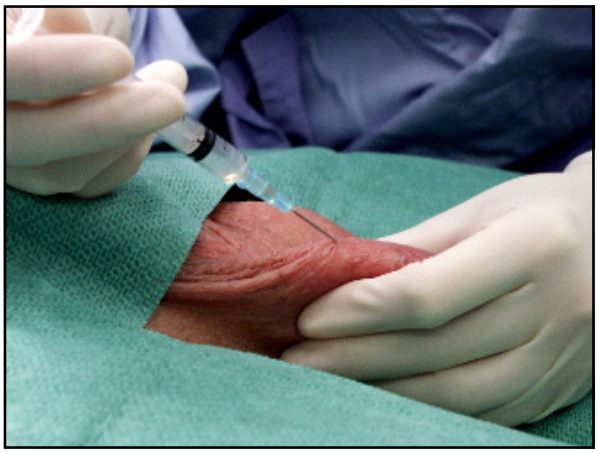
Vaso-epididymostomy

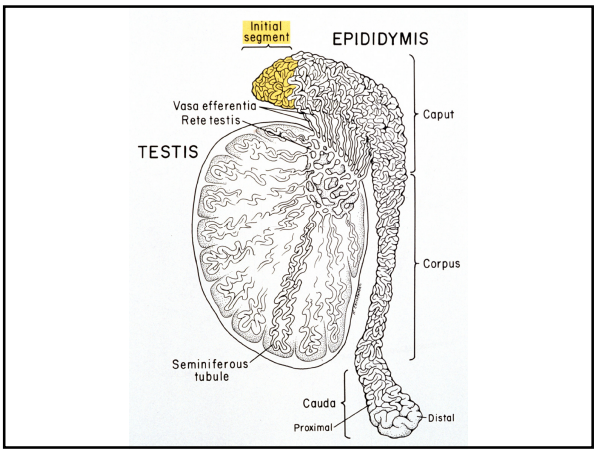
- hardly cumulative long-term follow-up studies
- contrast European vs US reports

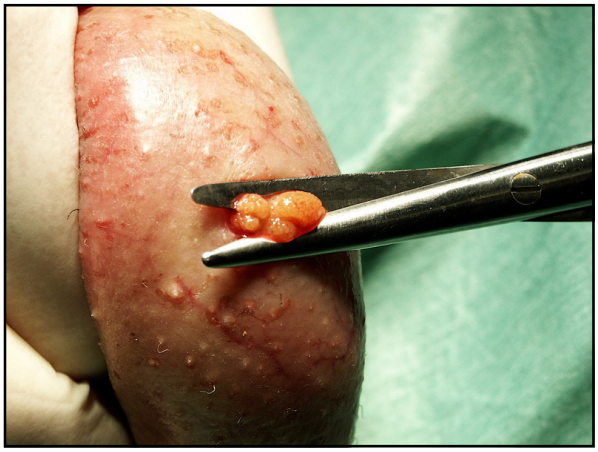
  EU: <30% long-term pregnancy rate

  US: >>30% long-term pregnancy rate

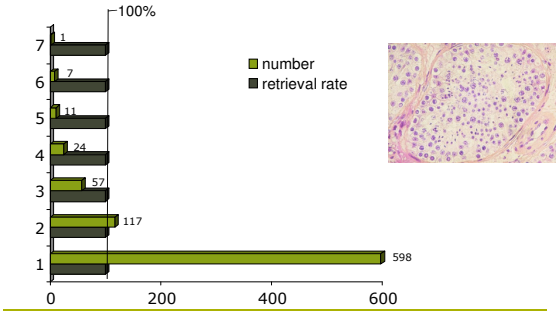








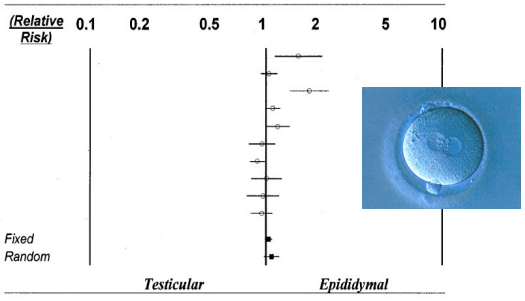
Cumulative retrieval rates after TESE



Centrum voor Reproductieve Geneeskunde

Vernaeve et al. (2006) Hum. Reprod.

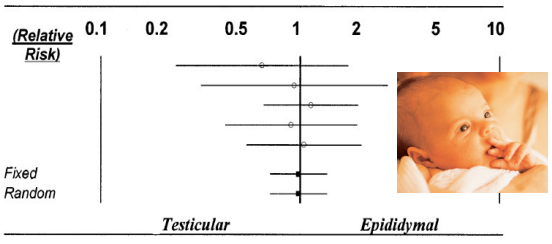
Which recovery technique in obstructive azoospermia?



Nicopoullos et al. Fertil Steril. 2004

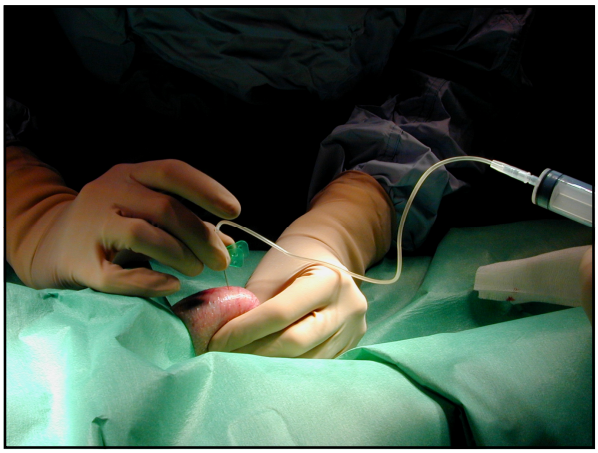
Fertilisation rate: RR 1,08 (0,97-1,18)

Which recovery technique in obstructive azoospermia?



Nicopoullos et al. Fertil Steril. 2004

live birth rate: RR 0,98 (0,71-1,36)



Open biopsy versus FNA for ICSI

	FNA	OPEN	
Patients	51	51	
samples (range)	1.5 (1-3)	1.5 (1-4)	
av. n sperm extrapolated $(x10)^6$	0.002	0.18	p<0.001
oocytes injected	584	525	
av. 2-PN fertilization rate	63.9 %	64.3 %	
av. cleavage rate	71.8 %	78.2 %	
ongoing pregnancy rate	19.6 %	21.6 %	

Centrum voor Reproductieve Geneeskunde

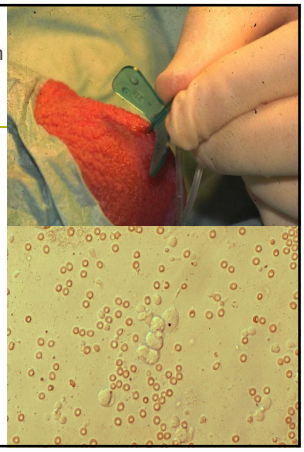
Tournaye et al 1998

cryopreserving testicular sperm after FNA in obstructive azoospermia

fine-needle aspiration

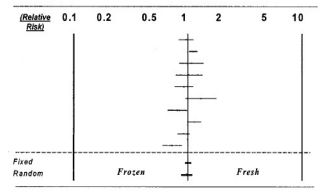
- (too) low numbers
- limited motility

Cryopreservation: difficult

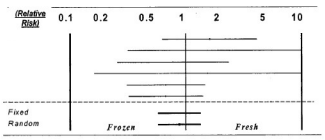


meta-analysis: fresh vs frozen testicular sperm for ICSI

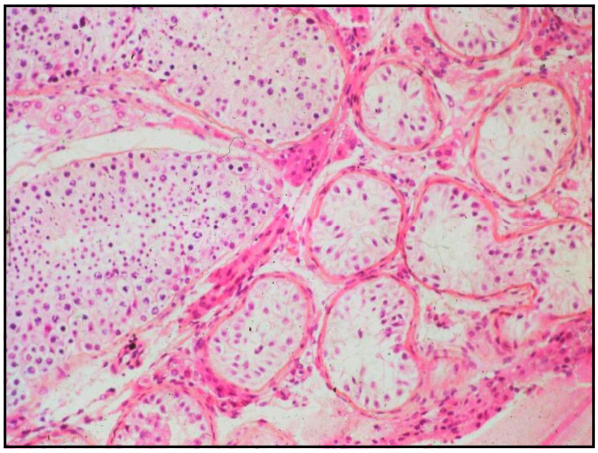
fertilization rate: RR 0.98 (0,89-1,08)



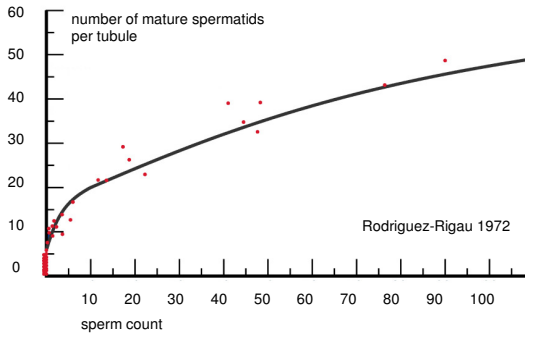
ongoing pregnancy rate: RR 0.88 (0,58-1,33)

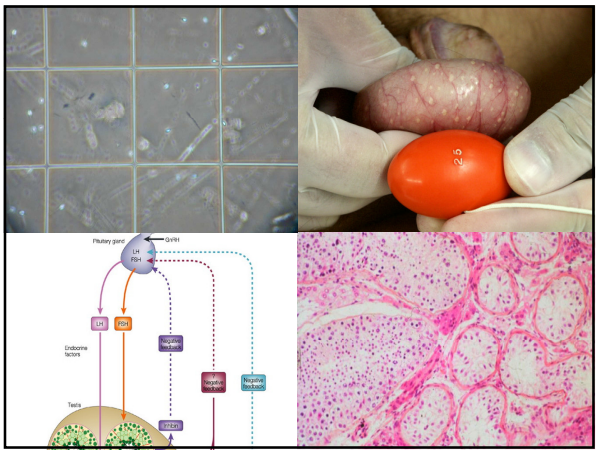


Nicopoullos et al. Fertil Steril. 2004



Quantitative Testicle Biopsy and Sperm Count



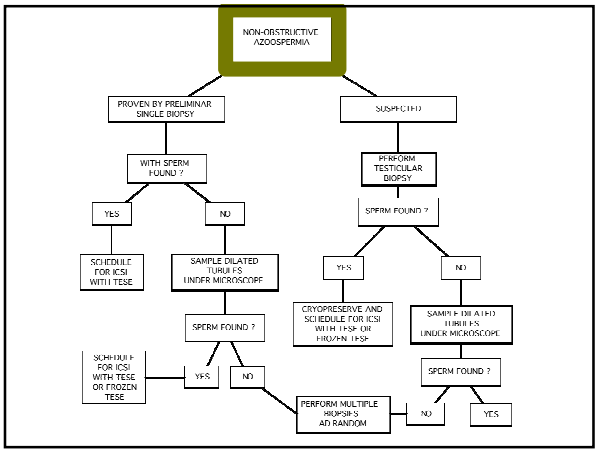


Predictors for successful testicular sperm recovery in patients with hypergonadotrophic hypogonadal azoospermia

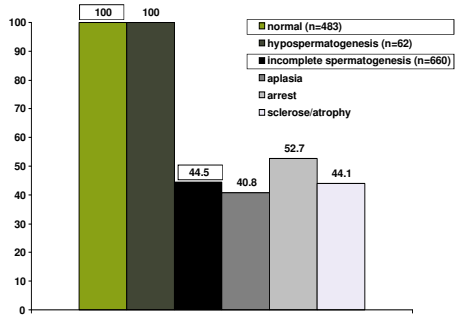
	Acc	CV	TPR	TNR	PV+	PV-
testicular volume	0.60	6.3	73	56	61	69
semen analysis	0.52	1	67	37	58	50
serum FSH	0.54	20.3	67	50	56	61
histopathology	0.61	1	40	81	75	58

Centrum voor Reproductieve Geneeskunde

Tournaye et al., 1997 Hum. Reprod.



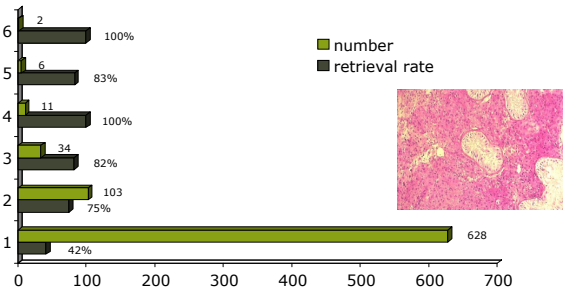
What chances to recover spermatozoa by TESE ?



Centrum voor Reproductieve Geneeskunde

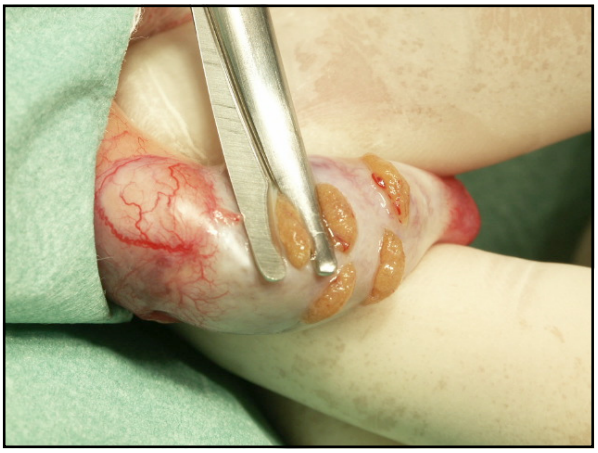
Tournaye unpublished

Cumulative retrieval rates after TESE



Centrum voor Reproductieve Geneeskunde

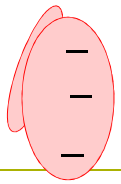
Vernaeve et al. (2006) Hum. Reprod.



Focal distribution versus diffuse distribution

55 testes (29 NOA men): each testis 3 TESE biopsies

overall recovery rate: 28/55 (51%) and 18/29 (62%)



+ in 3 locations	15	53.6%
+ in 2 locations	5	17.9%
+ in 1 location	8	28.9%

Hauser et al. 1998

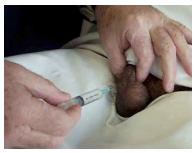
TESE vs aspiration in non-obstructive azoospermia

	TESE	needle (19-21 G)
Friedler et al. 1997	13/32 (40.6%)	4/32 (12.5%)
Ezeh et al. 1998	14/26 (53.8%)	4/26 (15.4%)
Tournaye et al. 1999	9/14 (64.3%)	1/14 (7.1%)
Overall	36/72 (50%)	9/72 (12.5%)

Fine-needle aspiration to predict sperm recovery

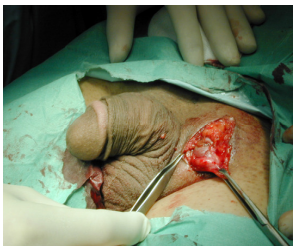
Betella et al. 2005 AJA

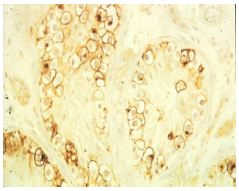
- ✓ Sertoli-cell only pattern: n= 70
- ✓ Maturation arrest pattern n= 13
- ✓ Hypospermatogenesis n= 42

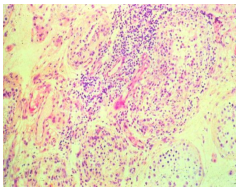


- ✓ Sertoli-cell only pattern: n= 70
  - FNA: no sperm in 100%
  - TESE: sperm in 41%
- ✓ Overall: specificity: 100%
  sensitivity: 44%

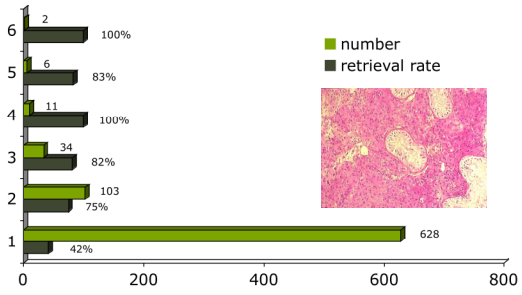
Novero, V. et al. 1996. Seminoma discovered in two males undergoing successful testicular sperm extracton for intracytoplasmic sperm injection. Fertil. Steril., 65, 1015-1054







Cumulative retrieval rates after TESE



Vernaeve et al. (2006) Hum. Reprod.

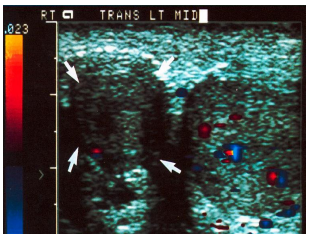
Micro-TESE versus random-TESE

TABLE I. ***Retrieval rate using conventional or microdissection TESE in patients with nonobstructive azoospermia***

Histopathologic Diagnosis	Conventional TESE (%)	Microdissection TESE (%)	*P* Value
Sertoli cell only	7/24 (29)	98/237 (41)	0.35
Maturation arrest	2/10 (20)	27/62 (44)	0.29
Hypospermatogenesis	7/14 (50)	57/73 (81)	0.03

Key: TESE = testicular sperm extraction.

Ramasamy et al. 2005



```
ERROR: stackunderflow
OFFENDING COMMAND: ~

STACK:
```