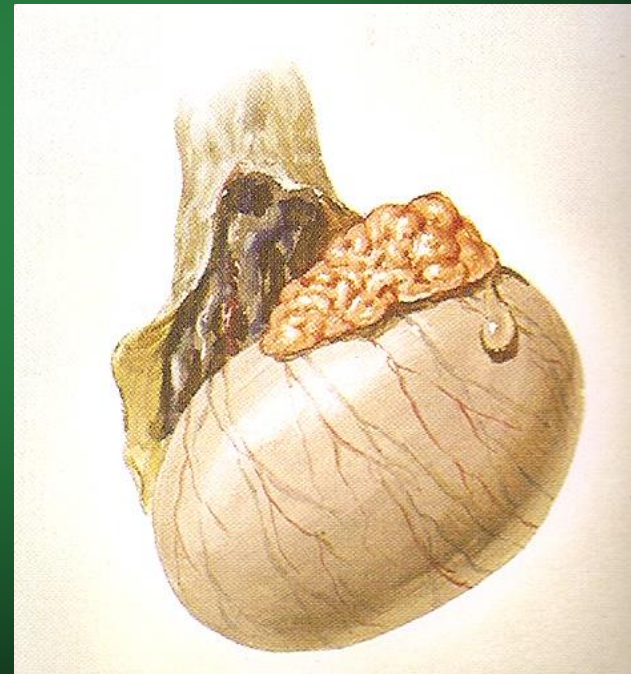


# Cystic Fibrosis and Male Sexuality: The Good News

Paul J. Turek, M.D.

Director, The Turek Clinic

Emeritus Professor, UCSF



I read in one of the papers that couples can get pregnant without sex. Is that true?

A patient, 1998

# Test Answers

$$c = a + b + d$$

$$c = (T \cdot S \cdot (\alpha - 10^\circ) + 3\alpha + 2 \cdot 3 \ln 11)^2$$

$$c = (T \cdot S \cdot \log \frac{1}{2} + 3\alpha + 6 \ln 11)^2$$

$$c = \left[ \int_{x_1}^{x_2} \alpha dx + \frac{3[(3+x)^2 + 6 + 3T]}{(5+y)(8+z)+1} + 6 \ln 11 \right]^2$$

$$c = \left[ \int_{x_1}^{x_2} \frac{(3+x)^2 + 6 + 3T}{(5+y)(8+z)+1} dx + \frac{3[(3+x)^2 + 6 + 3T]}{(5+y)(8+z)+1} + 6 \ln 11 \right]^2$$

$$c = \left[ \int_{x_1}^{x_2} \frac{(3+x)^2 + (\beta - 10^\circ) + 3T}{(5+y)(8+z)+1} dx + \frac{3[(3+x)^2 + (\beta - 10^\circ) + 3T]}{(5+y)(8+z)+1} + 6 \ln 11 \right]^2$$

$$c = \left[ \int_{x_1}^{x_2} \frac{\sqrt{3+7x} + (\beta - 10^\circ) + 3T}{10\Omega - 6T - 1} dx + \frac{3[\sqrt{3+7x} + (\beta - 10^\circ) + 3T]}{10\Omega - 6T - 1} + 6 \ln 11 \right]^2$$

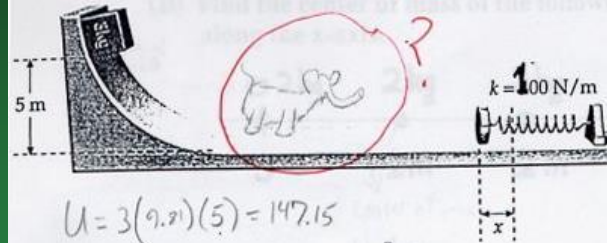
$$c = \sqrt{\left[ \int_{x_1}^{x_2} \alpha dx + \frac{3[\sqrt{3+7x} + (\beta - 10^\circ) + 3T]}{(5+y)(8+z)} + 6 \ln 11 \right]^2}$$

$$c = \sqrt{\left[ \int_{x_1}^{x_2} \alpha dx + \frac{3[\sqrt{3+7x} + (\beta - 10^\circ) + 3T]}{10\Omega - 6T - 1} + 6 \ln 11 \right]^2}$$

$$c = \sqrt{\left[ \int_{x_1}^{x_2} \alpha dx + \frac{3[\sqrt{3+7x} + (\beta - 10^\circ) + 3T]}{10\Omega - 6T - 1} + 6 \ln 11 \right]^2}$$

2. A 3-kg object is released from rest at a height of 5m on a curved frictionless ramp. At the foot of the ramp is a spring of force constant  $k = 100 \text{ N/m}$ . The object slides down the ramp and into the spring, compressing it a distance  $x$  before coming to rest.

- 10 (a) Find  $x$ .  
5 (b) Does the object continue to move after it comes to rest? If yes, how high will it go up the slope before it comes to rest?



$$U = 3(9.8)(5) = 147.15$$

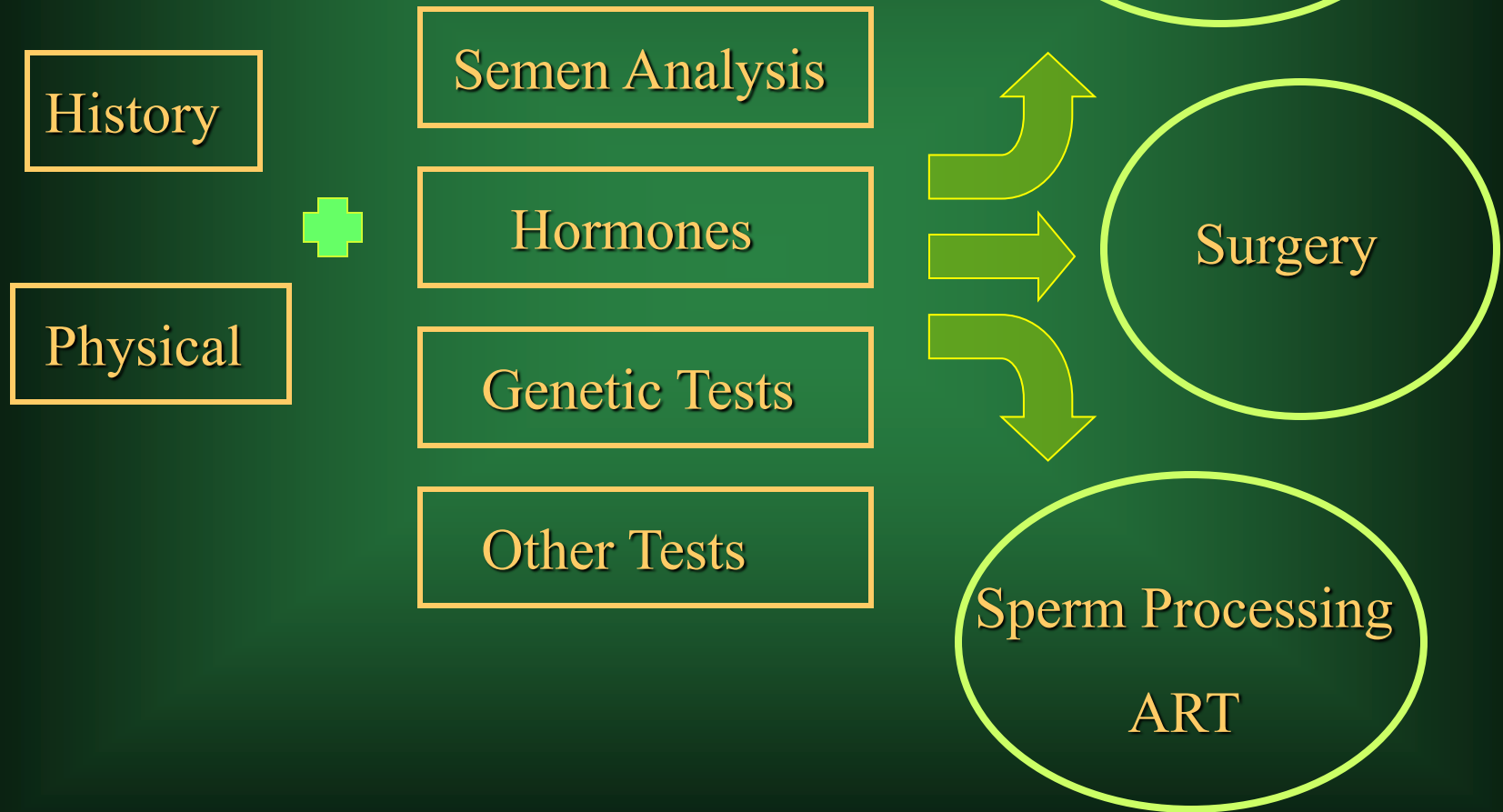
$$U_s = \frac{1}{2}(100)x^2 = 50x^2 \dots?$$

NO. there is an elephant in the way.



CF and male fertility is an easier problem!

# Basic Male Evaluation



# Medications

# Habits

# Exposure

Nitrofurantoin

ETOH

Radiation

Sulfasalazine

Tobacco

Heat

Cimetidine

Steroids

Pesticides

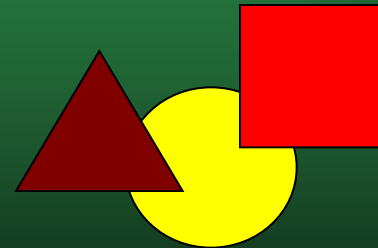
$\beta$ -blockers

Marijuana

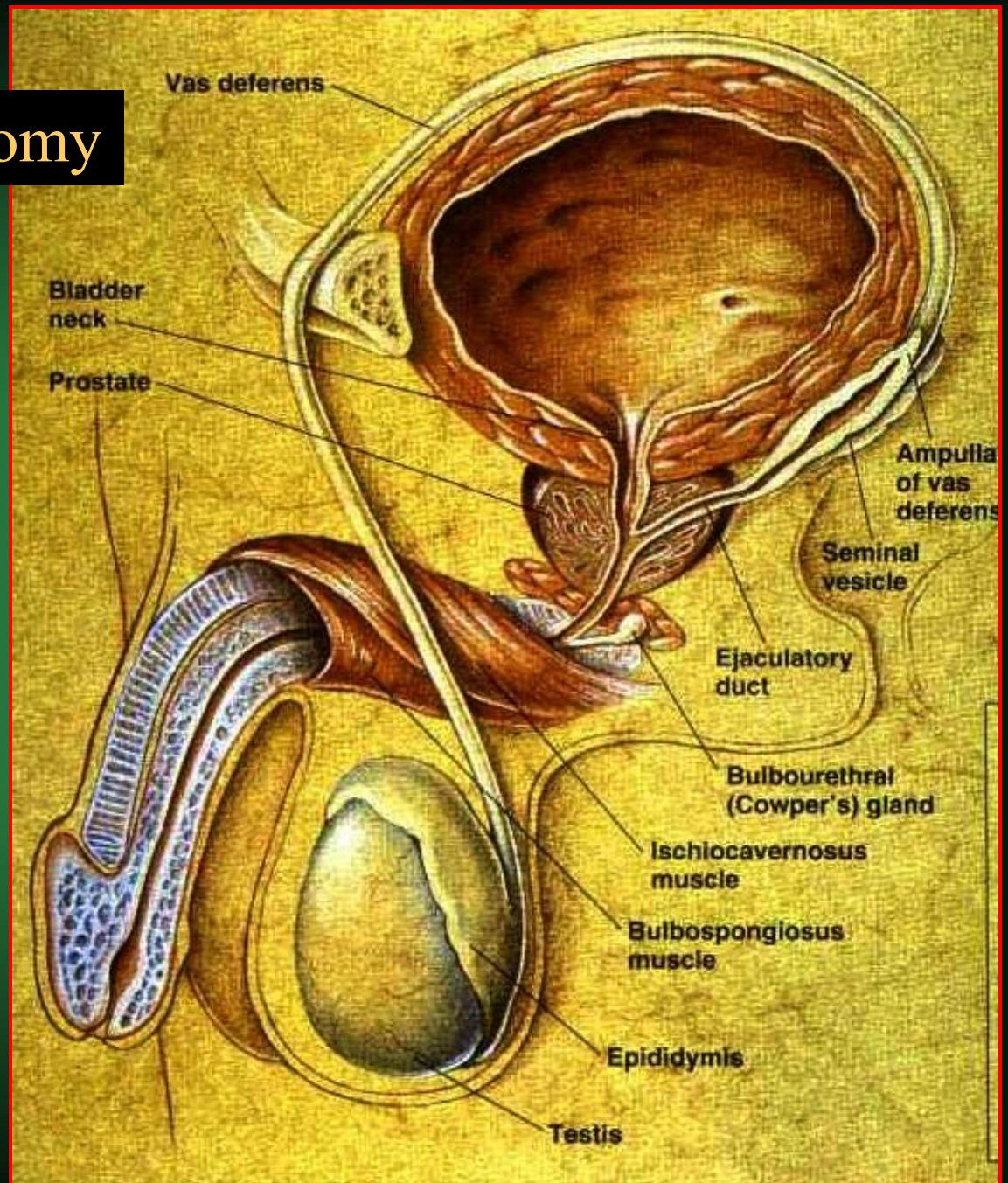
Lead

Ca<sup>+</sup> Chann. Block.

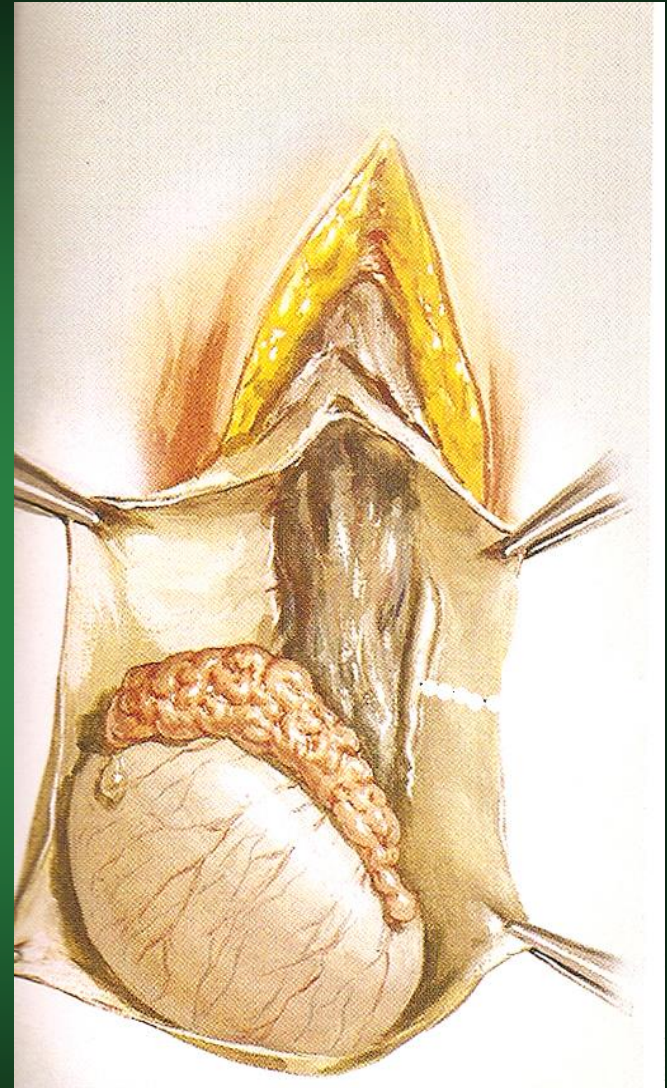
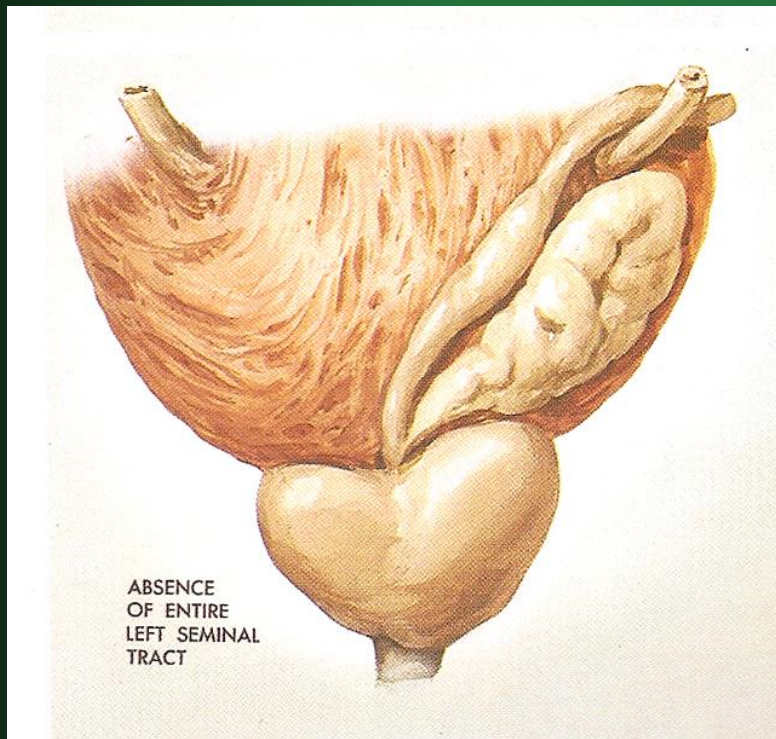
Antipsychotics



# Normal Male Anatomy

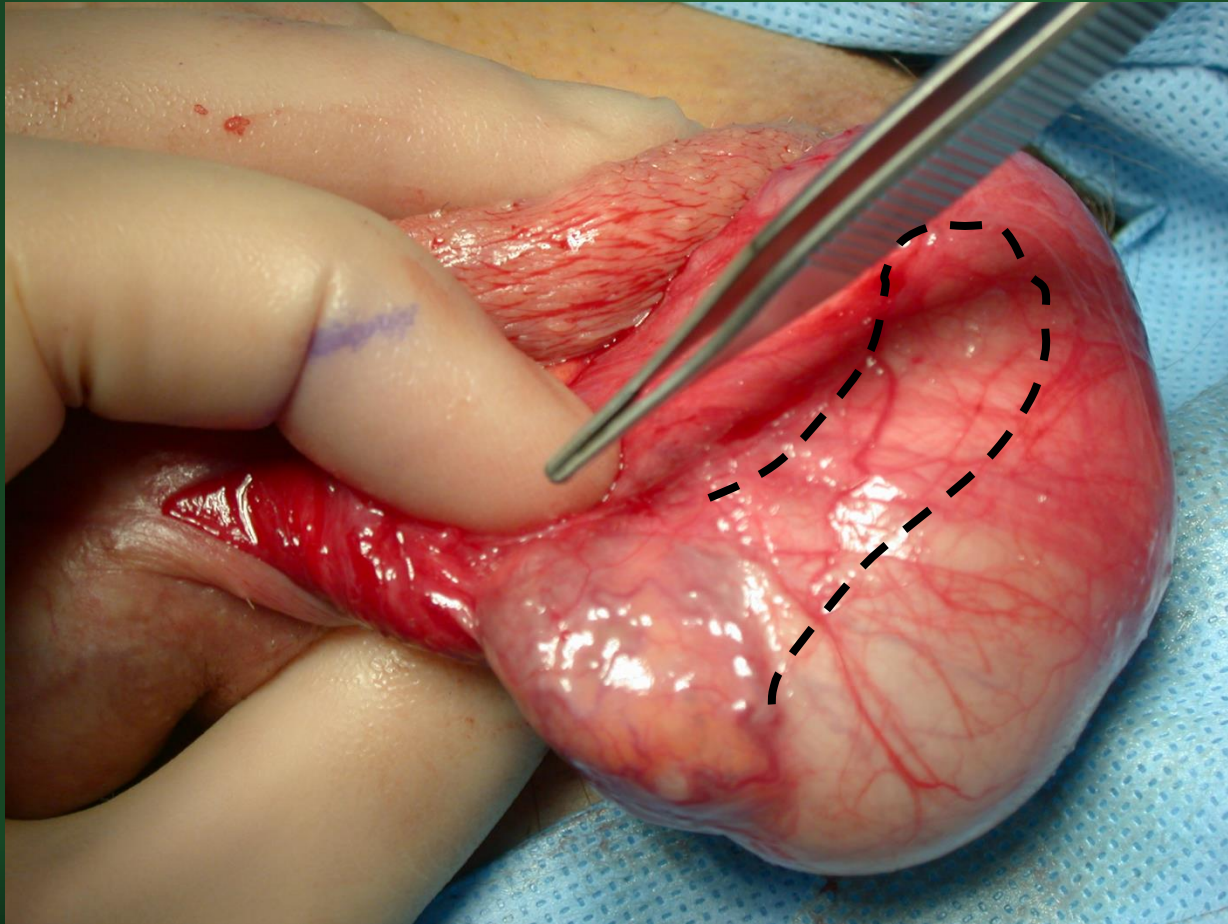


# Physical Examination

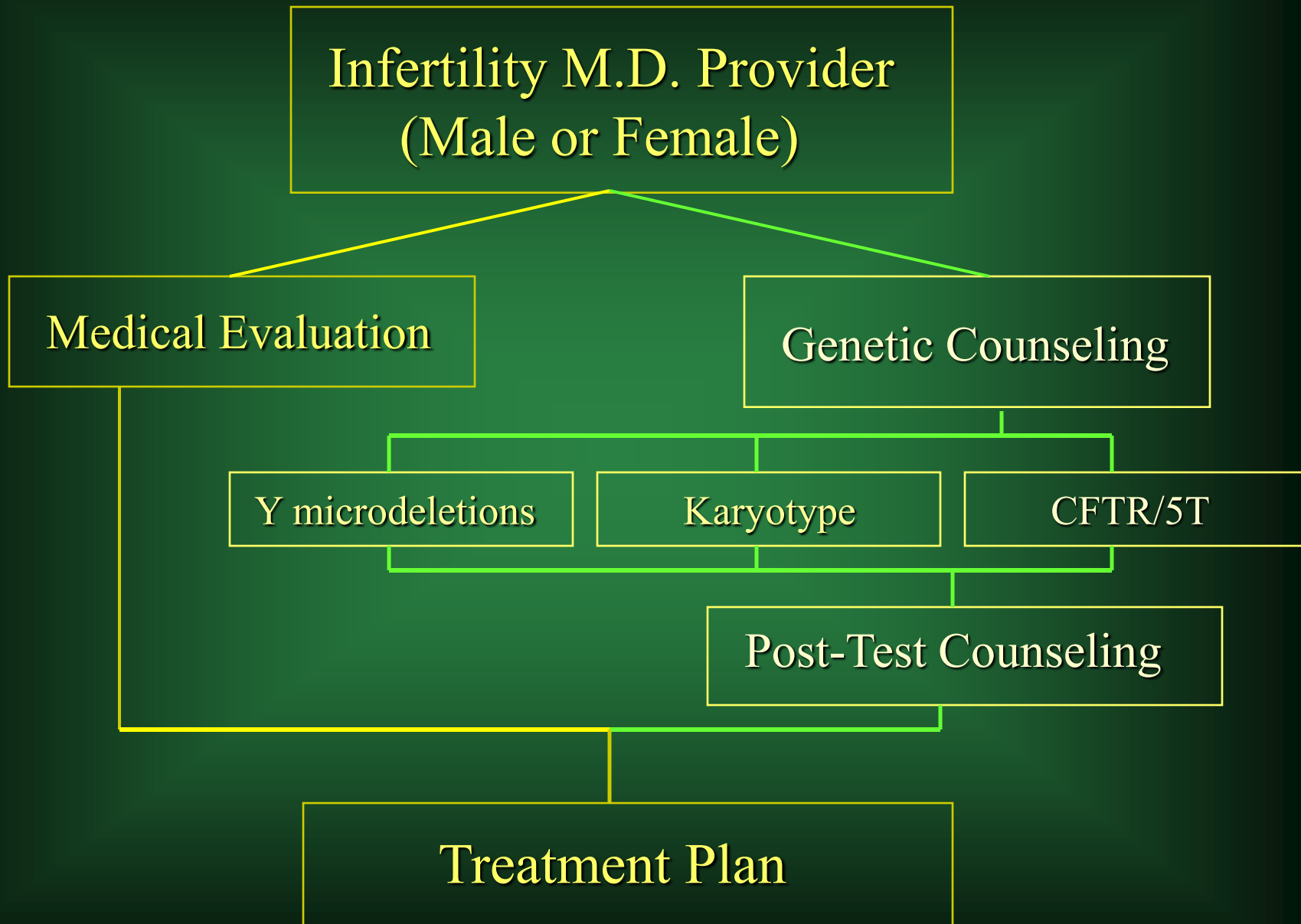


“Natural Vasectomy”

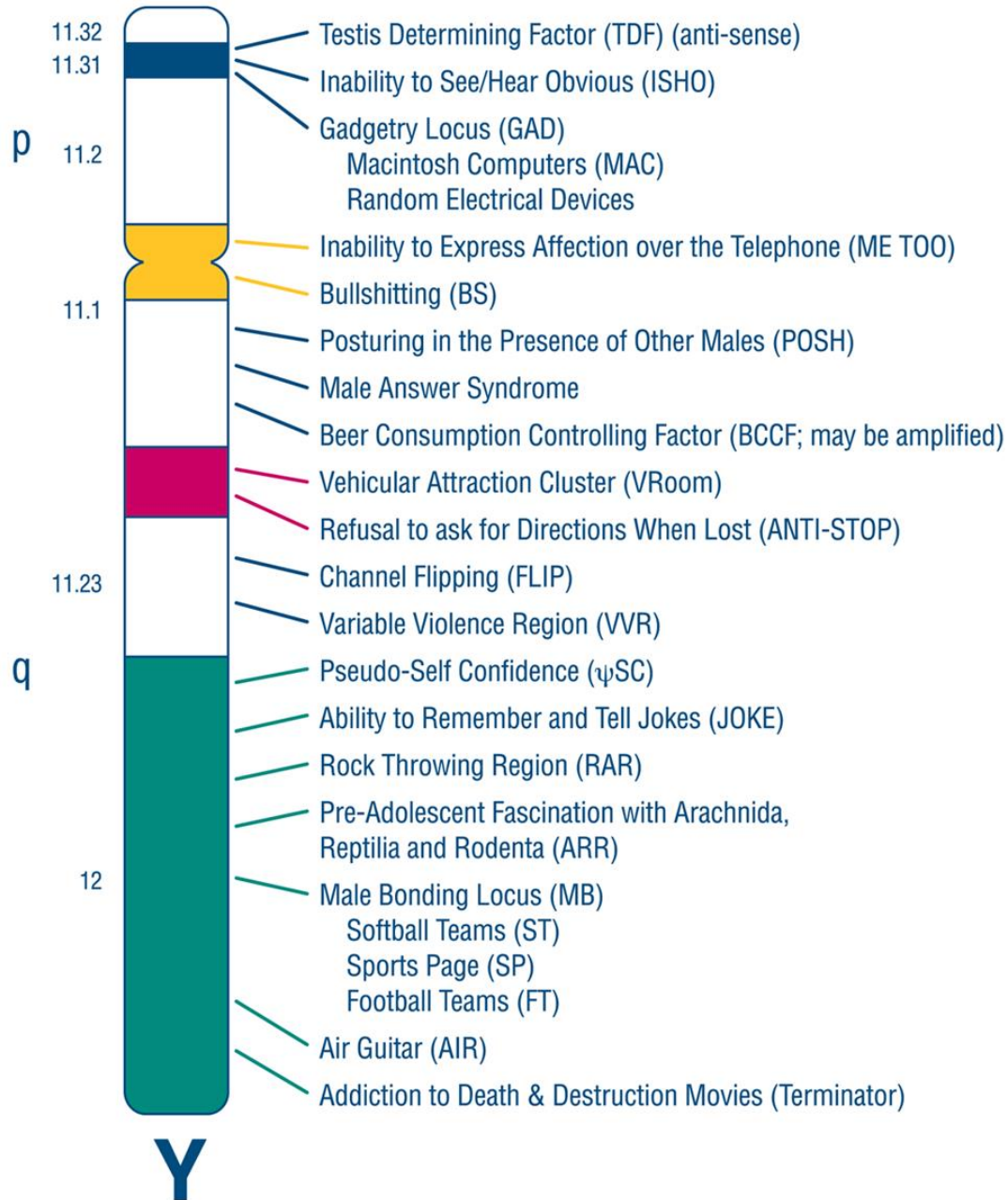
# CBAVD







# Major Human Y-linked Loci

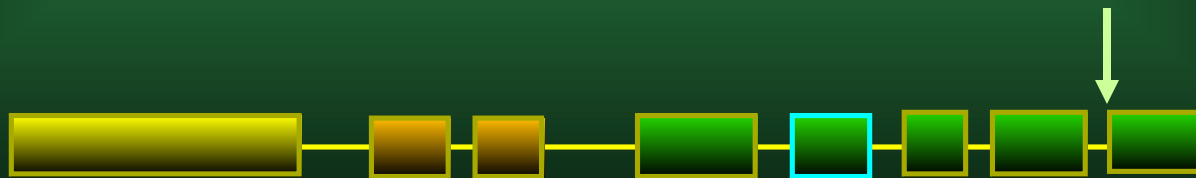


# The CFTR Gene

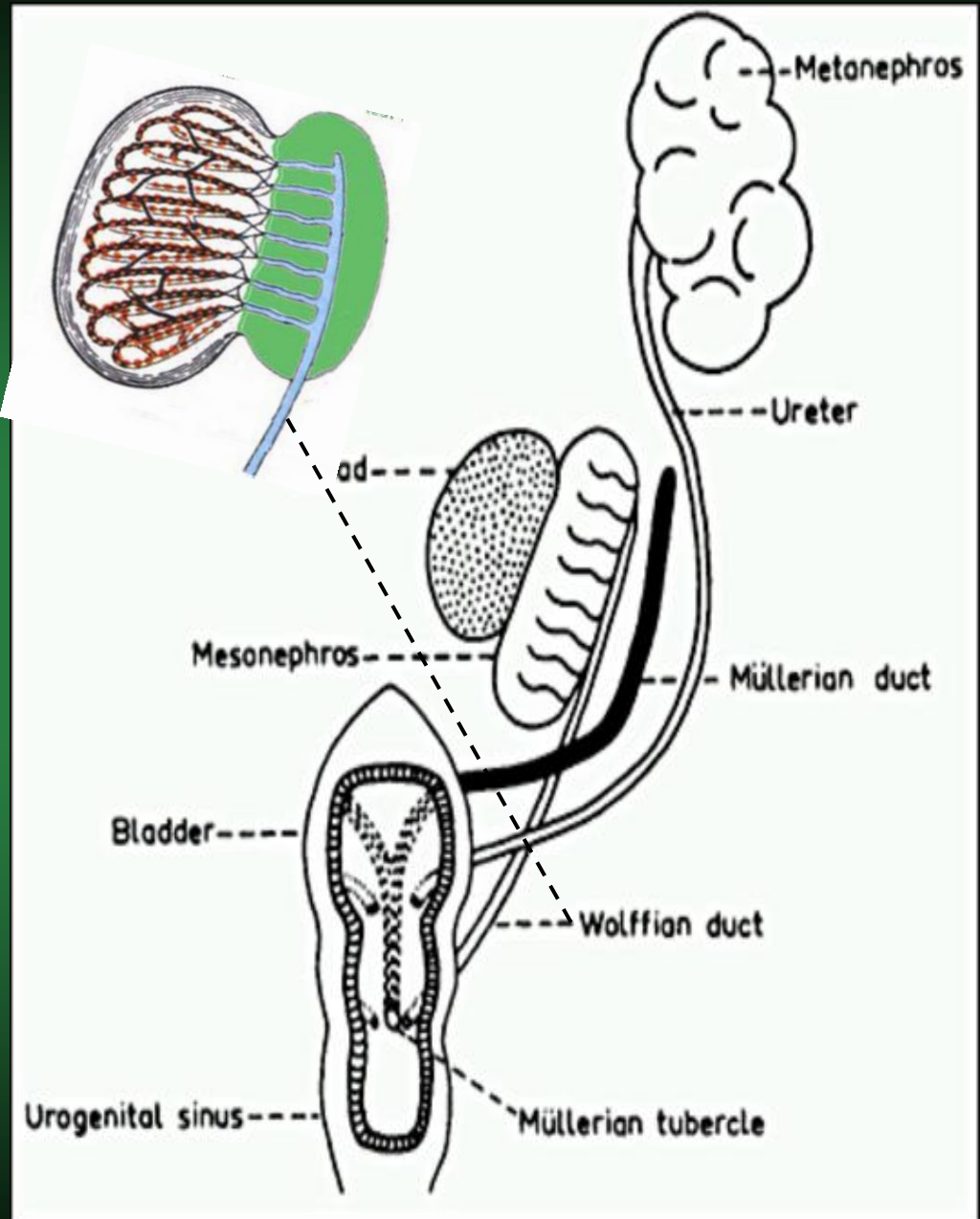
The Gene: CFTR, located 7q31.2  
5T IVS8 (5T variant)

Function: Encodes the cyclic adenosine monophosphate-regulated chloride channel in secretory epithelia

Problem: 1500+ mutations described

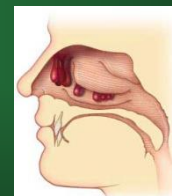
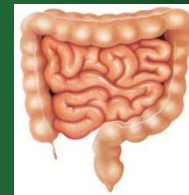
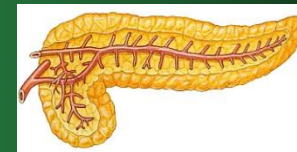


# Mullerian and Wolffian Duct Relationships



# Congenital Absence of the Vas Deferens (CAVD)

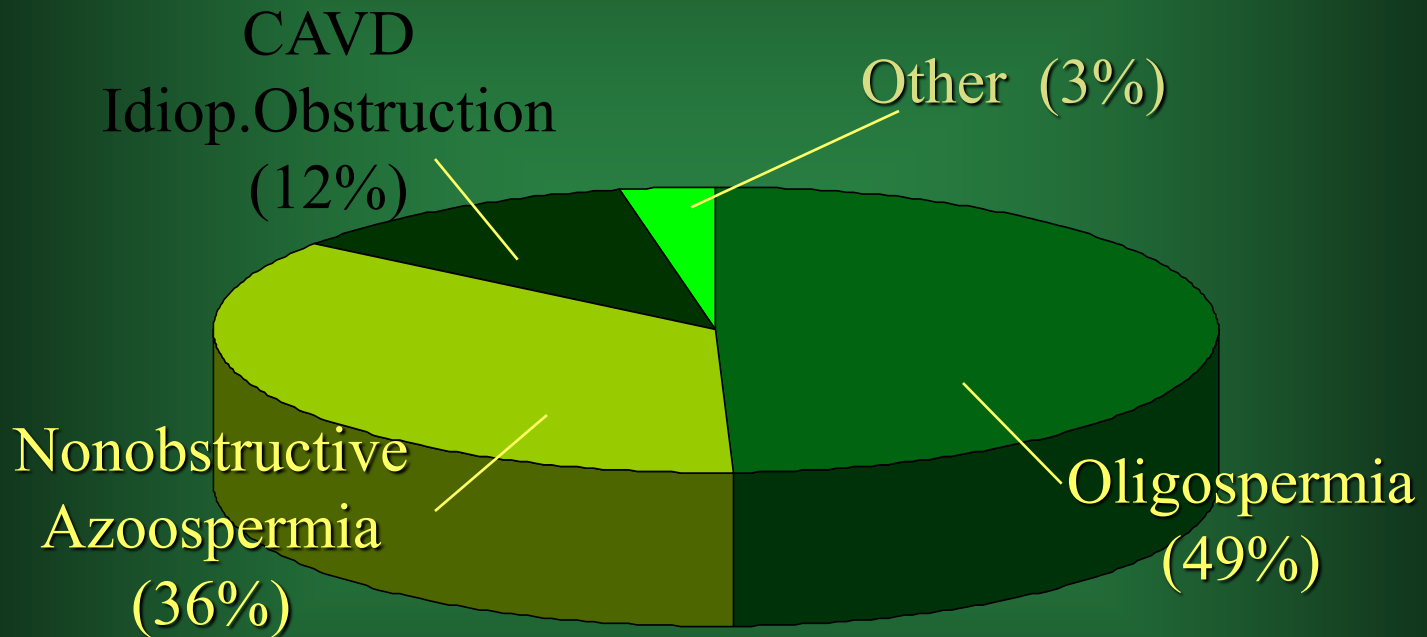
- Unilateral: most azoospermic
- Bilateral: all azoospermic
- Involves any segment of Wolffian duct
- Seminal vesicle agenesis, cysts
- Can have ejaculatory duct obstruction
- Prostatic and utricular cysts
- If ipsilateral kidney absent:  
    No CFTR mutations
- If ipsilateral kidney present:  
    80% have CFTR mutations
- “*Form fruste*” of CF:

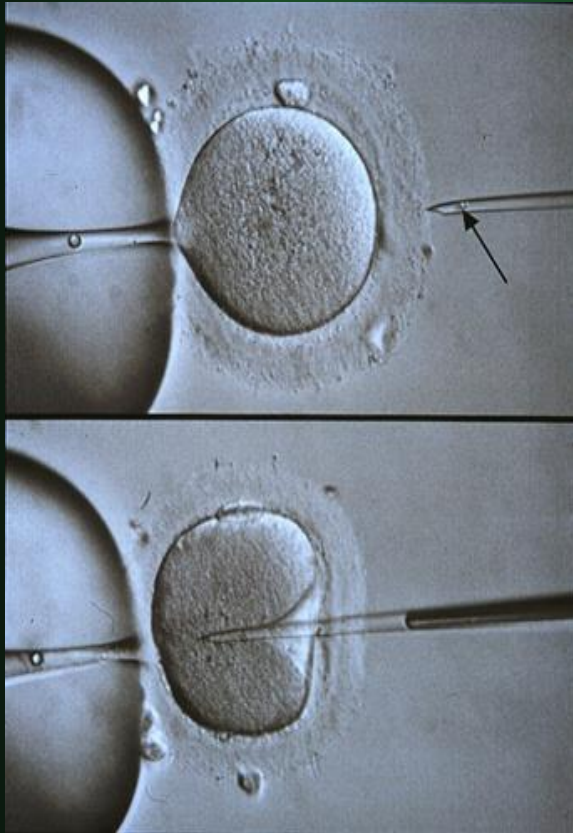


CF: Pneumonia, pancreatic insufficiency, bowel obstruction, sinusitis, nasal polyps.

*PROGENI*<sup>®</sup>

The First 500 Patients





ORGANON

presents



# An immaculate misconception

by Carl Djerassi

Produced and directed  
by William Archer

Yerba Buena Center for the Arts  
San Francisco, California

6 October 1998, 8:00 pm.

[www.djerassi.com](http://www.djerassi.com)

Redshift Productions presents the American Premiere of

# TABOOS

written by CARL DJERASSI



What would you compromise to make a family?

directed by Melissa Maxwell

starring

Blake Delong, Julie Leedes, Helen Merino,  
John G. Preston, and Jenn Schulte

**LIMITED ENGAGEMENT • 6 WEEKS ONLY**  
September 10th – October 19th, 2008

Performances: Wednesdays through Saturdays at 8PM, Saturdays and Sundays at 3PM  
The Soho Playhouse 15 Vandam Street, New York City

Take the C or E train to SPRING then one Block North  
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Tickets \$30.00 - \$42.50 • [www.sohoplayhouse.com](http://www.sohoplayhouse.com) or 212-691-1555

What makes one a parent? Love, genetics, giving birth? This question lies at the center of Carl Djerassi's newest play TABOOS. Returning to his scientific roots, Djerassi explores the other side of planned parenthood. When a lesbian couple and an infertile fundamentalist Christian couple each look to have a child, more than biology gets in the way of the idea of the "perfect family." TABOOS explores the unexpected, and often messy, results that arise when emotions and science collide.

**Praise for the London premiere:**

"Having grappled with such issues as test-tube reproduction and scientific fraud, Djerassi now explores the implications of modern fertility techniques or, as one character describes it, 'a spectacularly complicated reproductive mess among adults, not all of them consenting...'; a comedy fertilized by a 'what if?' case study." - Ian Johns, *The Times* (London)

"A stage full of scientific and ethical viewpoints... Djerassi manages to make this comedy of genetic muddle strangely gripping." - Fiona Mountford, *Evening Standard* (London)

"Rugby ball theatre... there are exciting complications at every turn. In the ethical crossfire that follows, Djerassi seems to have weighted the arguments as evenly as possible." - Kieron Quirke, *Time Out* (London)

# Sperm Retrieval Procedures

## Techniques for Obstructive Azoospermia

Vasal sperm

Epididymal sperm

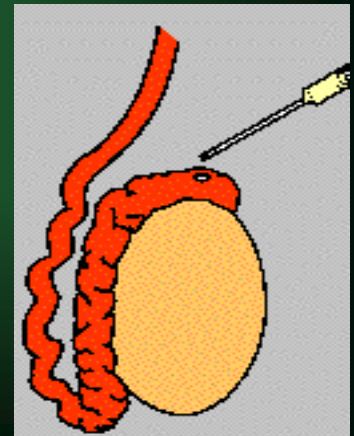
PESA

MESA

Testis sperm

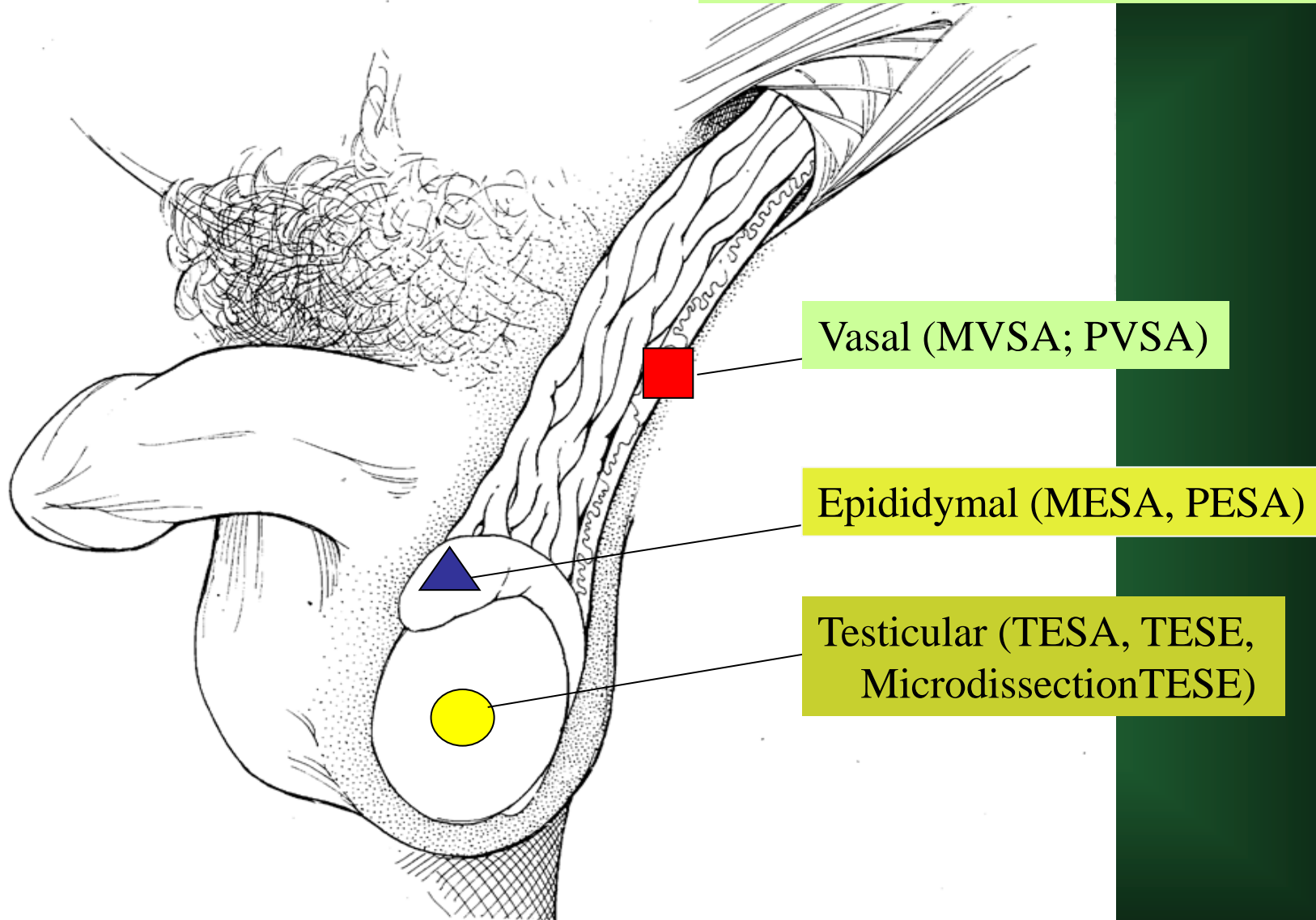
TESA

TESE





# Obstructive Azoospermia



## Obstructive Azoospermia

*Guideline:* Least invasive, least damaging, best yield.

Since assisted reproduction (IVF-ICSI) does not have a 100% success rate, it behooves reproductive urologists to develop and use sperm-retrieval techniques that are not only reliable and of low morbidity, but that also have the potential to harvest sufficient sperm to enable multiple IVF-ICSI attempts without repeat surgery

Turek et al. Ass Reprod Rev. 1999, 9: 60-64

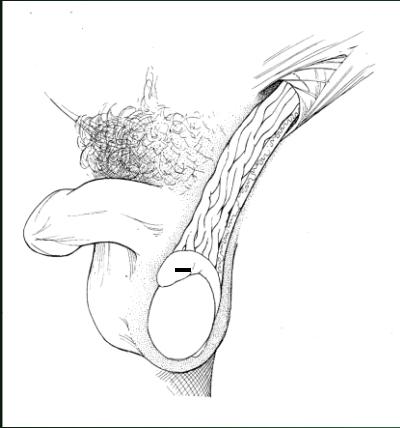
# Epididymal sperm

- Microscopic/magnified epididymal sperm aspiration (MESA)
  - Open incision
  - Use of optical magnification
  - High yield
- Percutaneous sperm aspiration (PESA)
  - No incision
  - No magnification
  - Low yield

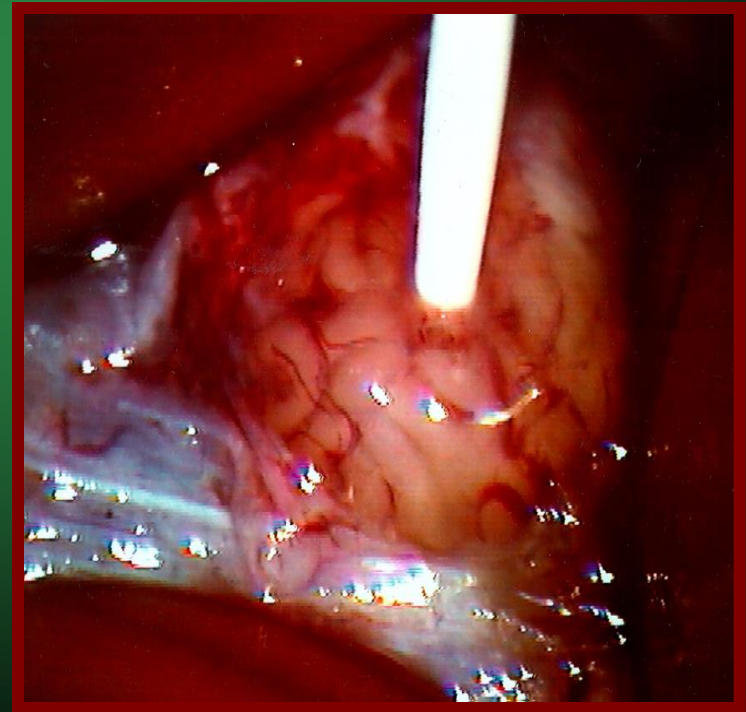
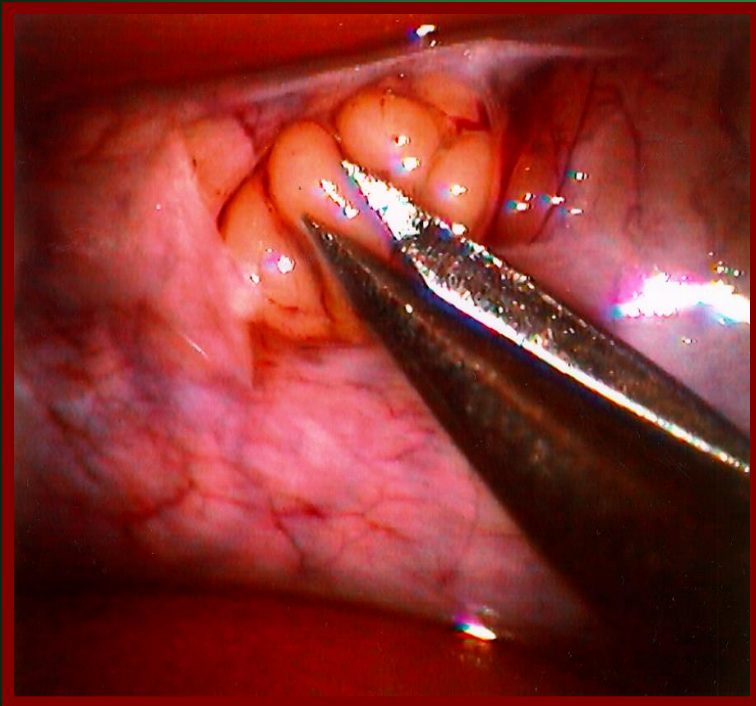
# Microscopic Epididymal Sperm Aspiration (MESA)



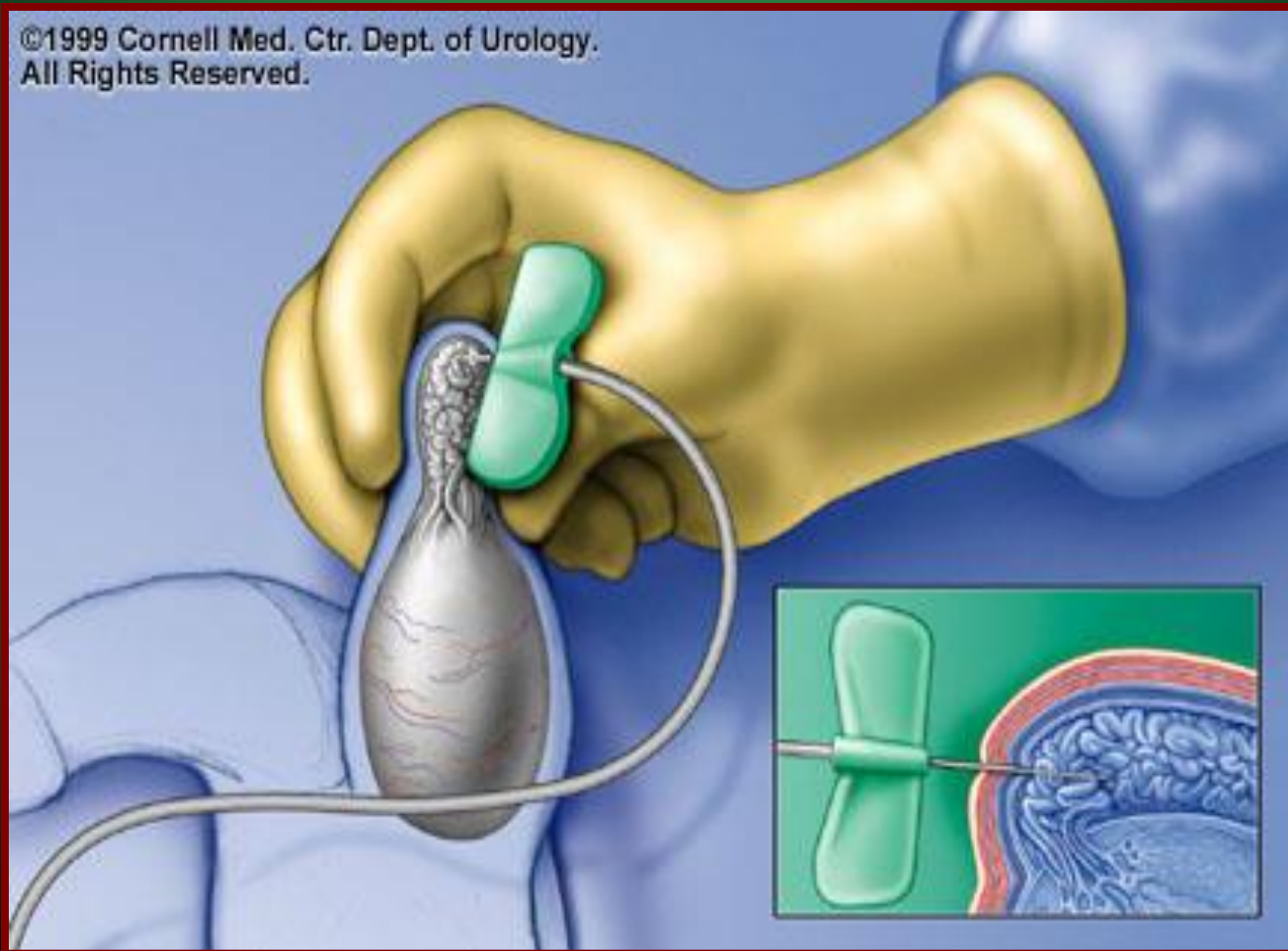
# The Mini-MESA



- Local +/- sedation
- 1-2 hours
- 6-10 million TMC
- Freeze-all approach
- Mean 2 pain pills
- Recovery 1-2 days
- <1% complication
- 1% need repeating

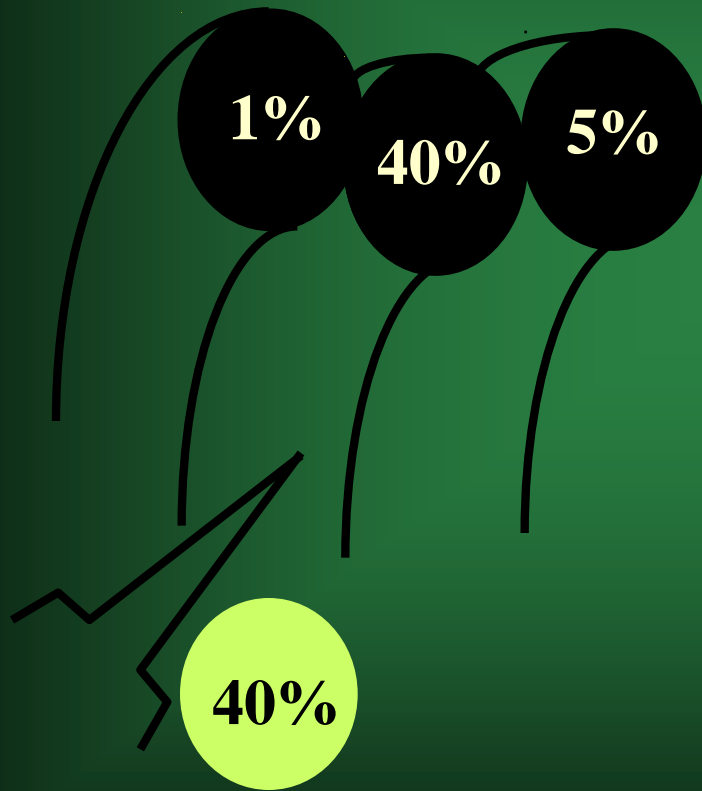


# Percutaneous Epididymal Sperm Aspiration (PESA)

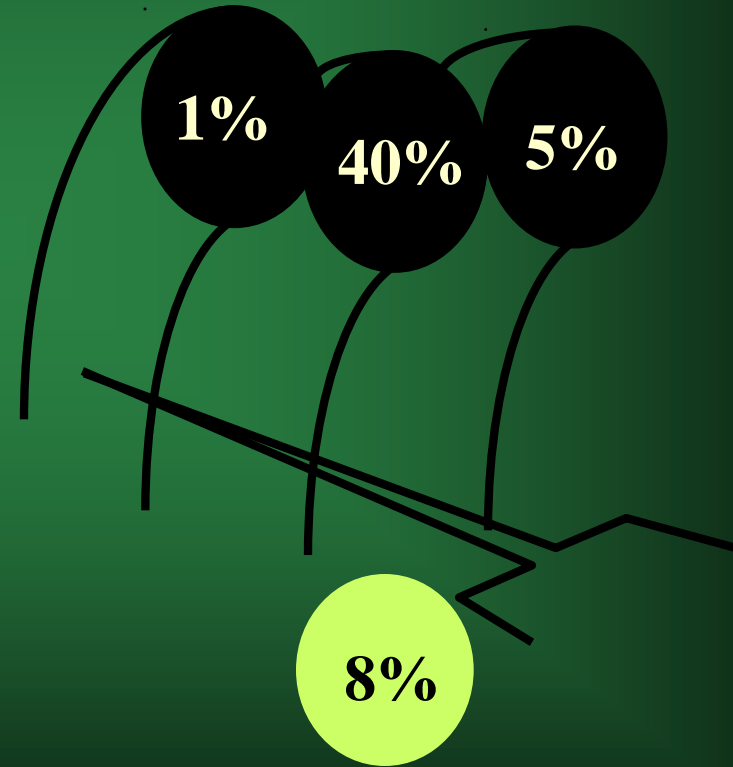


# Why MESA and not PESA?

MESA



PESA

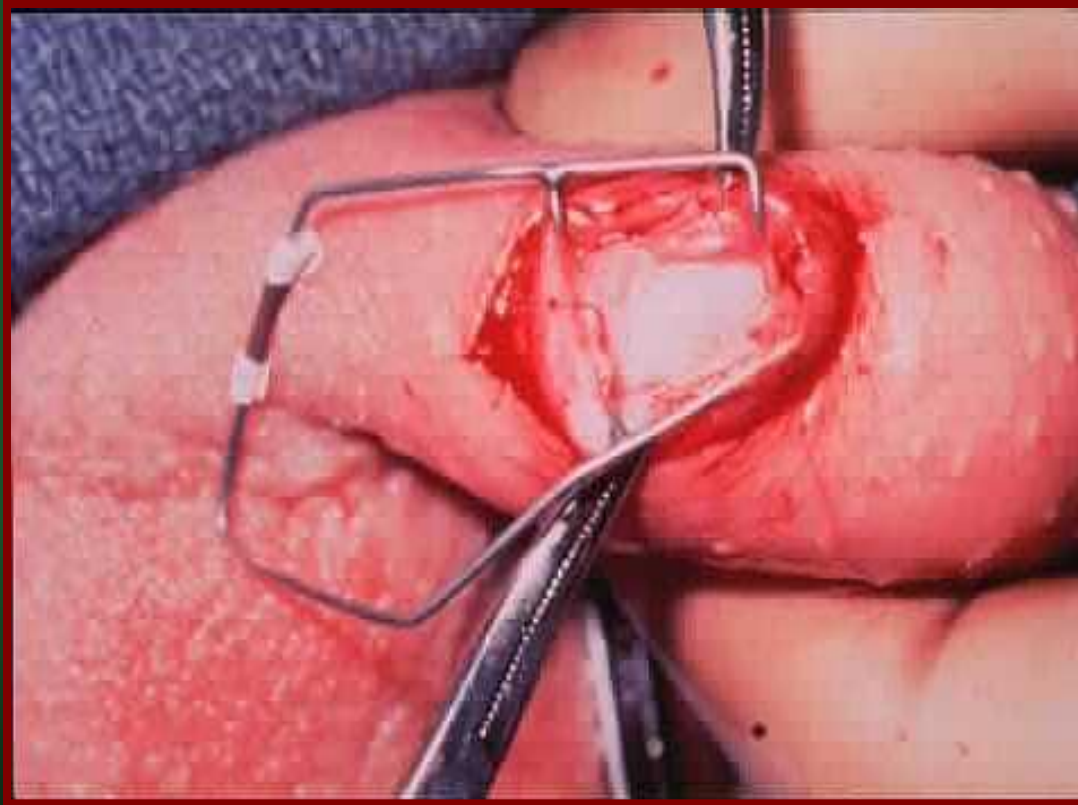


# Testicular sperm

- Testicular sperm extraction (TESE)
  - Open incision
  - High yield
- Percutaneous sperm aspiration (TESA)
  - No incision
  - Low yield
- Percutaneous biopsy of testis
  - No incision
  - Moderate yield
  - Risk for hematoma

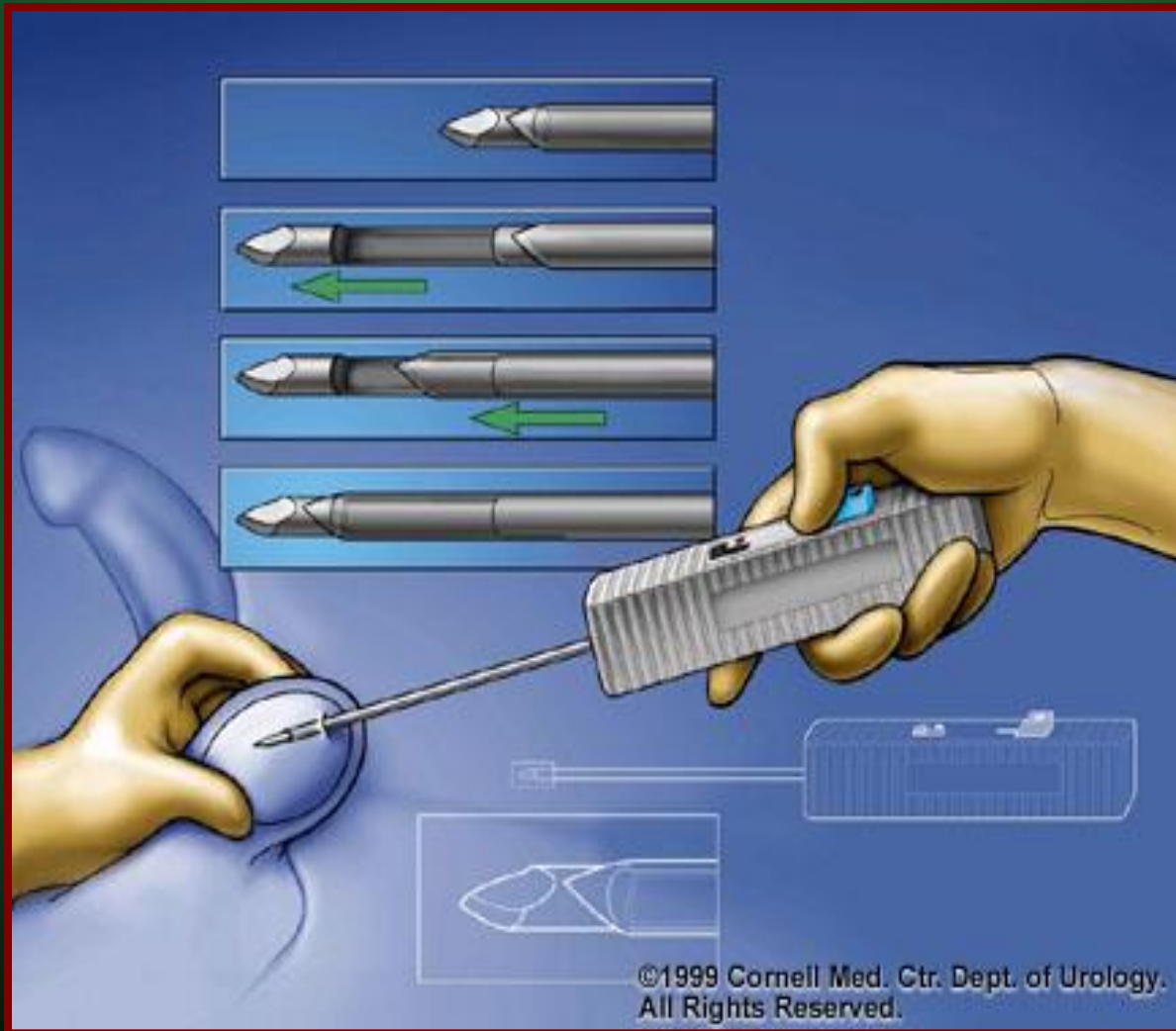


# Testicular Sperm Extraction (TESE)



Window Biopsy Technique

# Testicular PercBiopsy

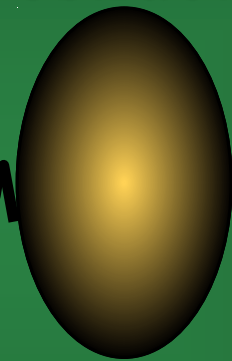


# The Problem of Azoospermia

5% of infertile men

- History
- Physical Exam
- Hormones
- Semen Analysis

Obstructive



Repair  
ICSI

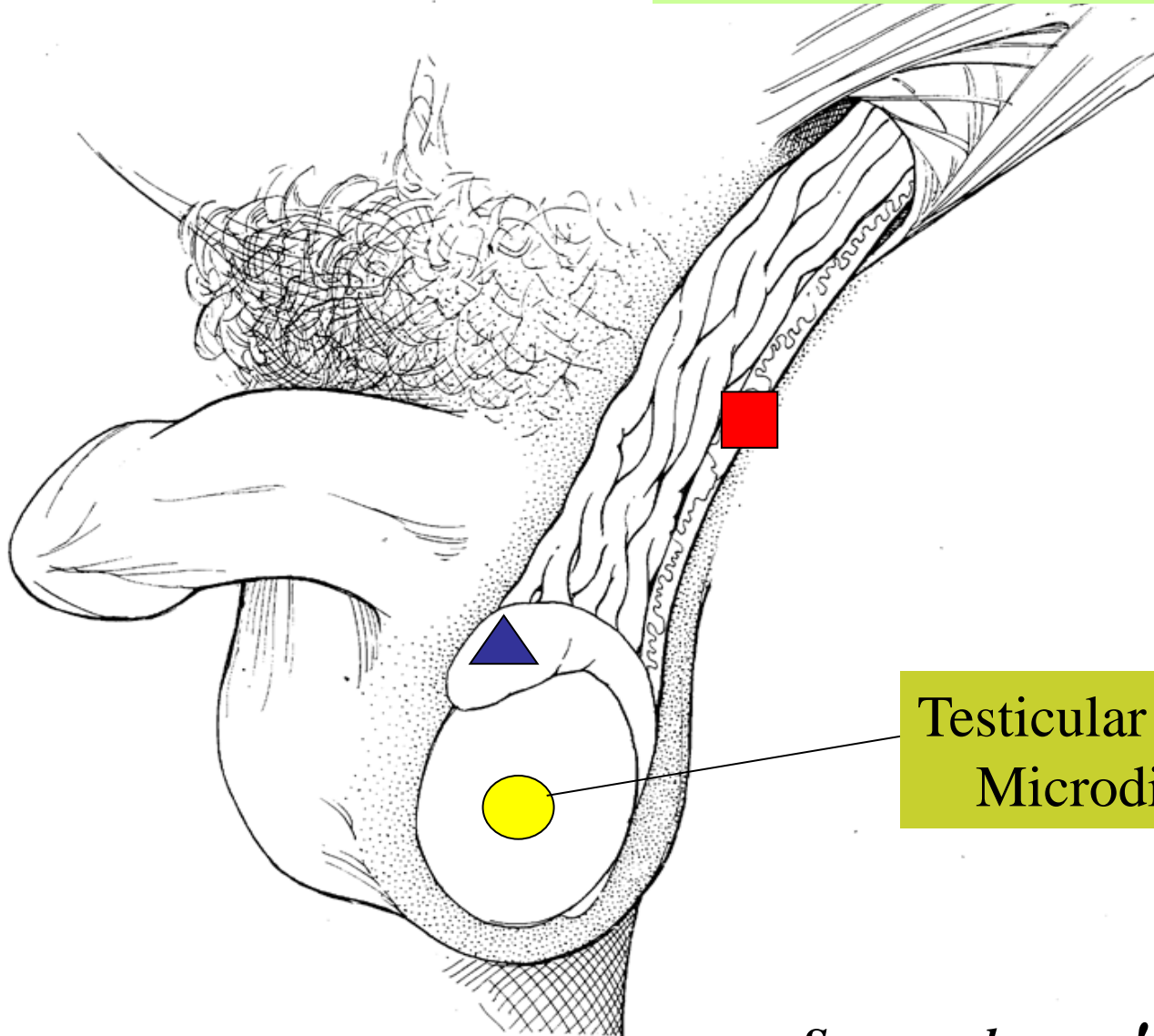


ICSI



Non-obstructive

# Nonobstructive Azoospermia

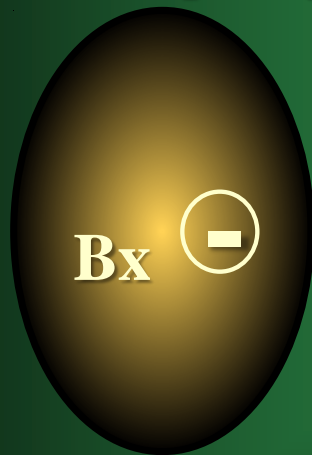


Testicular (TESA, TESE,  
Microdissection TESE)

*Surgeon beware!!*

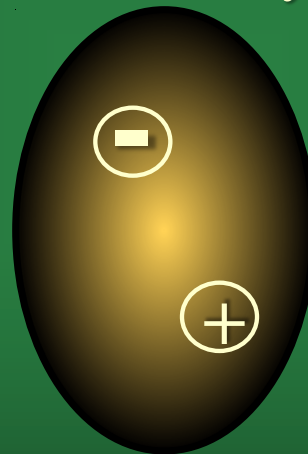
# How “Patchy” or “Focal” is Sperm Production?<sup>20</sup>

Bx-FNA  
Discrepancy



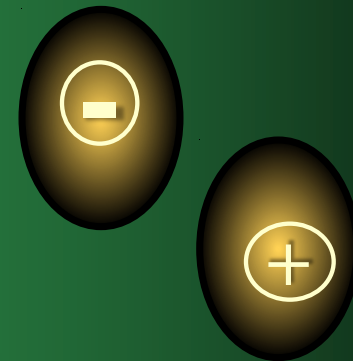
27% FNA +

Intratestis  
Variability



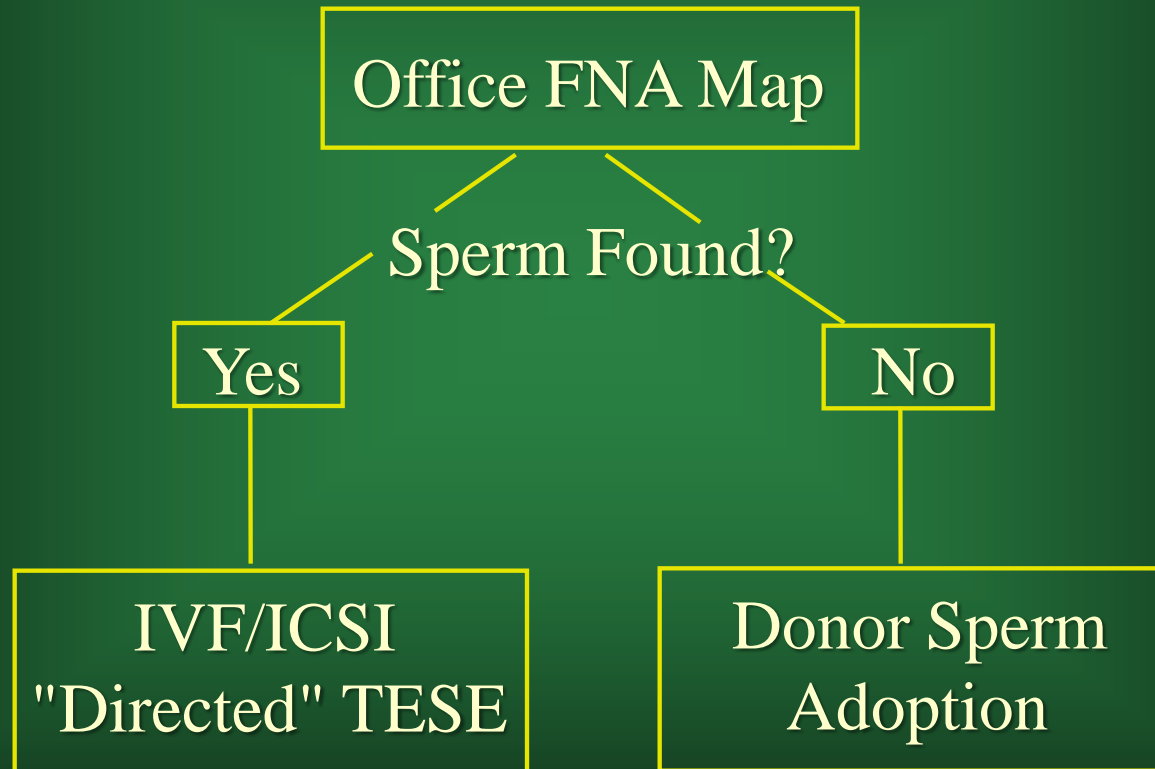
25% of testes

Intertestis  
Variability

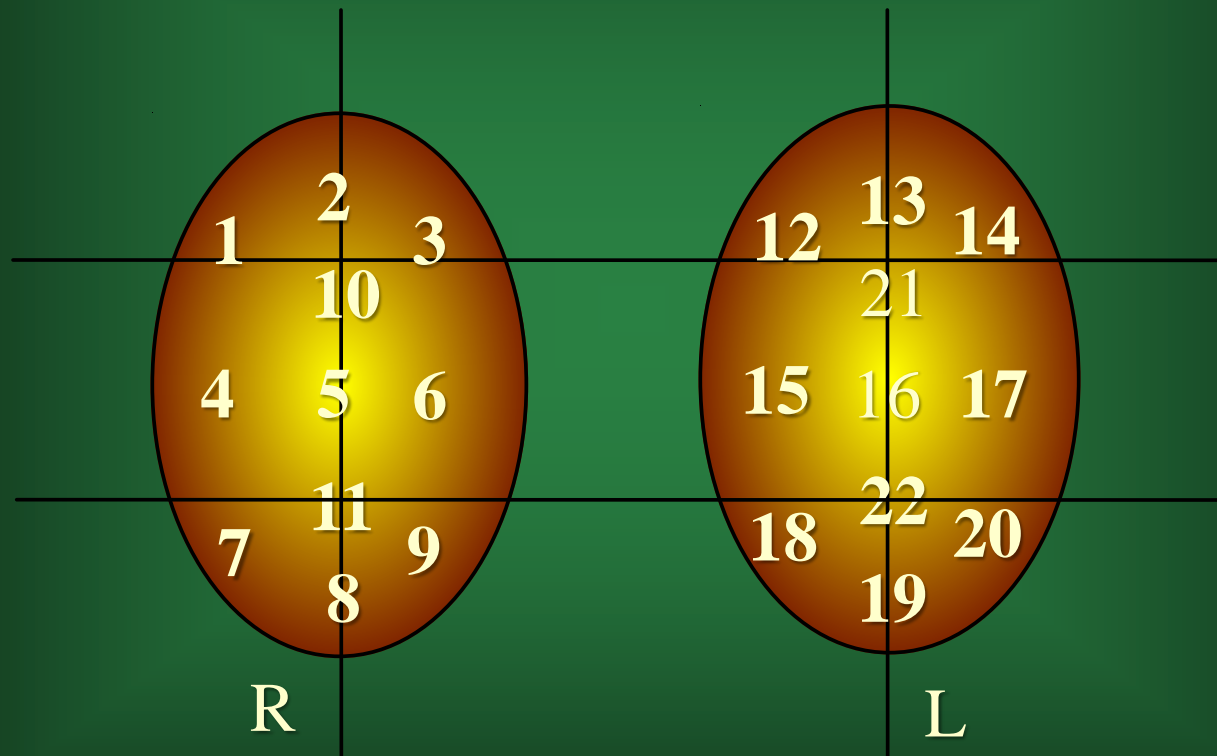


19% of testes

# Testis FNA Mapping



# Fine Needle Aspiration (FNA) Mapping Template



# Does Sperm Motility Make a Difference?

2

*Biologically, it appears to.....*

	— Motility —		—*Viability —	
	Fresh	Thawed	Fresh	Thawed
Testis, NOA	5%	0.2%	86%	46%
Epididymis, OA	22%	7%	57%	24%
Vas deferens, fertile	71%	38%	91%	51%

\*Vital Stains: carboxyfluorescein, 0.08mg/ mL;  
propidium iodide, 20mg/ mL



# Epididymal Sperm: Evidence-Based Guidelines

- For epididymal vs. testicular sperm in obstructive azoospermia:  
There is insufficient evidence of a difference in outcome.
- For fresh vs. frozen thawed epididymal sperm:  
There is no difference in clinical outcome (FR, OPR, IR)

# Other Sexual Dysfunction:

Erectile dysfunction

Premature ejaculation

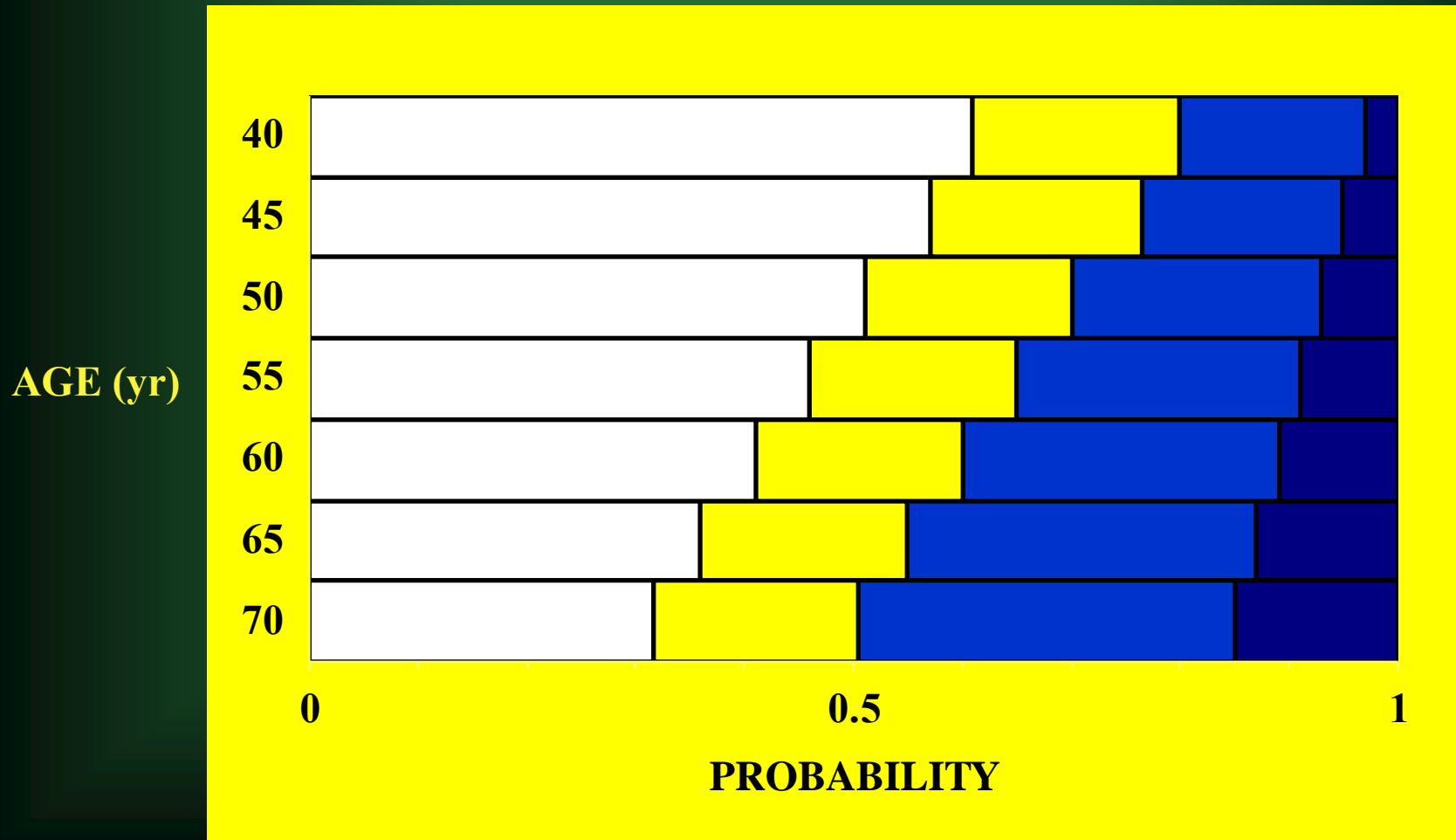
Retrograde ejaculation

Low libido (sex drive)

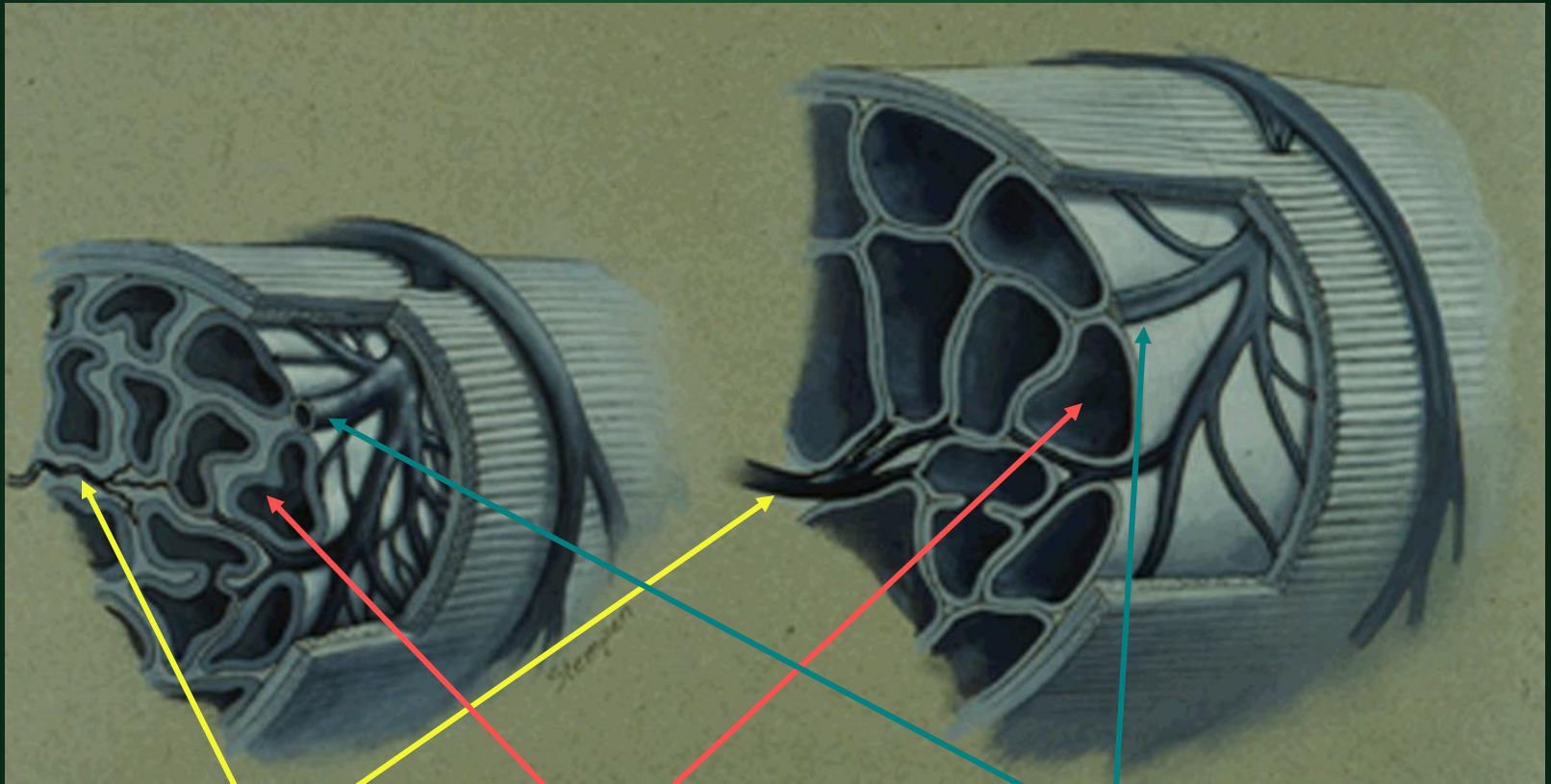


# Massachusetts Male Aging Study: Relationship of Prevalence/Degree of ED to Age

## DEGREE OF ED



# Mechanism of Erection



Arterial Dilation

Sinusoids fill

Venous compression

# Evaluation of Erectile Dysfunction

History + Physical exam + Lab



Appraise pt's goal, expectation & profile  
Discuss diagnostic and treatment options



Therapeutic trial



Further diagnostic testing



Definitive treatment



The penis does not obey the order of its master, who tries to erect or shrink it at will. Instead, the penis erects freely while its master is asleep. The penis must be said to have its own mind, by any stretch of the imagination.

Leonardo da Vinci

# CF and Male Sexual Function

The problem is well defined.

The solution is well defined.

Fertility: Planning is important.

THE TUREK CLINIC