SURGICAL TREATMENT OF MALE INFERTILITY

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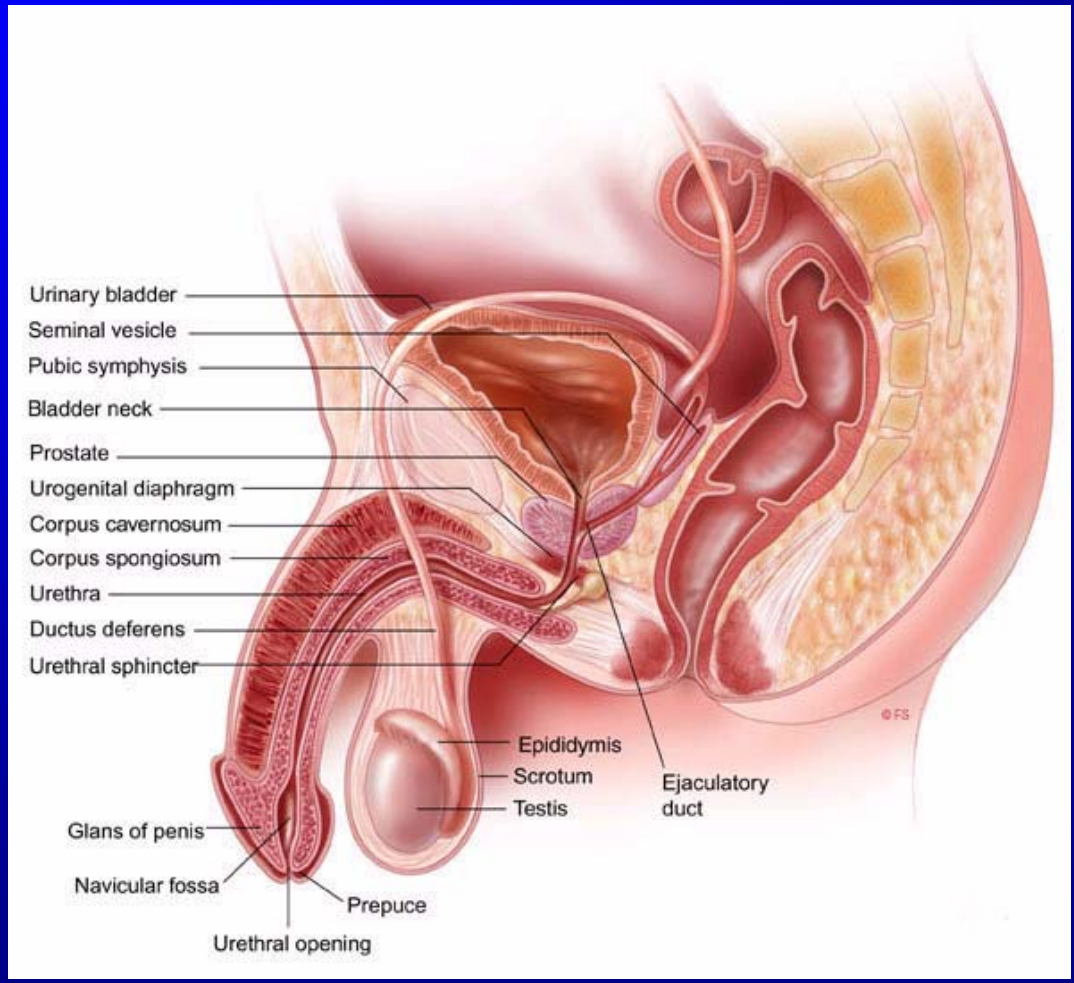
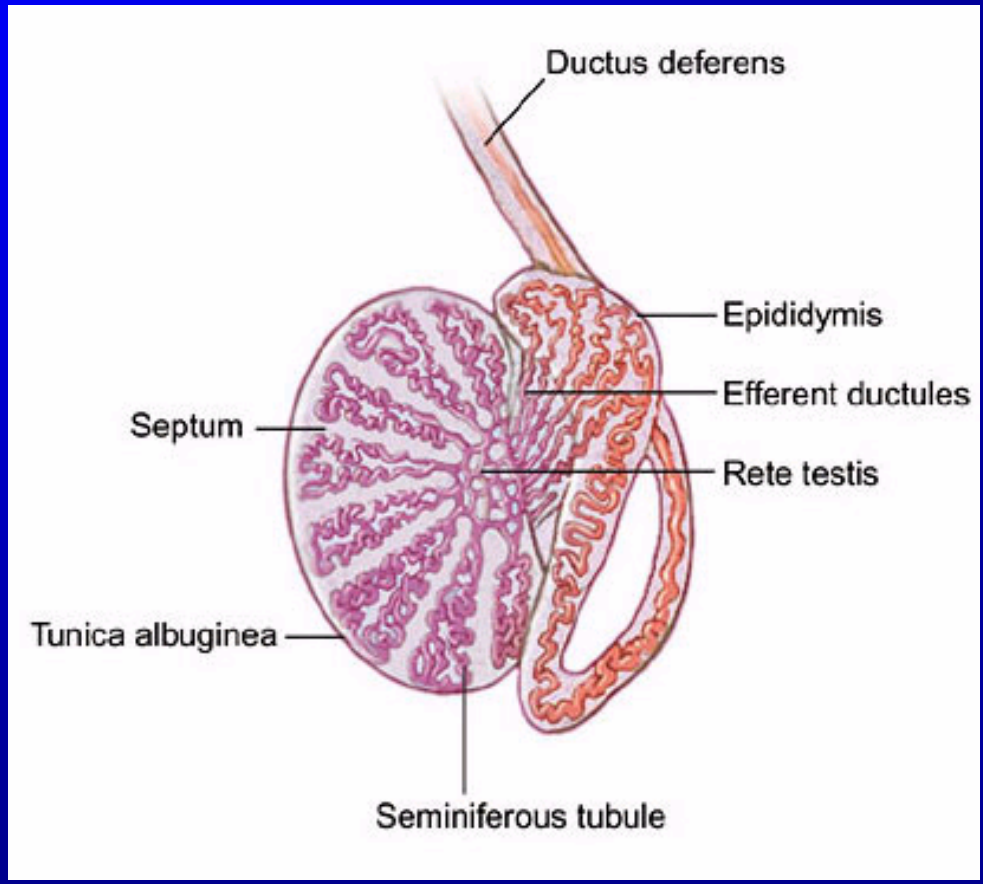
Anatomy


Urinary bladder
Seminal vesicle
Pubic symphysis
Bladder neck
Prostate
Urogenital diaphragm
Corpus cavernosum
Corpus spongiosum
Urethra
Ductus deferens
Urethral sphincter
Epididymis
Scrotum
Testis
Ejaculatory duct
Glans of penis
Navicular fossa
Prepuce
Urethral opening

Anatomy


Ductus deferens
Epididymis
Efferent ductules
Septum
Rete testis
Tunica albuginea
Seminiferous tubule

Causes of male infertility(1)

- Testicular insufficiency
  - Cryptorchidism
  - Orchitis, torsion
  - Chemo and radiotherapy
  - Genetic (Klinefelter, Y deletion)
- Endocrine disorders
  - Kallmann, Leydig tumor, pituitary

Causes of male infertility(2)

- obstruction of the genital tract
  - absence of the vas (congenital, CF)
  - prostatic cyst
  - epidiymal or vasal obstruction (inf. or surg.)
- varicocele
- Misceleanous
  - sexual problem, « idiopathic »

Only a few causes of male infertility can be surgically treated

- *Varicocele*
- *Obstructive causes 7% to 14% of azoospermia*

Obstruction

- *Congenital*
  - *agenesy*
    - *cystic fibrosis*
  - *Young ’s syndrome*
    - *ciliary dyskinesia in epid.head*
- *Aquired*
  - *infectious*
    - *tuberculosis, chlamydia*
  - *surgical damage*
    - *vasectomy*
    - *hernia repair*
    - *orchidopexy*

Treatment of a chronic prostatitis

or

any chronic inflammation of the male genital tract

OFLOXACINE (200 mg x b.i.d.) associatif with		***PHASE 1***
NON STEROID ANTI INFLAMMATORY	***20 D***	
Then		
METRONIDAZOLE (500 mg b.i.d.)	***10 d***	***PHASE 2***
DOXYCYCLINE (100 mg b.i.d.)	***16 d***	

CONTROL SPERM TEST *(> 3 weeks)*

VARICOCELE

- *15% of normal males*
- *40% of primary infertility*
  - *bilateral*
- *80% in secondary infertility*
  - *Deleterious effect*
  - *Effect of the heat, enzymatic*

VARICOCELE

Indication

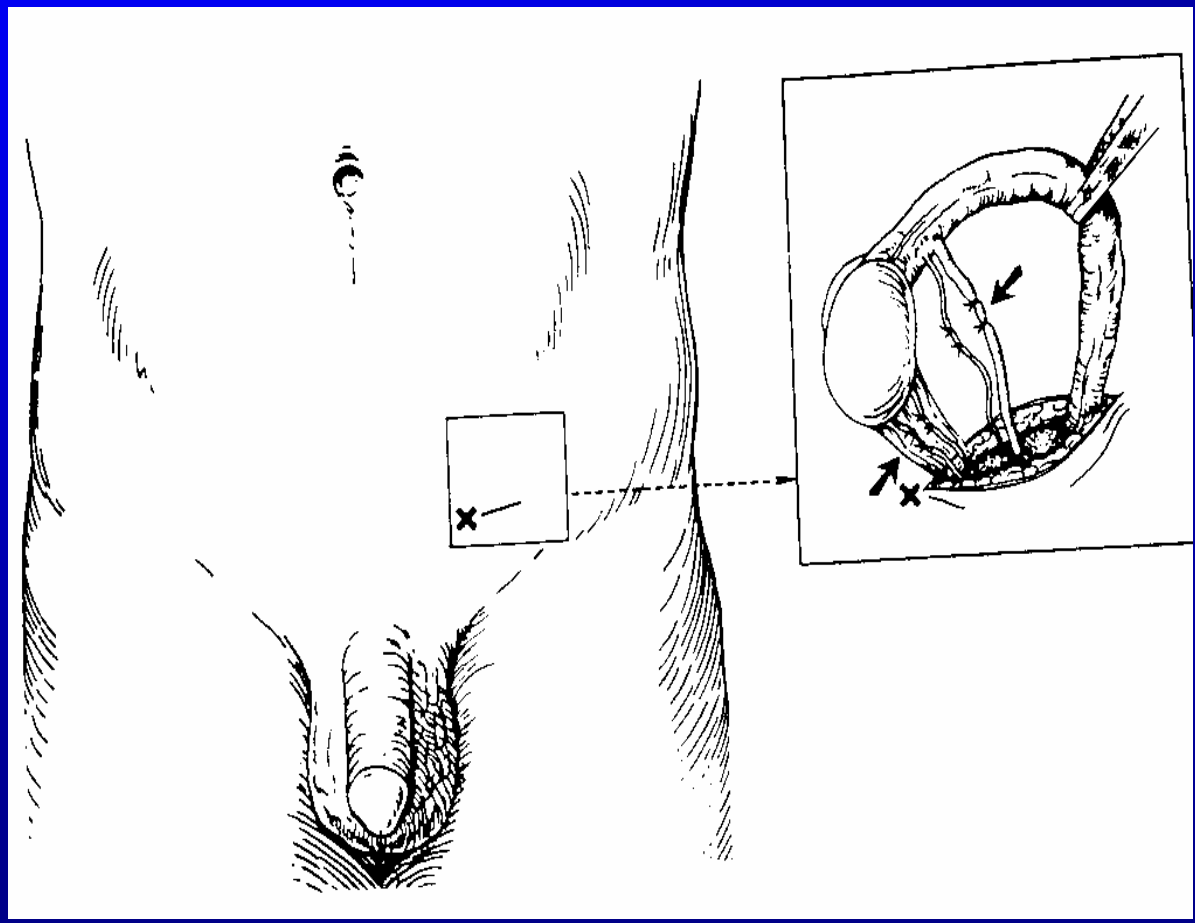
- *Infertility*
  - *Clinical « bag of worms »*
  - *Subclinical*
- *scrotal pain*

VARICOCELE

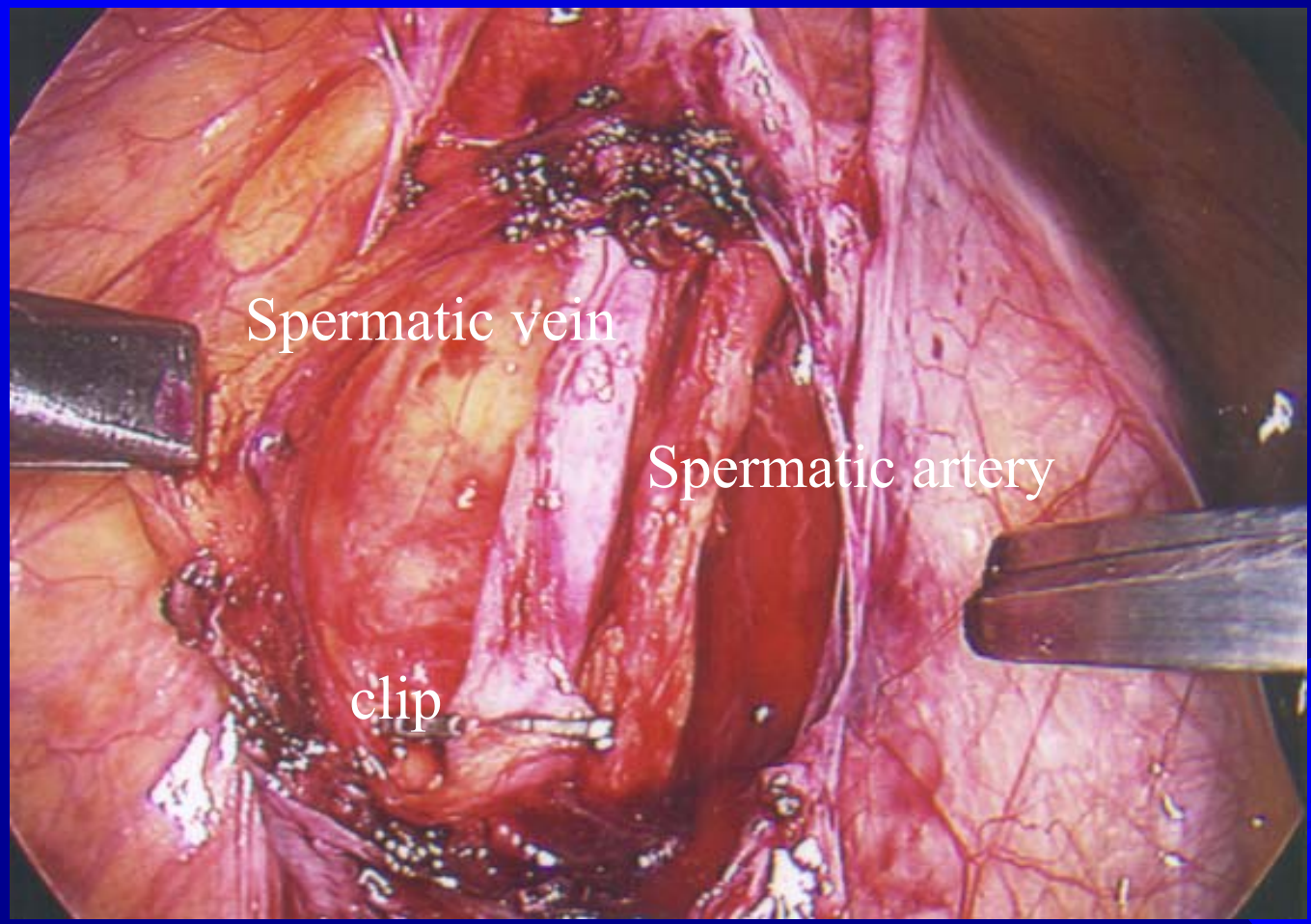
Techniques

- *High ligation*
  - *retroperitoneal, 2% failure*
- *Inguinal ligation*
  - *safe and easy, up to 21% failures*
- *Radiological embolization*
  - *cost and time effective, 12% failure*
- *Laparoscopy*
  - *needs skill. 2% failure (High ligation)*

Inguinal ligation



High Ligation (Laparoscopy)



VARICOCELE

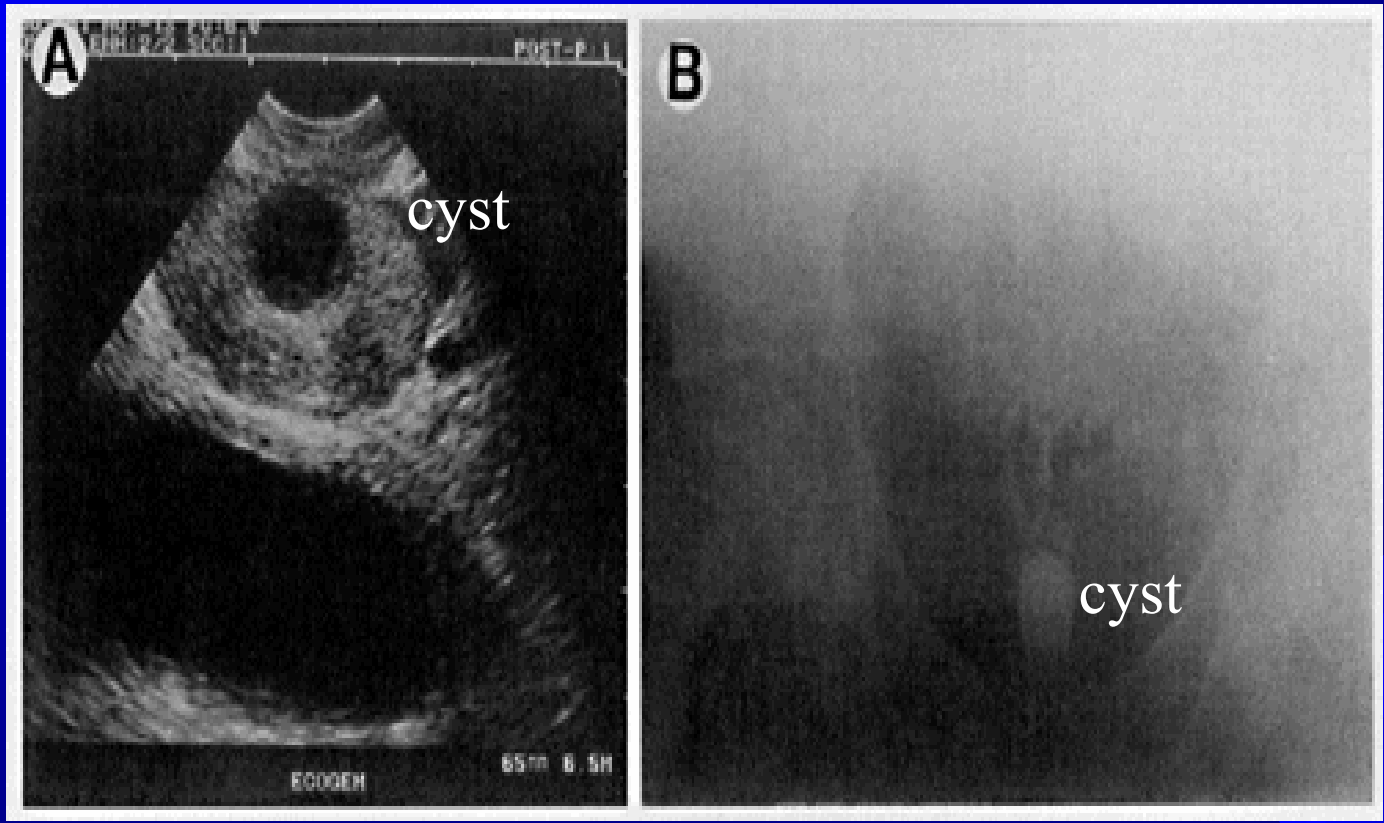
results

- *50 to 90% improvement in semen quality*
- *30 to 50% pregnancies after 6 to 9 months*

Obstruction at the prostatic level

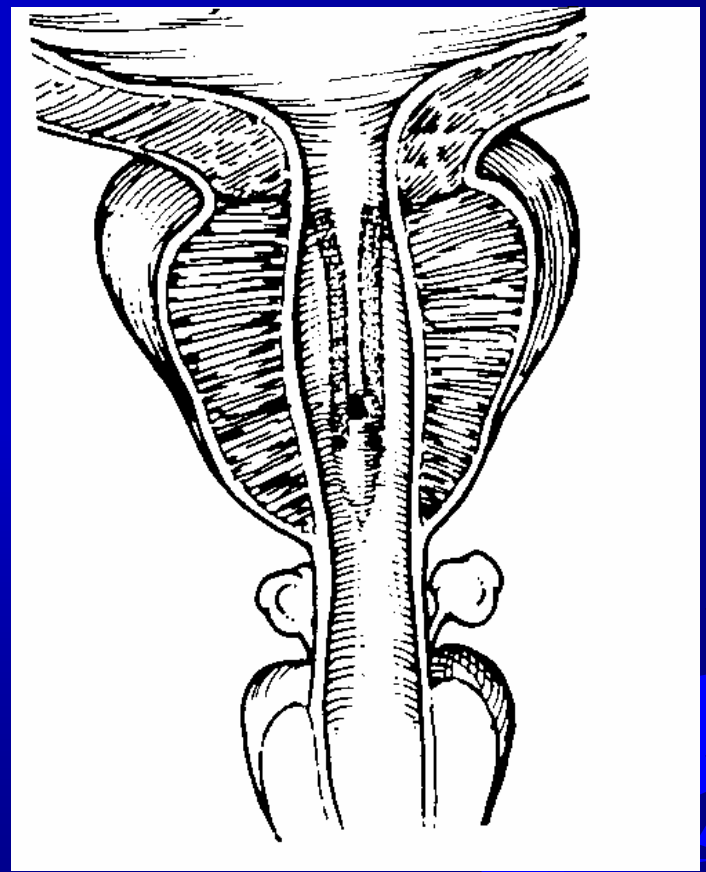
- *Compresion or obstruction of the ejaculatory duct*
  - *Infectious, congenital Mullerian cyst, Wolffian malformation*
  - *suspected by low semen volume.*

congenital Mullerian cyst



EJACULATORY DUCT RESECTION

- *transurethral incision*
  - *resectoscope*
- *25% good result*
  - *importance of diagnosis*
- *Side effects*
  - *urinary reflux in the seminals*



Vaso-vasostomy

Indications

- *Post infectious stenosis*
- *Iatrogenic section*
- *Short segmental agenesis*
- *Vasectomy reversal*
  - *2-6% of vasectomies*

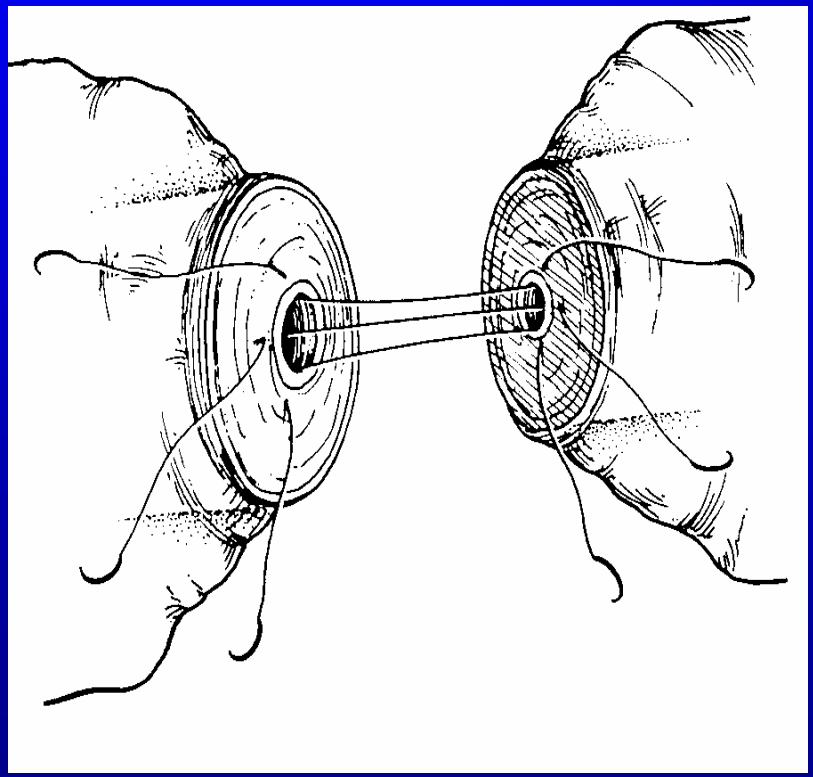
Vaso-vasostomy

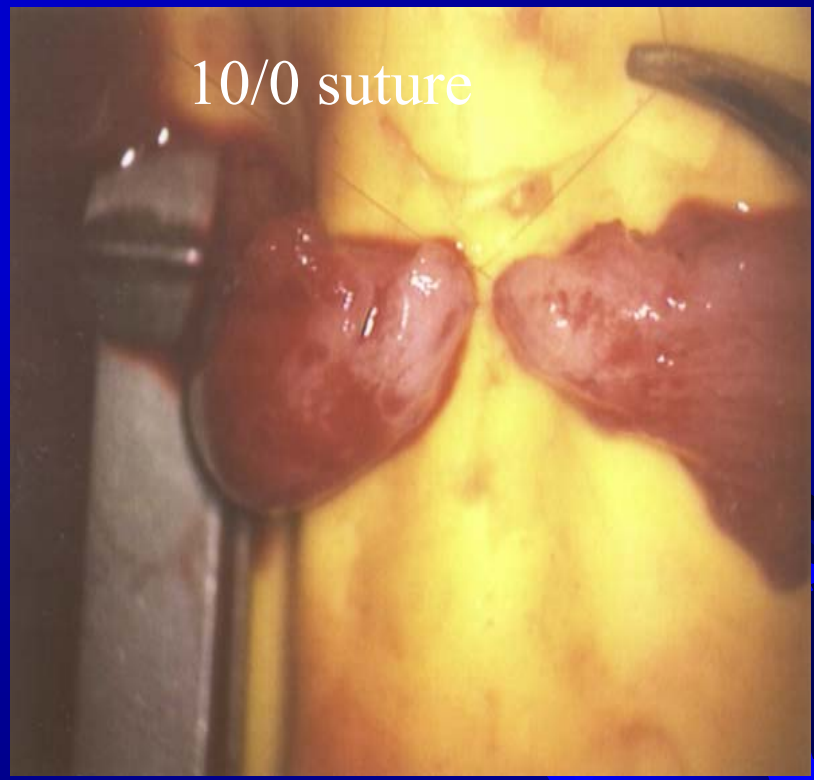
Technique

- *Two layer*
  - *microscope*
  - *approximator*
  - *10-0 and 9-0 polyglycolic sutures*
- *Modified two layer*
  - *magnification*
  - *9-O monofil. polyglycolic*
- *Other techniques*
  - *glue, rod, laser....*

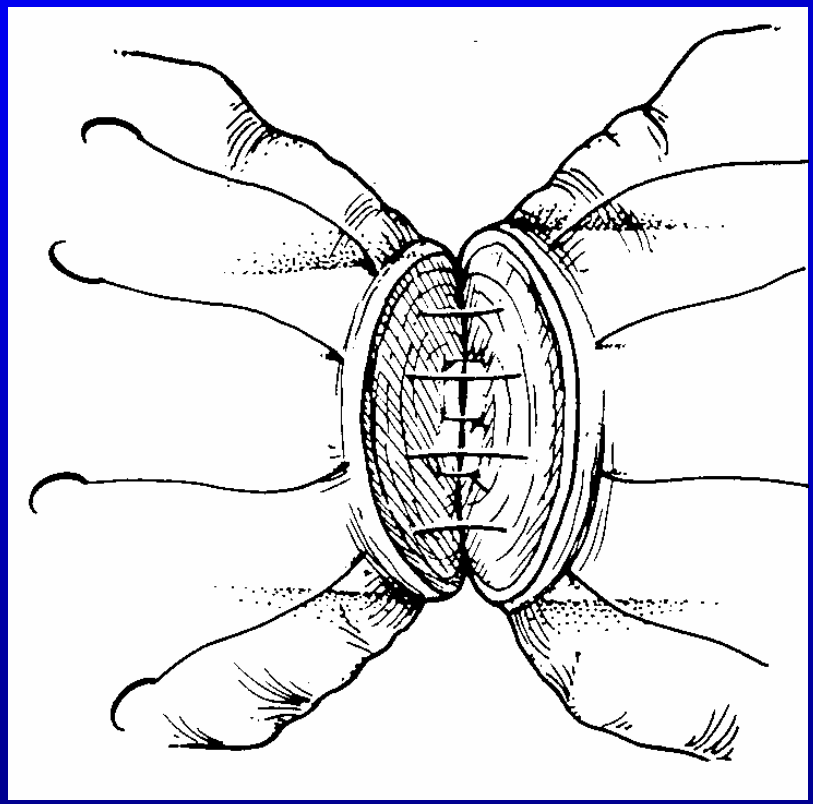
Goldstein ’s microspike approximator

Two-layer vaso-vasostomy

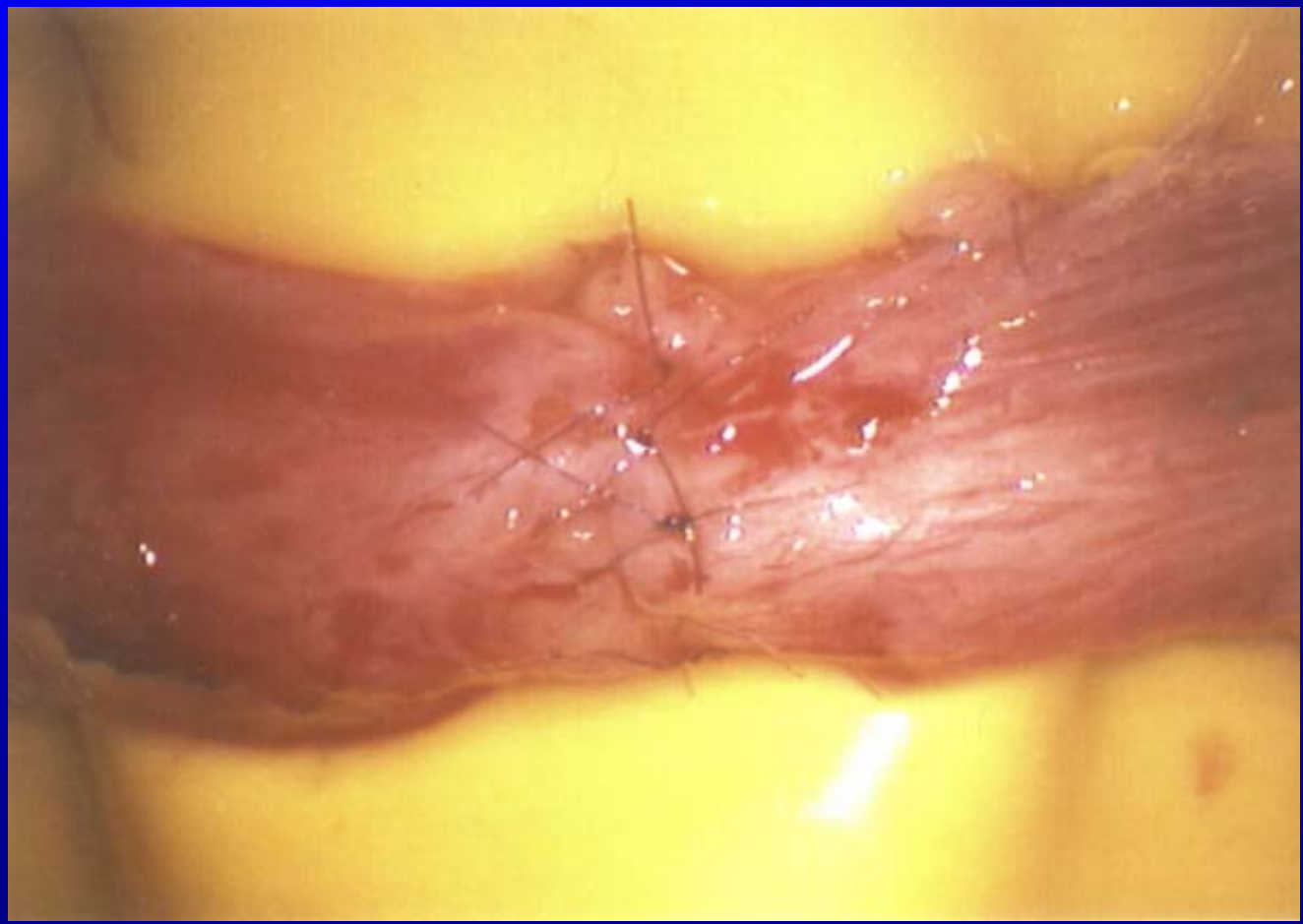




Two-layer vaso-vasostomy



Two-layer vaso-vasostomy



Vaso-vasostomy Results

- *90 % patency rates*
- *60% pregnancy rate*
- *delay after vasectomy to be considered before surgery*

Vasectomy Reversal >15 years & pregnancy rate (PR)

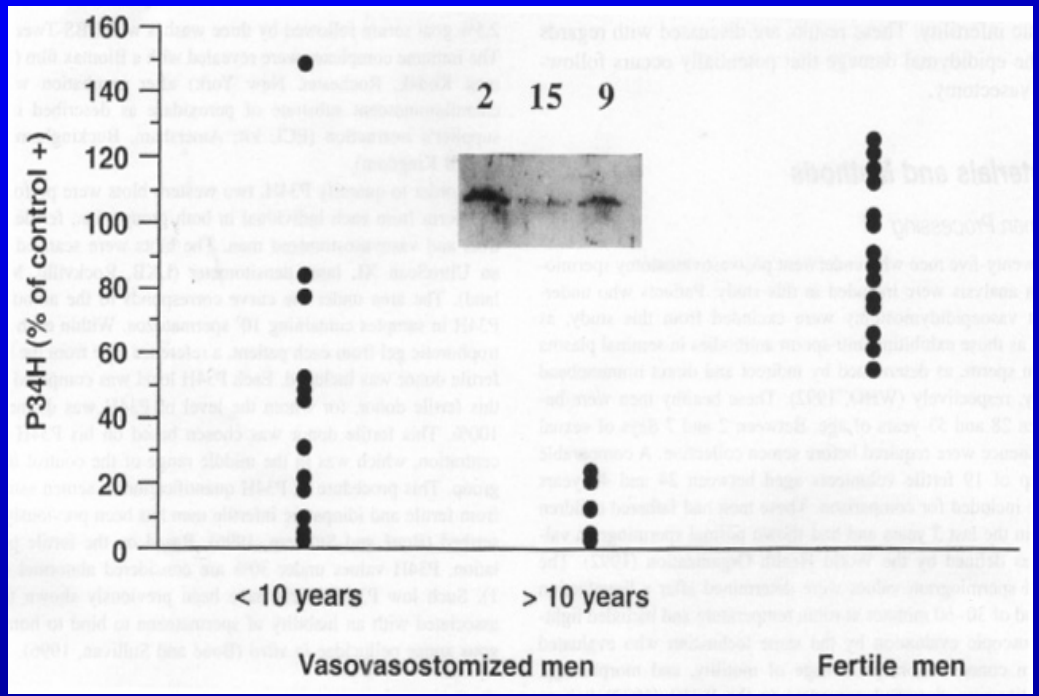
- *Overall* *45% PR*
- *15-19 years* *49% PR*
- *20-24 years* *39% PR*
- *> 25 years* *25% PR*

antisperm antibodies?
epididymal alteration?

Spousal age & PR after vasectomy reversal

- *< 25 years* — *57% PR*
- *26-30 years* — *58% PR*
- *31-35 years* — *49% PR*
- *36-40 years* — *45% PR*
- *41-45 years* — *20% PR*
- *> 45 years* — *0% PR*

Vasectomy reversal and epididymal P34H



Protein localized on the head of the spermatozoa

Necessary for the fixation to the pellucide membrane

No effect on motility

P34H is an epididymal marker proving that vasectomy causes alteration of the epididymis

(Guillemette et al., 1999) Courtesy Dr H.Lucas

Vaso-epididymostomy

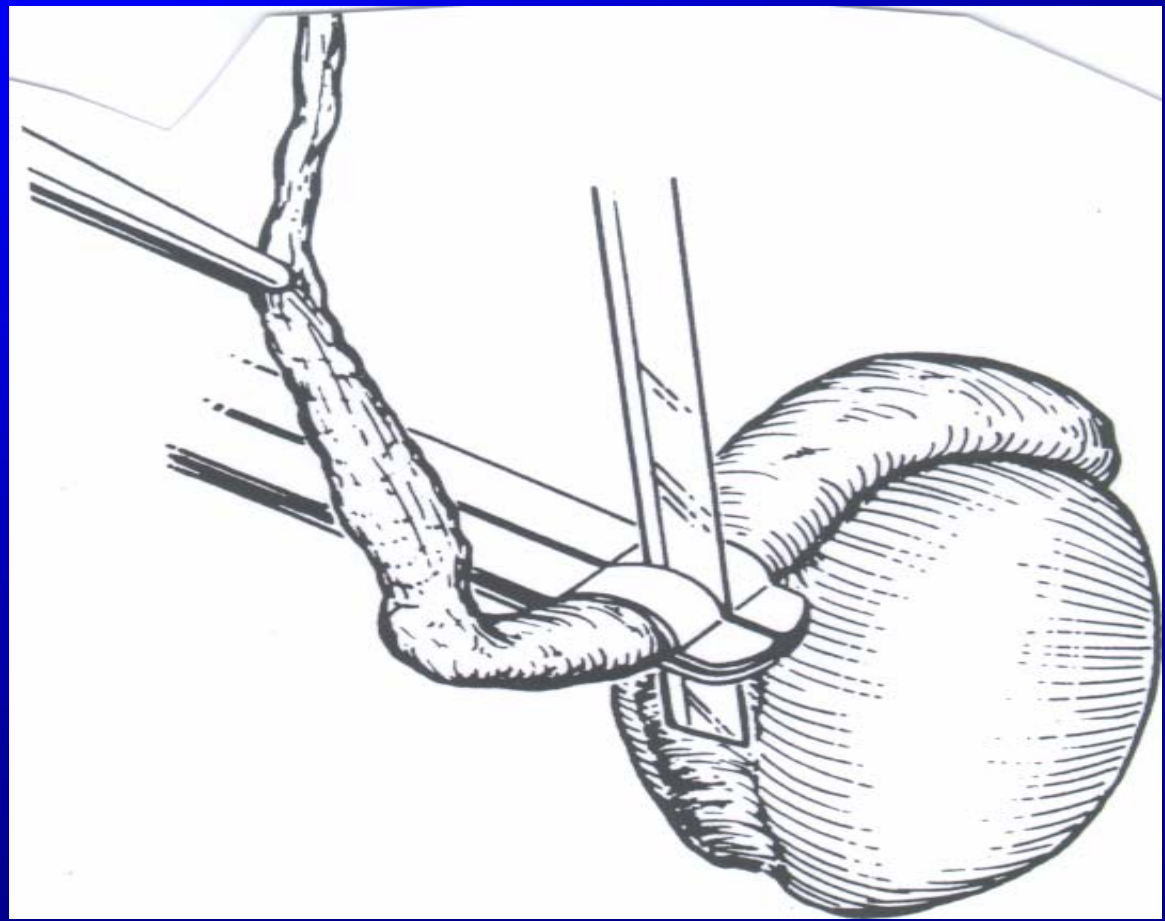
Indications

- *Best in case of obstruction at the level of the body or the tail of the epididymis.*
- *Poor at the level of the rete testis*
- *some vasectomy reversal failure*

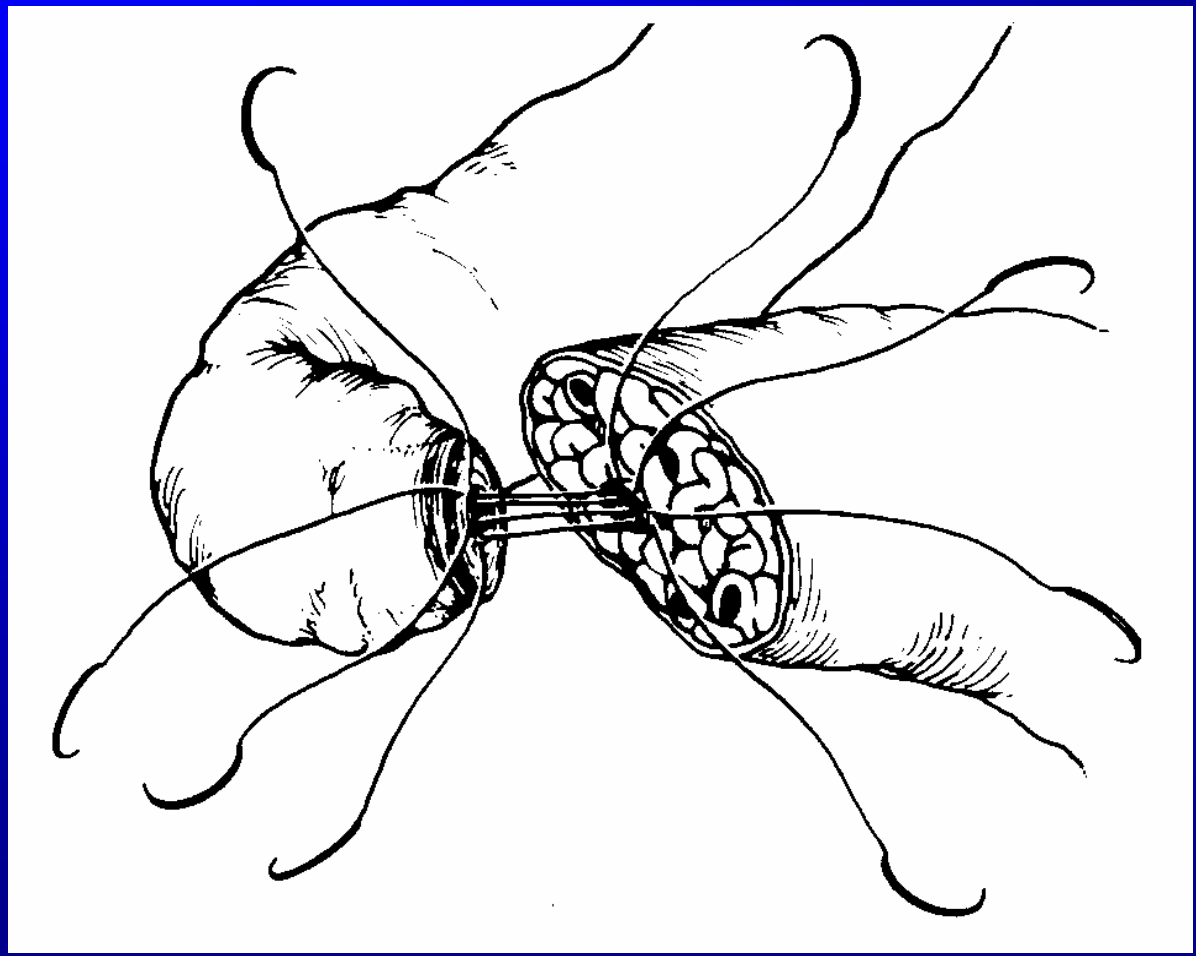
Vaso-epididymostomy
Technique

- *Termino-terminal*
  - *The epididymis is transected, exposing the efferent tubule*
  - *3 to 4 10-0 sutures approximating the mucosas then 6 to 8 9-0 sutures securing the serosa*
- *Latero-terminal (older technique)*
  - *The epididymis is incised and a tubule laterally opened*

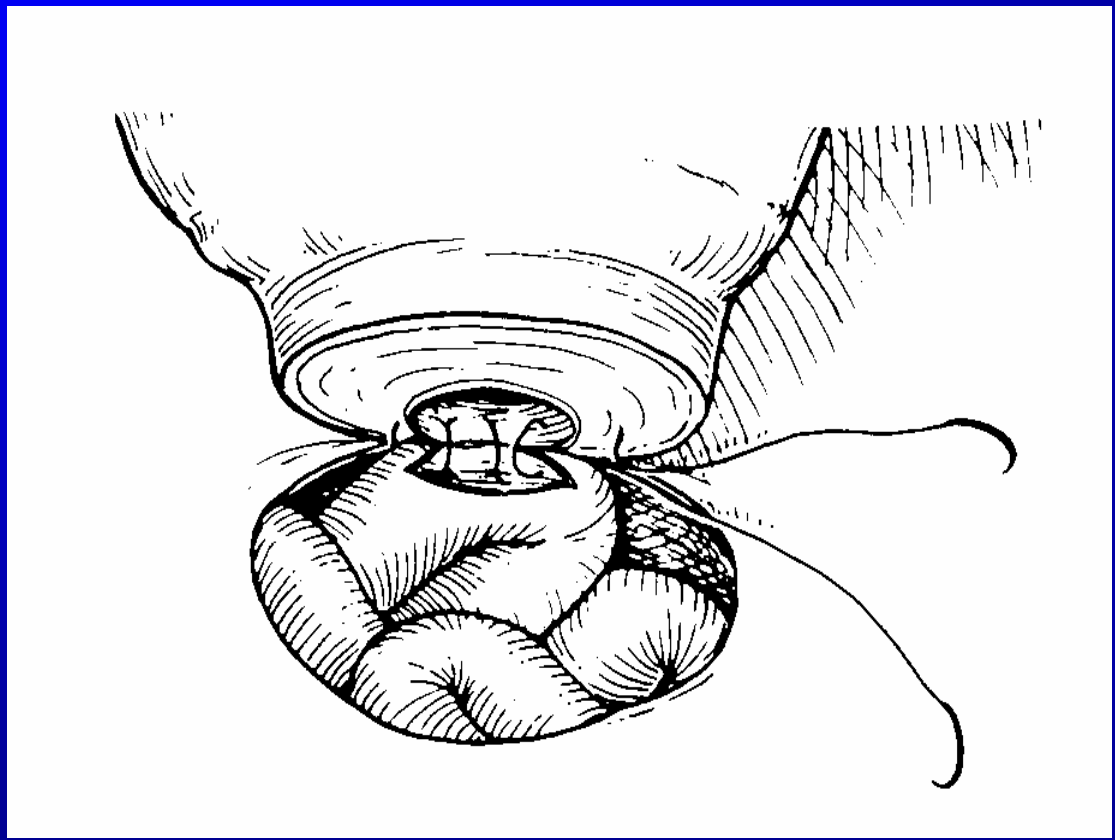
Termino-terminal



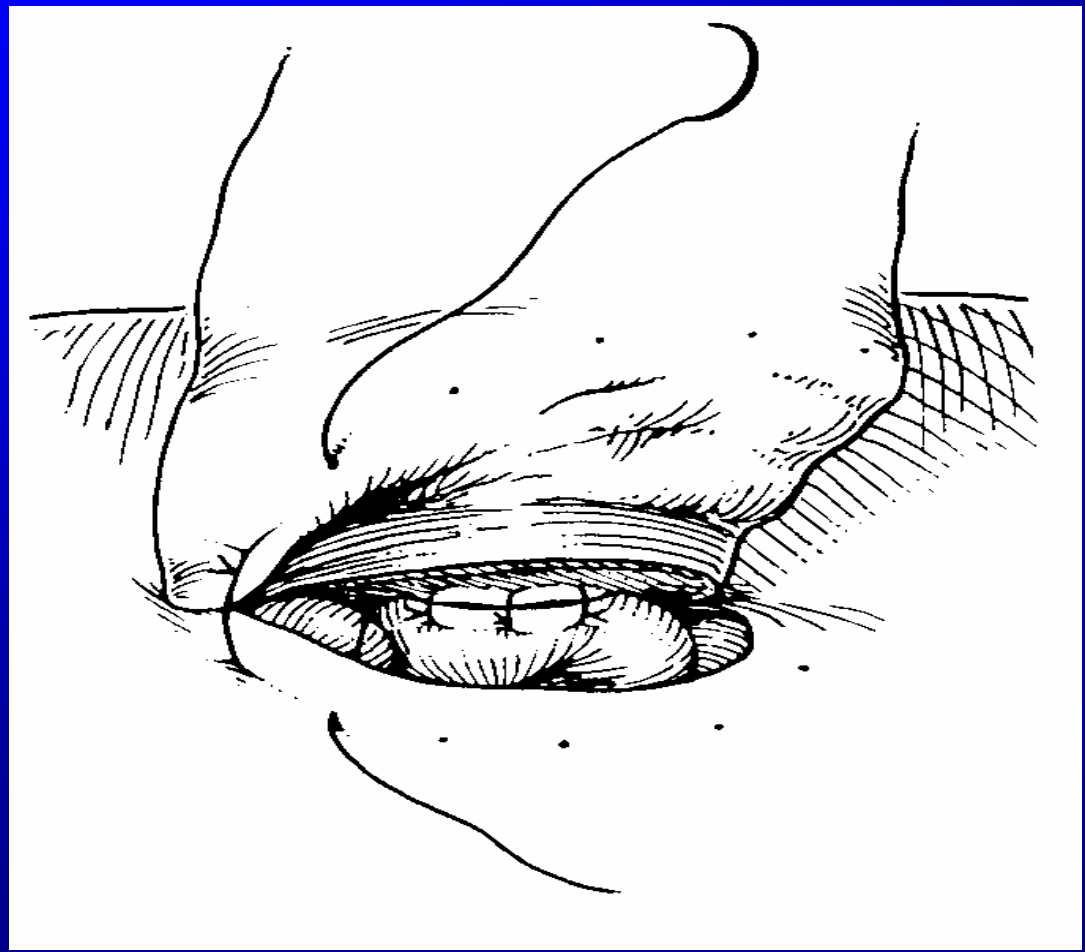
Termino-terminal



Latero-terminal



Latero-terminal



Vaso-epididymostomy

Results

- *Patency rate approx. 64%*
- *Pregnancy rate 30%*

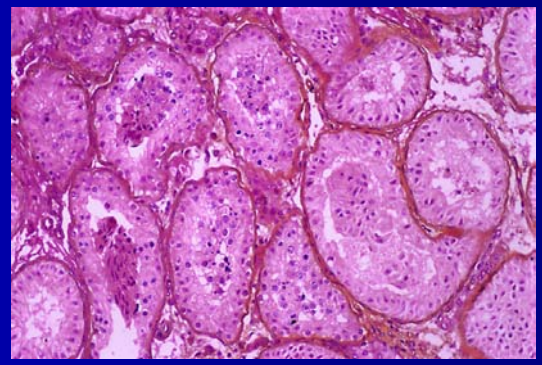
Epididymal sperm aspiration M.E.S.A.

- *Not a treatment*
- *Combined with I.C.S.I*
- *Depends more on the skill of the biologist then of the surgeon*
- *Microscopic procedure*

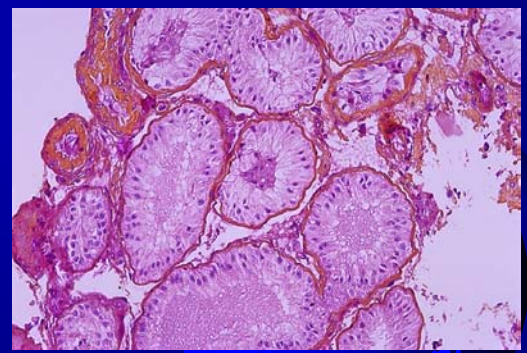
I.C.S.I. with testicular biopsy (TESE)

- Sampling of spermatozoa in testicular fragments
  - 50% after negative former biopsy even with elevated FSH
  - in almost all obstructive cases
  - higher vitality
- Spermatides , germinal cells
- No microscope

I.C.S.I. with testicular biopsy (TESE)



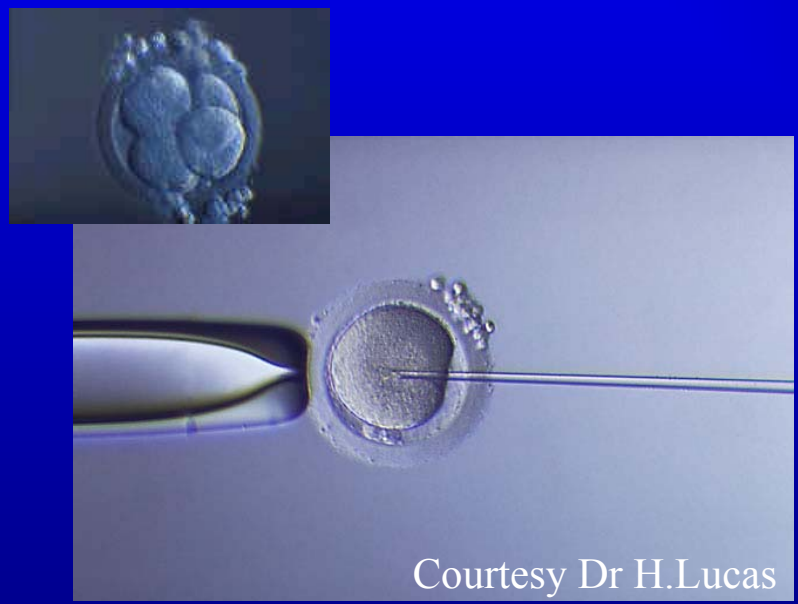
normal



s.o.c.

Courtesy Dr H.Lucas

I.C.S.I. with testicular biopsy (TESE)



frozen

Results of TESE + ICSI

2.2 embryo tranferred
22% twin pregnancies

- *Fertilization:* *60 %/inj.oocyte*
- *pregnancies fresh:* *32.8 % /transf*
- *pregnancies froz.:* *20.8 % /tranf*
- *CUMULATED:* *approx. 50%*

H.Lucas 2002

ICSI and Genetical risk

- *Cystic fibrosis*
- *microdeletion of Y chromosome*
- *Klinefelter*

17 % of severe oligozoospermic
34 % of azoospermic

Never do a biopsy for diagnostic purpose alone

FREEZE !!!

CONCLUSION

We are improving our ability to treat male causes of infertility in two different ways :

Microsurgery and the development of endoscopic tools will allow us to cure an increasing number of patients.

I.C.S.I. coupled with TESE gives a chance to those who cannot be treated.