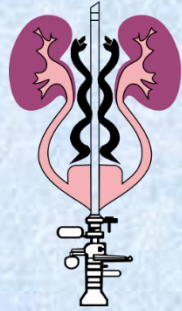


MALE INFERTILITY



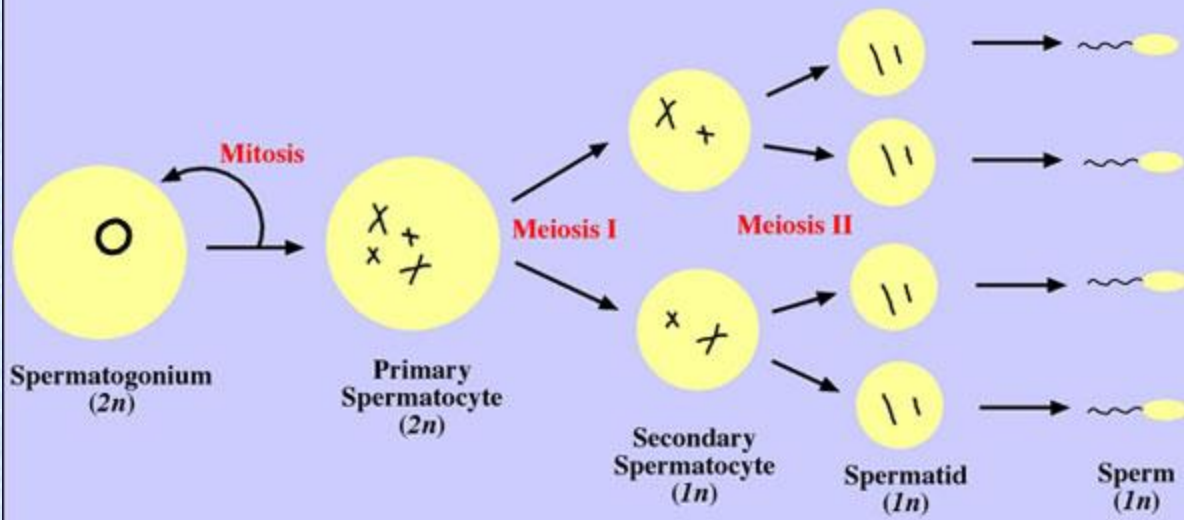
Prof. Dr.
Özcan ATAHAN
Üroloji Uzmanı

**DEPARTMENT OF UROLOGY,
SCHOOL OF MEDICINE,
ALTINBAŞ UNIVERSITY**

Definition

- inability to conceive after 1 year of unprotected sexual intercourse.
- 15% of couples
- 40%: male
- 40%: female
- 20%: both

Spermatogenesis



cycles

- within the human testis, 60 days
- sperm maturation: 10-15 days

Diagnosis of male infertility

History

- Duration of infertility; earlier pregnancies
- Sexual history, timing and frequency, lubricants
- Medical and surgical history
 - fever, acute infection, surgical procedure of bladder, retroperitoneum, pelvis, hernia
- Childhood diseases: mumps, cryptorchidism
- Medication, pesticides, radiation, tobacco, cocaine, marijuana, androgenic steroids, hot tubs or saunas
- Family history

Physical examination

- Virilize: body hair, gynecomastia
- Scrotal contents
- Testis: size and consistency
- Epididymis; vas deferens; varicocele
- Other abnormalities

Laboratory tests

- Urinalysis
- Semen analysis
- Semen collection: 48-72 hours of sexual abstinence.
- Seminal fructose and postejaculate urinalysis
- Fructose: derived from the seminal vesicle
- Hormone assessment
- FSH and testosterone

Table 44–6. Semen Analysis—Minimal Standards of Adequacy.

Ejaculate volume	1.5–5.5 mL
Sperm concentration	$>20 \times 10^6$ sperm/mL
Motility	$>50\%$
Forward progression	2 (scale 1–4)
Morphology	$>30\%$ WHO normal forms ($>4\%$ Kruger normal forms)

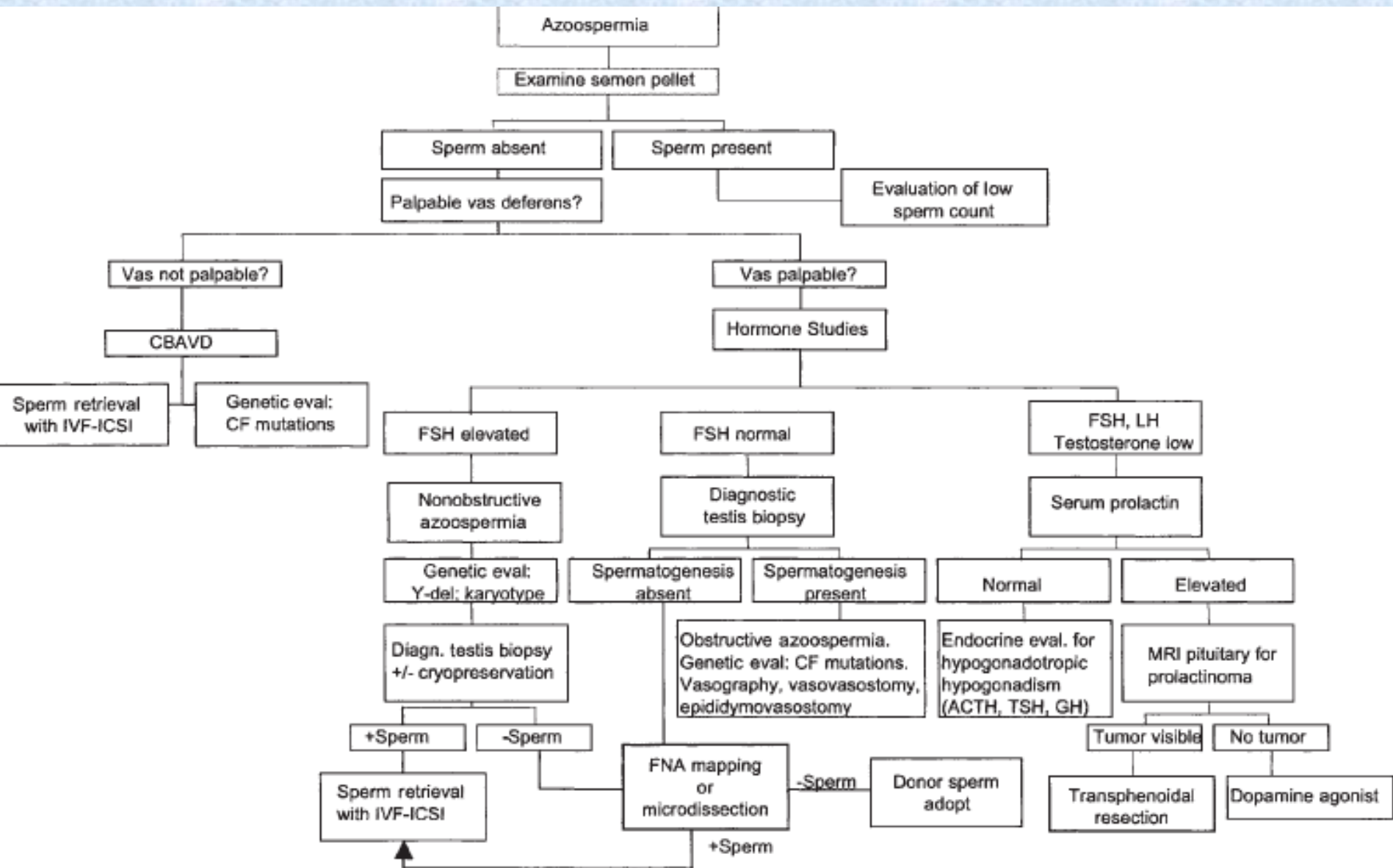
No agglutination (clumping), white cells, or increased viscosity.

Adjunctive tests

- semen leukocyte analysis;
- antisperm antibody test;
- hypoosmotic swelling test;
- sperm penetration assay;
- sperm chromatin structure;
- chromosomal studies;
- genetic analysis

- Radiologic testing
- scrotal ultrasound, transrectal ultrasound
- CT scan or MRI of the pelvis

- Testis biopsy & vasography
- Fine-needle aspiration 'mapping' of the testes
- Semen culture



Causes of male infertility

- Pretesticular
- Testicular
- posttesticular

Pretesticular causes of infertility

Hypothalamic disease

Gonadotropin deficiency (Kallmann syndrome)

Isolated LH deficiency ("fertile eunuch")

Isolated FSH deficiency

Congenital hypogonadotropic syndromes

Pituitary disease

Pituitary insufficiency (tumors, infiltrative processes, operation, radiation, deposits)

Hyperprolactinemia

Exogenous hormones (estrogen-androgen excess, glucocorticoid excess, hyper- and hypothyroidism)

Growth hormone deficiency

Testicular causes of infertility

Chromosomal (Klinefelter syndrome [XXY], XX sex reversal, XYY syndrome)

Noonan syndrome (male Turner syndrome)

Myotonic dystrophy

Vanishing testis syndrome (bilateral anorchia)

Sertoli-cell-only syndrome (germ cell aplasia)

Y chromosome microdeletions (DAZ)

Gonadotoxins (radiation, drugs)

Systemic disease (renal failure, liver failure, sickle cell anemia)

Defective androgen activity

Testis injury (orchitis, torsion, trauma)

Cryptorchidism

Varicocele

Idiopathic

Posttesticular causes of infertility

Reproductive tract obstruction

- Congenital blockages
 - Congenital absence of the vas deferens (CAVD)
 - Young syndrome
 - Idiopathic epididymal obstruction
 - Polycystic kidney disease
 - Ejaculatory duct obstruction

Acquired blockages

- Vasectomy
- Groin surgery
- Infection

Functional blockages

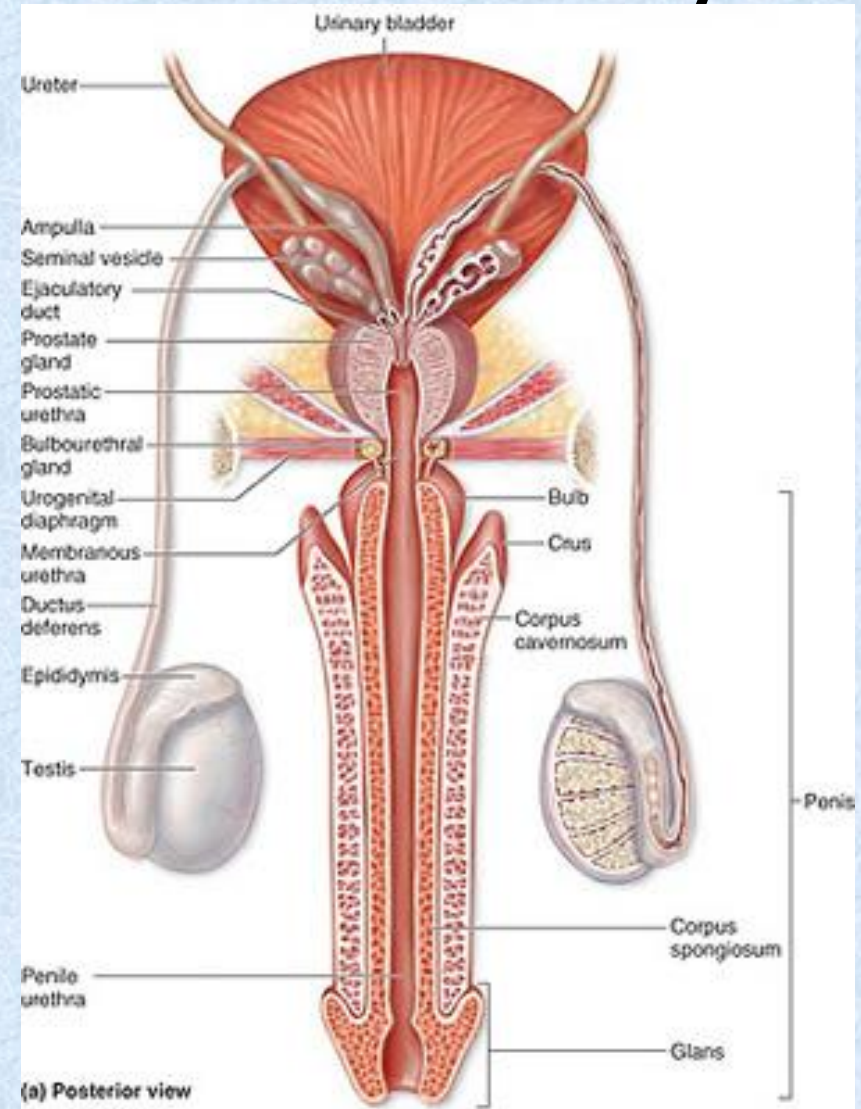
- Sympathetic nerve injury
- Pharmacologic

Disorders of sperm function or motility

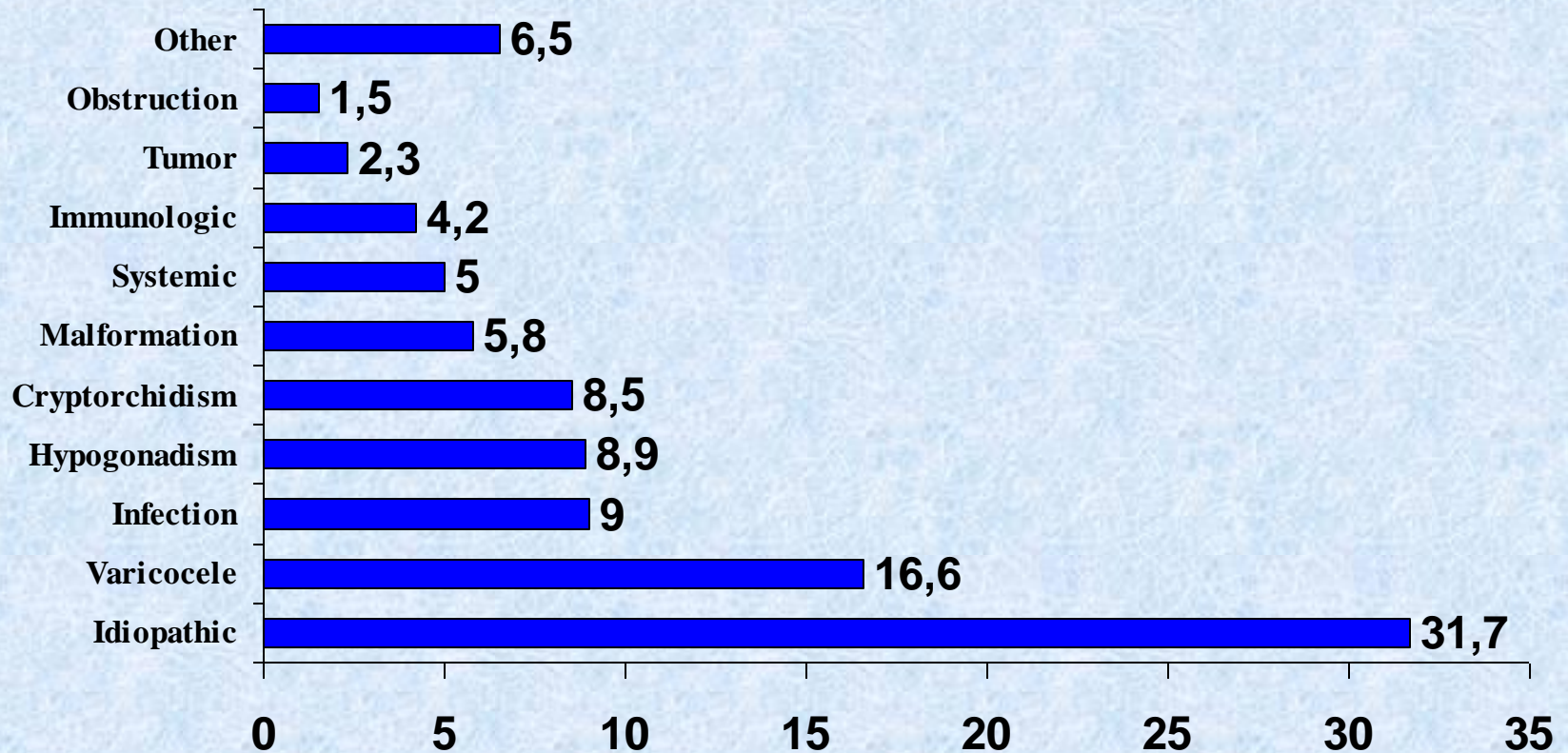
- Immotile cilia syndromes
- Maturation defects
- Immunologic infertility
- Infection

Disorders of coitus

- Impotence
- Hypospadias
- Timing and frequency



Causes of male infertility

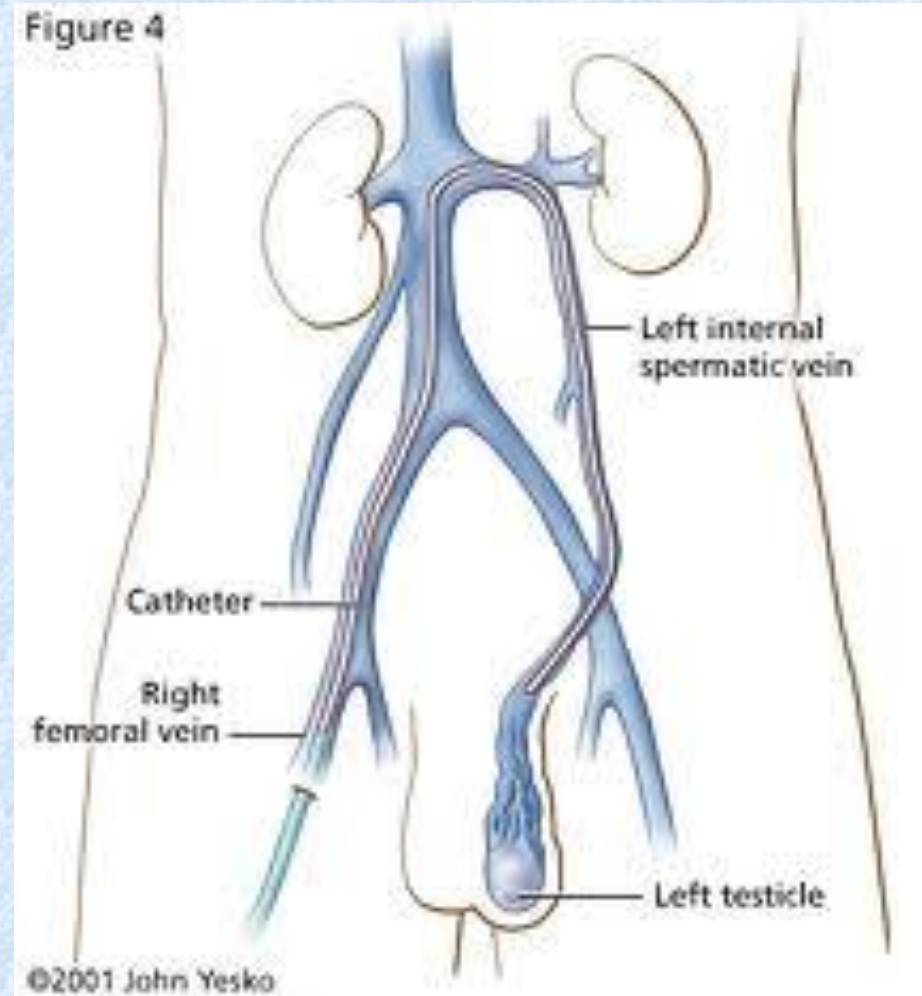


Medications associated with infertility

- Ketoconazole, spironolactone, alcohol inhibit T synthesis
- Cimetidine: androgen antagonist
- Marijuana, heroin, methadone: lower T levels
- Pesticides, estrogen like activity
- Chemotherapy
- Calcium channel blockers; sulfasalazine; colchicine; allopurinol; alpha-blockers; nitrofurantoin; antipsychotics; antidepressants

varicocele

Normal: 15%;
infertility: 40%

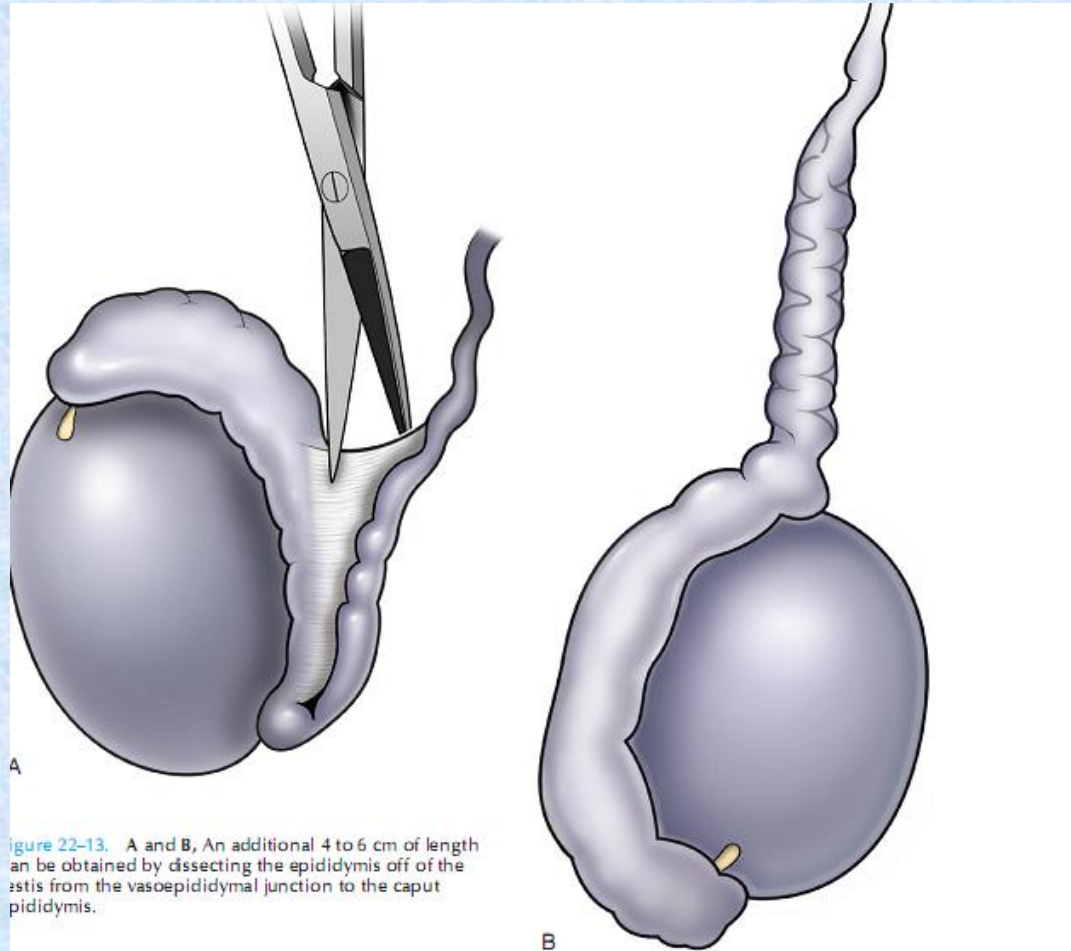


Treatment of male infertility

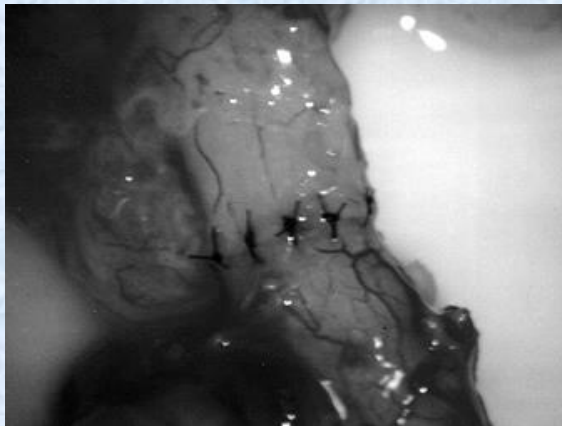
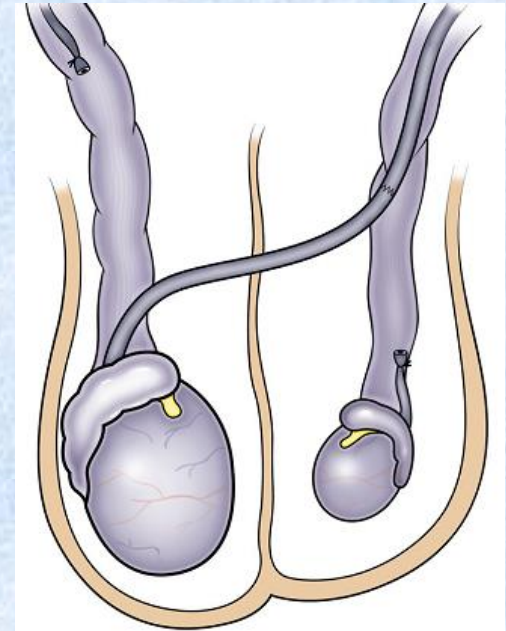
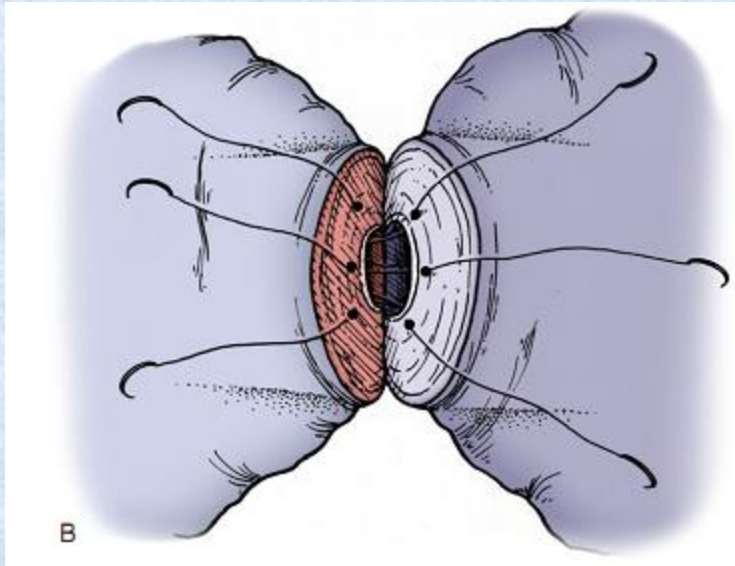
(Surgical treatments)

- Varicocele:
- Vasovasostomy or epididymovasostomy
- Ejaculatory duct obstruction: TURED
- Electroejaculation spinal cord injury; pelvic or retroperitoneal surgery injured the pelvic sympathetic nerves.
- Sperm aspiration: vas deferens, epididymis, or testicle.
- Orchidopexy: within two years of age
- Testicular torsion; the unaffected, contralateral testis can become infertile after torsion of its mate. Sympathetic orchidopathia, immunologic in nature.
- Pituitary ablation
- Elevated serum prolactin levels stemming from a pituitary adenoma can be treated medically and surgically.

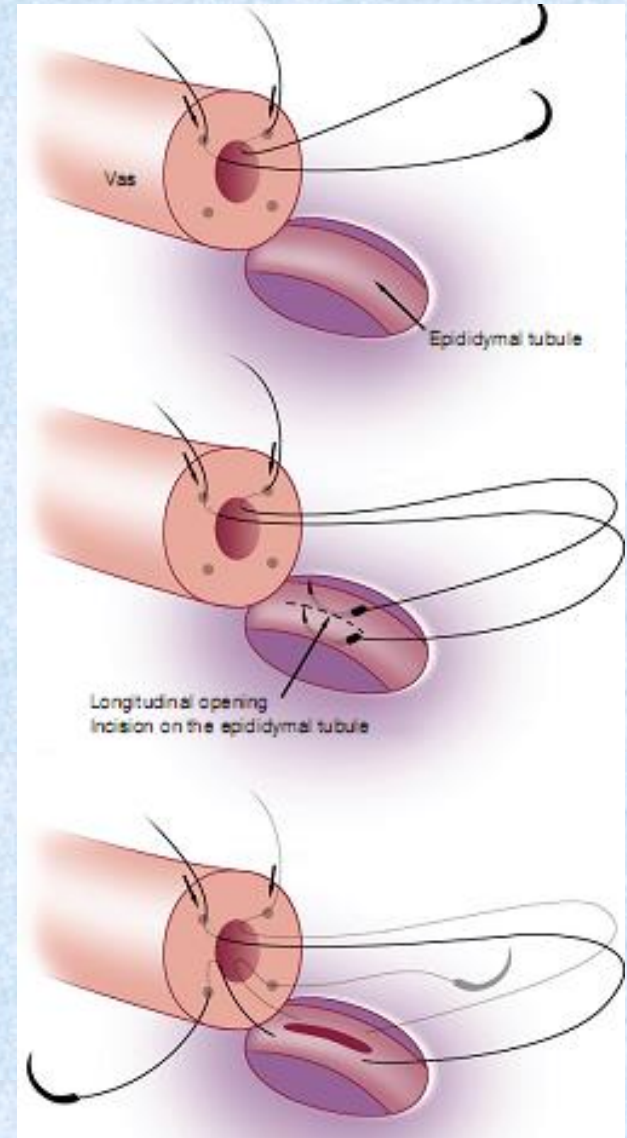
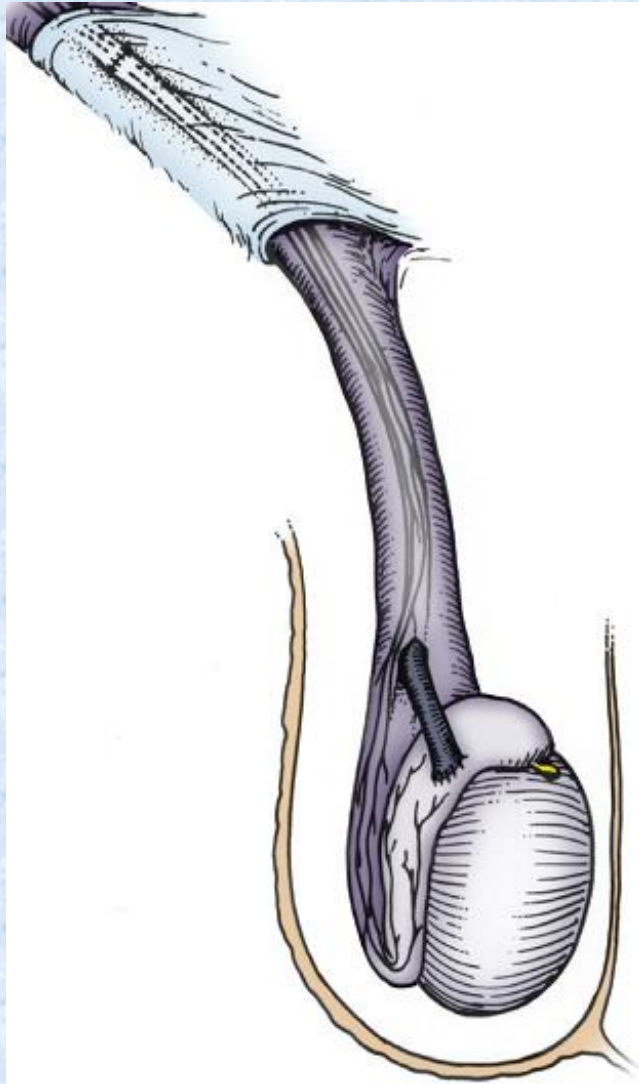
Vasovasostomy



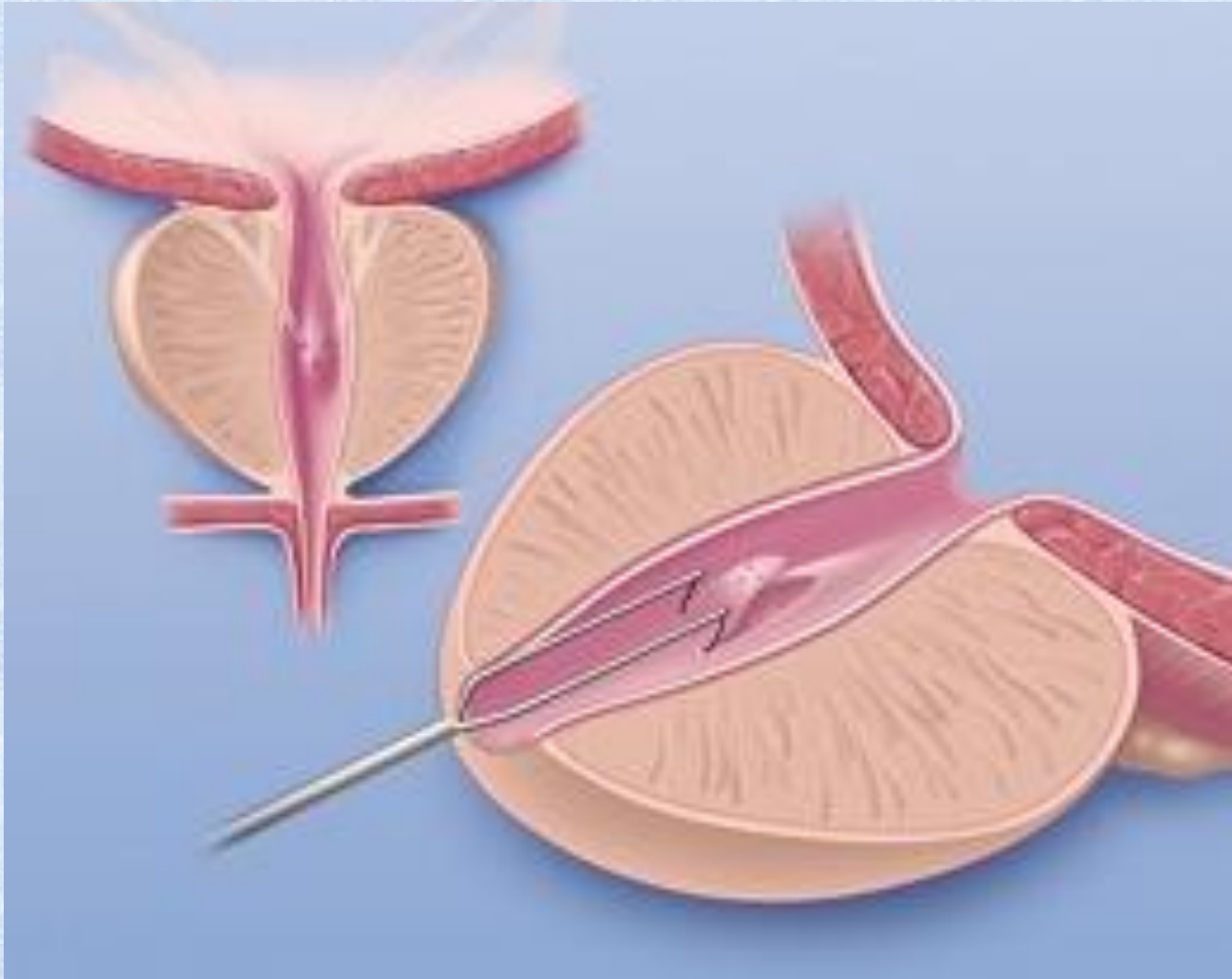
Vasovasostomy



Vasoepididymostomy



Transurethral resection of the ejaculatory ducts



Treatment of male infertility (Nonsurgical treatments)

- Pyospermia:
 - evaluate the patient for sexually transmitted diseases, penile discharge, prostatitis, or epididymitis
- Coital therapy
- Immunologic infertility
- Corticosteroid suppression, sperm washing, IUI, IVF, and ICSI.

Medical therapy

- Hyperprolactinemia; hypothyroidism; congenital adrenal hyperplasia; testosterone excess/ deficiency: Kallmann syndrome, HCG, FSH
- Empiric medical therapy
- clomiphene citrate: antiestrogen, increase secretion of GNRH, FSH, and LH. Low sperm count
- antioxidant therapy: vit E
- growth hormone

Assisted reproductive technologies

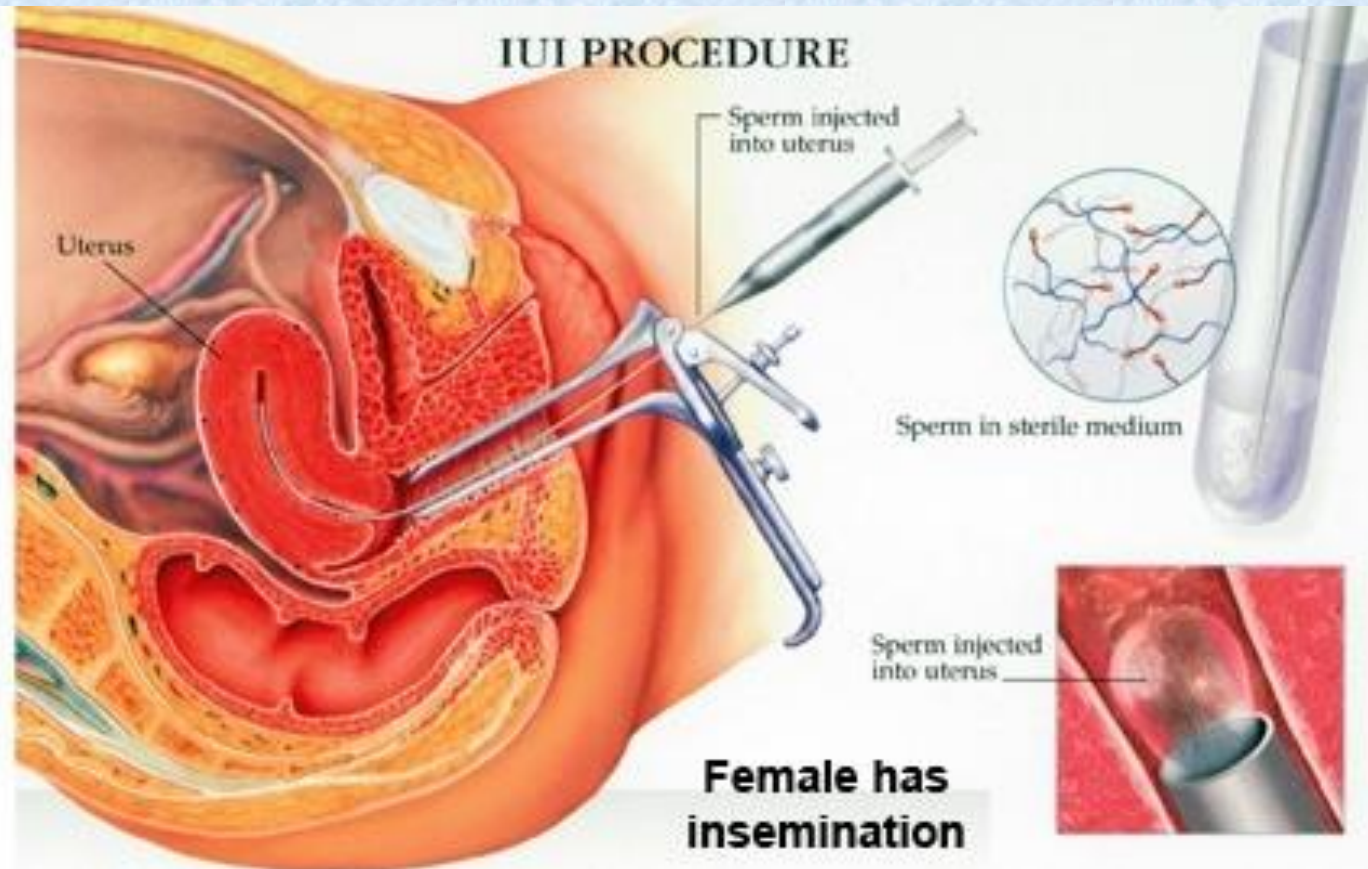
Intrauterine insemination (IUI):

Cervical factors; low sperm quality, immunologic infertility, poor sperm delivery

At least 5-40 million motile sperm in the ejaculate



Male has a date with the cup



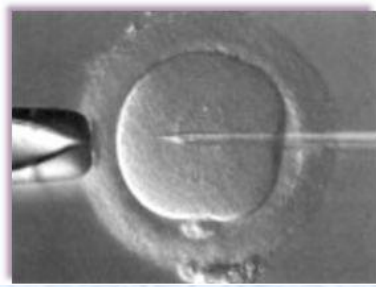
Female has insemination

IVF

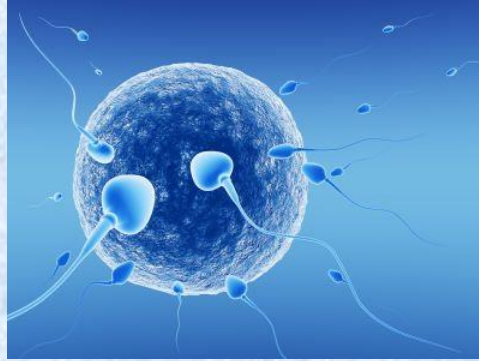
- Pituitary suppression – GnRH agonist
- Superovulation – FSH (hyperstimulation)
- hCG to mimic LH surge
- Oocyte collection
- 500.000 to 5 billion sperms are required
- Fertilisation & incubation (ICSI)
- Embryo transfer 48-72 hours later
- Luteal support with progesterone

- Procedures

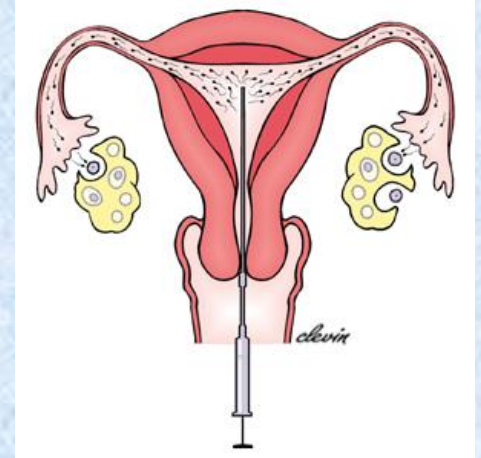
- IVF-ET (In Vitro fertilization-embryo transfer)
- GIFT (Gamete intrafallopian transfer)
- ZIFT (Zygote intrafallopian transfer)
- ICSI (Intracytoplasmic sperm injection)



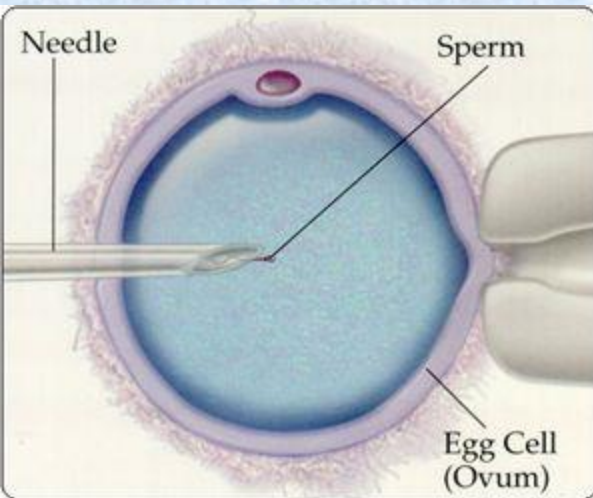
ICSI



IVF



IUI



Thanks

