

Recent guidelines in male fertility

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Causes of infertility

- Female factor only: 45%
- Male factor only: 35%
- Combined: 10%
- Unknown: 10%



History

➤ Reproduction history

- Duration of sexual relations without contraception
- Previous history of fertility

➤ Past history

- Developmental: cryptorchidism
- Surgical: vasectomy, herniorrhaphy, orchiopexy
- Medical: epididymitis, DM, STD
- Exposure to gonadotoxic agents, anabolic steroids



Physical examination

➤ Genital examination

- Testicular volume (80%: seminiferous tubules)
- Palpation of vas deferens, presence of varicocele
- Palpation of epididymis: induration, cystic dilation

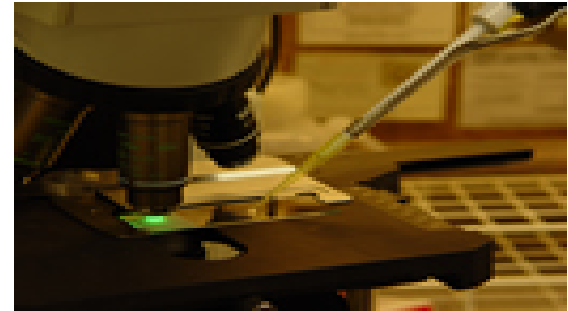


Semen analysis

Table A1.1 Lower reference limits (5th centiles and their 95% confidence intervals) for semen characteristics

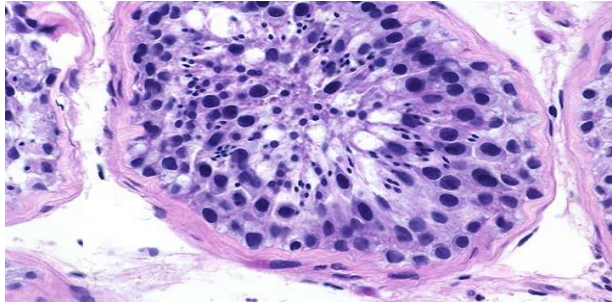
Parameter	Lower reference limit
Semen volume (ml)	1.5 (1.4–1.7)
Total sperm number (10^6 per ejaculate)	39 (33–46)
Sperm concentration (10^6 per ml)	15 (12–16)
Total motility (PR + NP, %)	40 (38–42)
Progressive motility (PR, %)	32 (31–34)
Vitality (live spermatozoa, %)	58 (55–63)
Sperm morphology (normal forms, %)	4 (3.0–4.0)
Other consensus threshold values	
pH	≥ 7.2
Peroxidase-positive leukocytes (10^6 per ml)	< 1.0
MAR test (motile spermatozoa with bound particles, %)	< 50
Immunobead test (motile spermatozoa with bound beads, %)	< 50
Seminal zinc (μmol /ejaculate)	≥ 2.4
Seminal fructose (μmol /ejaculate)	≥ 13
Seminal neutral glucosidase (mU/ejaculate)	≥ 20

- 2-7일 정도의 금욕기간 필요
- 1회 검사로 불충분할 수 있음

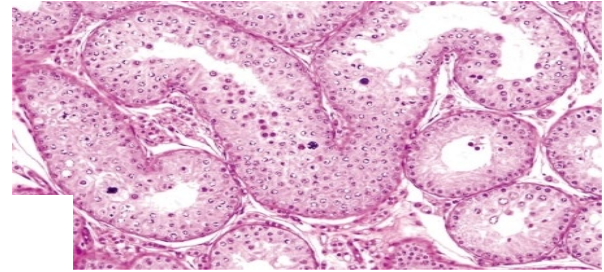


Semen analysis (WHO manual, 2010)

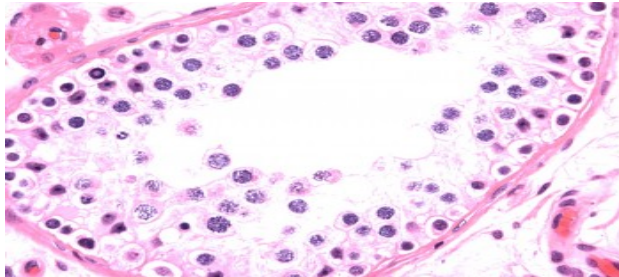
Testis biopsy



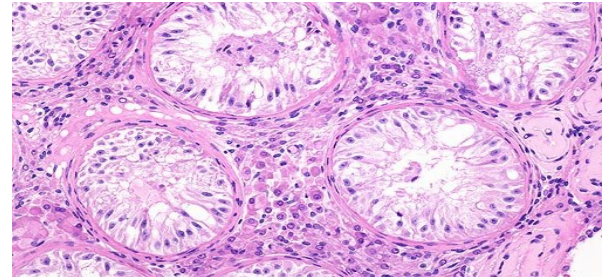
Normal



Hypospermatogenesis



Maturation arrest



Sertoli cell only tubule

Surgical intervention

-Relieve of seminal tract obstruction

ex) Obstructive azoospermia

Ejaculatory duct obstruction

-Improvement of sperm quality

ex) Varicocele



Guideline statement (AUA 2020)

-Surgical varicocelectomy **should be considered** in men attempting to conceive, who have **palpable varicocele(s), infertility, and abnormal semen parameters**, except for azoospermic men.

(Moderate Recommendation; Evidence Level: Grade B)

-Clinicians **should not recommend** varicocelectomy for men with **nonpalpable varicocele detected solely by imaging**.

(Strong Recommendation; Evidence Level: Grade C)



Guideline statement (AUA 2020)

-Clinicians should counsel patients that **existing data are insufficient** to provide recommendation for **specific supplements** (eg, antioxidants, vitamins) in treating male infertility.

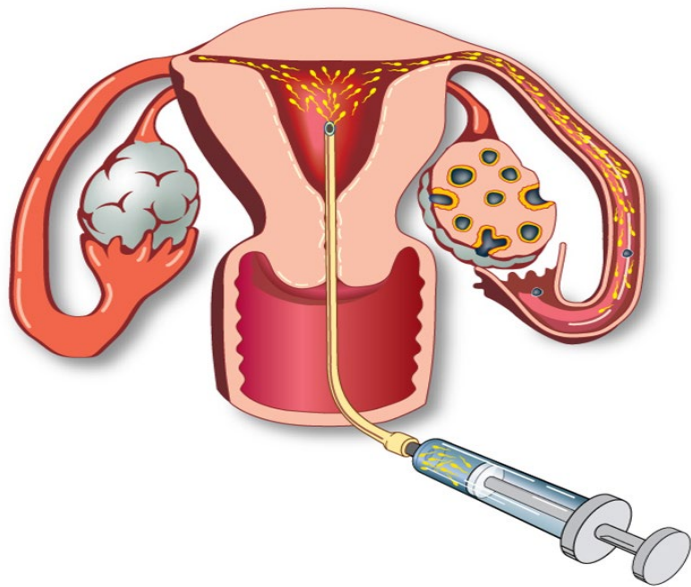
(Conditional Recommendation; Evidence Level: Grade B)

-Couples desiring **conception after vasectomy** should be counseled that **surgical reconstruction, surgical sperm retrieval, or both reconstruction and simultaneous sperm retrieval** for cryopreservation are viable options.

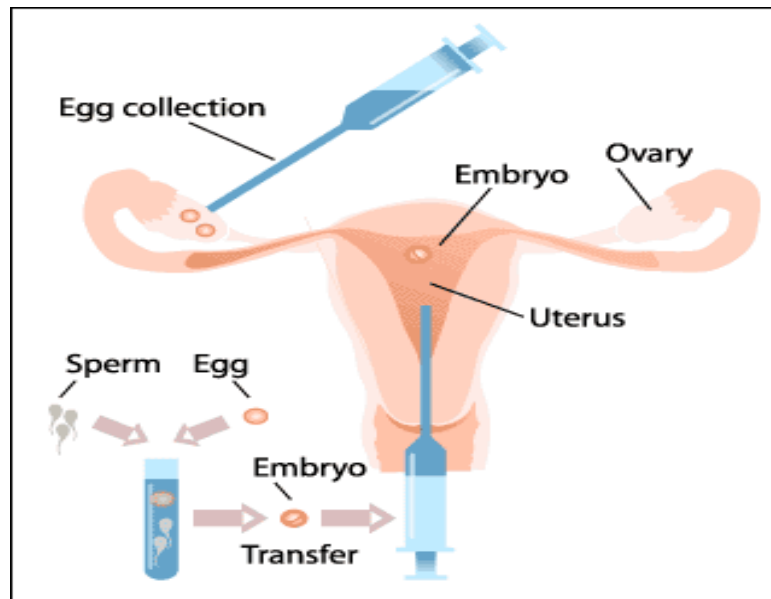
(Moderate Recommendation; Evidence Level: Grade C)



Assisted reproduction (보조생식술)



Intrauterine insemination
(IUI, 인공수정)



In vitro fertilization
(IVF, 체외수정)

Guideline statement (AUA 2020)

-Clinicians should discuss the **effects of gonadotoxic therapies and other cancer treatments** on sperm production with patients prior to therapy.

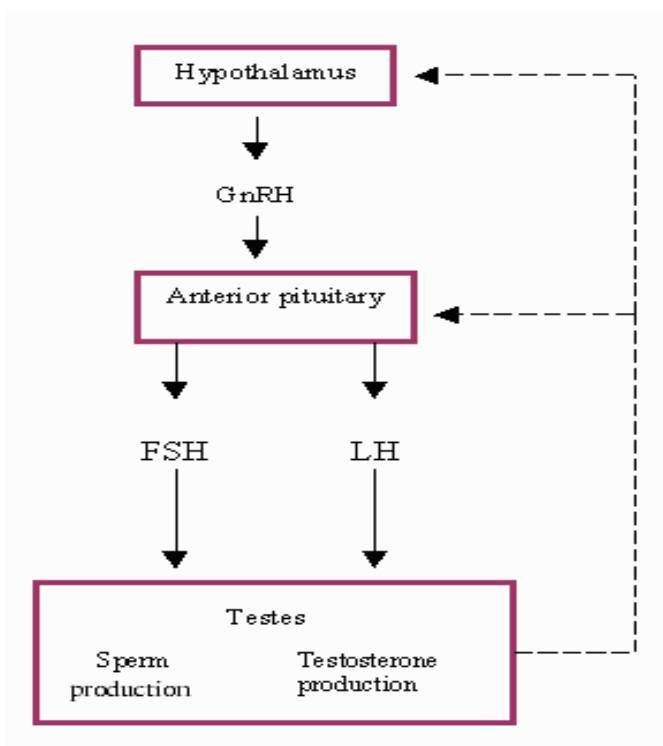
(Moderate Recommendation: Evidence Level: Grade C)

-Clinicians should counsel infertile men or men with abnormal semen parameters of the **health risks associated with abnormal sperm production.**

(Moderate Recommendation; Evidence Level: Grade B)



Hormonal regulation of testis



Hormonal assessment expected in azoospermic men with severely impaired spermatogenesis, obstruction, and hypogonadotropic hypogonadism.

	Severely Impaired Spermatogenesis	Obstructive Azoospermia	Hypogonadotropic Hypogonadism
LH	↑ or NI	NI	↓
FSH	↑	NI	↓
Testosterone	↓ or NI	NI	↓

Schlegel. AUA/ASRM guideline part I. Fertil Steril 2020.

Life style modification

- Cessation of smoking
- Avoidance of hot sauna
- Healthy diet & good nutrition
- Regular exercise & reduce stress



Male infertility evaluation

- History
- Physical examination
- Standard semen analysis
- Hormonal evaluation
- Imaging study
- Genetic counseling



Goal of male evaluation

- ◆ Correctable conditions
- ◆ Irreversible conditions amenable to ART
- ◆ Irreversible conditions: possible AID or adoption
- ◆ Health-threatening conditions
- ◆ Genetic abnormalities transfer to offspring



Summary- male infertility algorithm

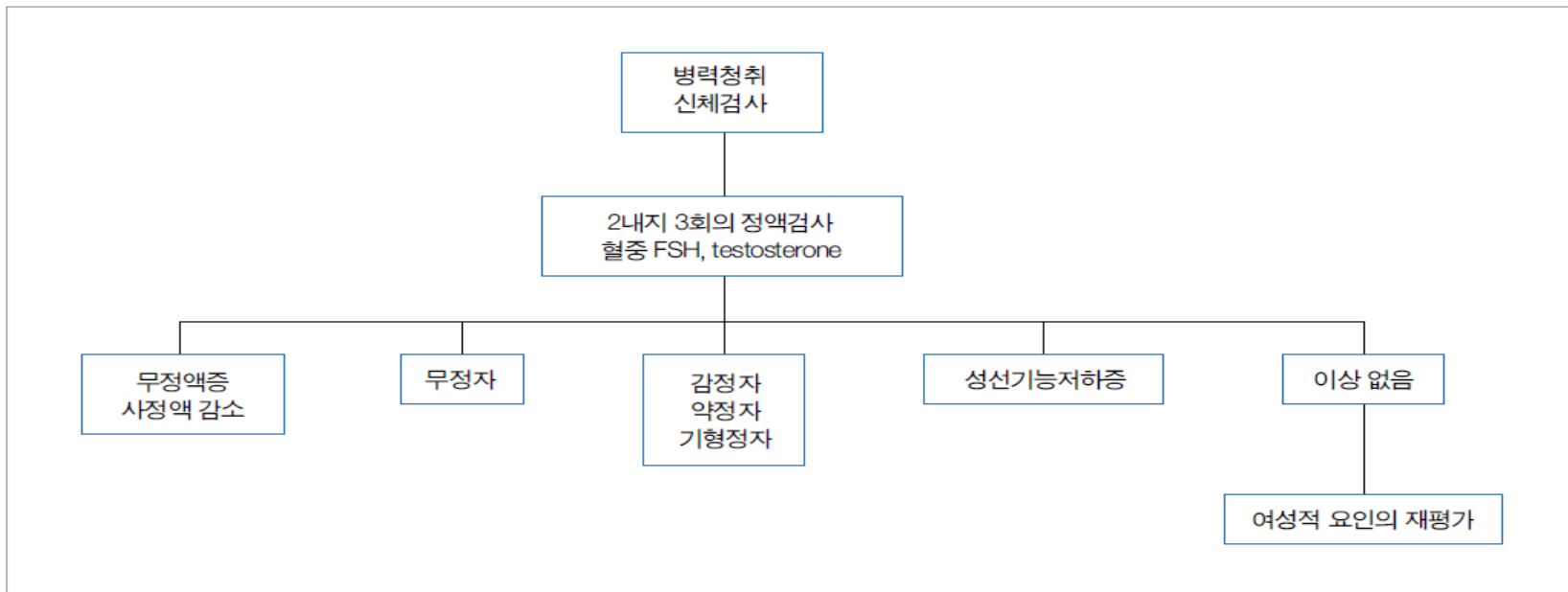


그림 6-1 | 불임남성의 평가 흐름도 (Algorithm for evaluation of the infertile male) FSH, follicle-stimulating hormone