The Reproductive System

Chapter 26

The Male Reproductive System

- Scrotum
- Testes
- Epididymus
- Vas deferens
- Urethra

The Scrotum

- Pouch supporting testes
- Consists of skin and superficial fascia
- Divided into 2 sacs
- Cremaster muscle, tunica dartos
  - Regulate temperature of testes

The Testes

- Paired oval glands
- Development
  - High on embryo’s abdominal wall
  - Begin descent into scrotum during latter ½ of 7th month
- Cryptorchism

The Testes

- Tunica vaginalis forms a capsule over testis
  - Derived from peritoneum
- Tunica albuginea
  - Immediately covers testis
  - Divides testis into lobules
- Lobules contain tightly coiled seminiferous tubules
- Function
  - Spermatogenesis

A Few Concepts with Regard to the Formation of Gametes

- In sexual reproduction, a new organism is produced by the union and fusion of sex cells called gametes
- A zygote results from the union and fusion of gametes
- Zygote repeatedly divides (mitosis), develops into a new organism
- Gametes differ from all other body cells in that they contain ½ the number of chromosomes
  - Human cells have 23 chromosomes (haploid, or n) = 1 set
  - Or 46 chromosomes (diploid, or 2n) = 23 pairs, or 2 sets
- Meiosis = a process of cell division by which gametes are produced in the testes and ovaries; receive the haploid chromosome number (n)
Spermatozoa

- Produced at the rate of about 300 million/day
- Life expectancy – about 48 hours in the female reproductive tract
- Structure
  - Head with acrosome
  - Midpiece
  - Tail (flagellum)

Accessory Glands

- Seminal fluids (semen) are added to the sperm
  - Seminal vesicles
  - Prostate gland
  - Bulbourethral gland

The Penis

- Contains distal portion of urethra
- Regions
  - Root
  - Body (shaft)
    - Contains erectile tissue
      - Corpora cavernosa
      - Corpora spongiosum
  - Glans
    - Surrounded by prepuce

Semen

- Mixture of sperm and secretions from accessory glands
- Average volume for each ejaculation
  - 2.5 – 5 ml
- Average # sperm/ejaculation
  - 50 – 100 million/ ml.
  - 125 – 500 million/ejaculation
- Only a small % reach ovum
  - Many sperm cells act on ovum to dissolve the barrier
  - Only 1 enters the ovum

Overview of the Male Reproductive System

- Sperm are produced in the seminiferous tubules of the testes
  - Spermatogenesis
- Sperm are stored in the epididymus
- Sperm are transported through the vas deferens
  - Accessory glands add seminal fluid
  - Sperm leave the body through the urethra
The Female Reproductive System
- Ovaries
- Fallopian tubes
- Uterus
- Vagina

The Ovaries
- Location – upper pelvic cavity
- Function
  - Oogenesis
    - Within a follicle
    - Production of hormones

Oogenesis Before Birth
- Formation of haploid ovum by meiosis
  - Division of cytoplasm is uneven
- Before birth, many primordial follicles formed
  - Begin meiosis
  - Meiosis stops at chromosome duplication

Oogenesis Continues at Puberty
- Once a month:
  - FSH causes ovaries to enlarge
  - Primordial follicles mature
  - Oocyte becomes larger
  - Follicle cells divide
  - Follicle fills with fluid, oocyte pressed to 1 side

Ovulation
- Ovum undergoes 1st meiotic division
  - Ovum is released into peritoneal cavity
- Ovum is propelled to the fallopian tube
  - If not fertilized, it degenerates
  - If fertilized, 2nd meiotic division occurs
- Empty follicle becomes corpus luteum
  - Progesterone secretion

The Fallopian Tubes
- Extend laterally from uterus
- Not attached to ovary
- Function
  - Transport ovum
  - Fertilization occurs
- Ectopic pregnancy

http://www.healthsquare.com/gntheadch17.htm
The Uterus

- Functions
  - Site of menstruation
  - Implantation of fertilized ovum
  - Development of fetus during pregnancy
  - Labor
- Location
  - Between the bladder and rectum
- Structure
  - Body
  - Cervix

The Uterine Wall

- 3 layers
  - Endometrium
  - Myometrium
  - Perimetrium

The Vagina

- Function
  - Passageway for menstrual flow
  - Receptacle for penis during intercourse
  - Lower portion of birth canal
- Structure
  - Muscular
  - Lined with mucous membrane
  - pH is low

The Female External Genitalia

- Vulva (pudendum)
  - Labia majora
  - Labia minora
  - Vestibule
    - Urethral opening
    - Vaginal opening
  - Clitoris
    - Contains erectile tissue
    - Surrounded by prepuce

Overview of the Female Reproductive System

- Ova (oocytes) are produced in the ovaries (oogenesis)
- Approximately every 28 days one ovum is expelled from the ovary (ovulation)
- An ovum transported through the fallopian tube to the uterus where it becomes embedded in the uterine lining
  - Fertilization occurs in the fallopian tube
- If the egg is not fertilized, the uterine lining detaches and is shed in menstruation
- If the egg is fertilized, the uterine lining is held in place and supported by progesterone