Female Anatomy: Structure & Function

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STRUCTURE & FUNCTION
- Uterus
  - Anatomy & Function
  - Bony pelvis shape
  - Baby
    - Internal rotation
    - Labor progress
- Pelvic floor
  - Relationship b/w
  - Labor mismanagement & pelvic floor trauma
  - Crowning
  - Control head

ANATOMICAL AREAS
- External genitalia
- Perineum
- Internal genitalia & organs
- Pelvis
FEMALE INTERNAL ANATOMY

Pouch of Douglas

EXTERNAL GENITALIA STRUCTURE (aka introitus)

SKENE’S GLANDS (AKA: PARAURETHRAL GLANDS)

- Skene’s Glands
- Non-palpable
- Located on either side of urethra
- Very small
- Infection (GC/CT)
- Mucopurulent discharge
Opening to Skene's ducts (normal position)

Purpose: lubrication / cleansing

Skene's Duct Opening (Alternate Position)

Alternate position of Skene’s ducts

INTERNAL GENITALIA STRUCTURE
UTERINE LIGAMENTS

VAGINA

- Musculo-membranous
- Elastic
- Rugae

Highly acidic

- Resistant to infection

Vaginal discharge

- Increased in pregnancy
- Healthy bacteria: Lactobacillus

PELVIC MUSCULATURE
PELVIC FLOOR MUSCLES

LATERAL VIEW

MUSCULAR SLING
PELVIC FLOOR FUNCTIONS

- Pelvic Floor Functions:
  - Supports pelvic organs
  - During birth: controls presenting part
  - Continence of feces & urine
  - Sexual pleasure

PERINEAL FUNCTION DURING BIRTH

Notice extensive perineal stretching
Controls Head

KEGEL EXERCISE

1. Kegel exercises help support many conditions.
2. Kegel exercises can strengthen the pelvic floor muscles.
3. They can be done at any time, for any length of time, or in any position.
4. They have been shown effective in eliminating urinary incontinence.

KEGEL EXERCISE

ASSIST IN CHILDBIRTH AND POSTPARTUM PERIOD
Pelvic muscle trauma may lead to:
- Cystocele = Bladder prolapse
- Rectocele = Rectal prolapse
- Urinary, fecal, & flatus incontinence

"CELE" ETIOLOGY
- Trauma during labor
- RN role: proper pushing techniques
  - Active vs. passive descent (laboring down)
  - Station & maternal posturing
  - Instrumental delivery
- Parity (# of children)
- Patient's Anatomy
- Age

UTERINE ANATOMY
VASCULATURE

UTERINE STRUCTURE

- Perimetrium
  - Outer serous peritoneal layer
- Myometrium *
  - 3 sets of muscle layers
    - Outer, middle & inner
- Endometrium
  - 3 functional layers

MYOMETRIUM FUNCTION

- Labor
  - Contracts & retracts
  - Expels baby, then expels the placenta
- Third stage (after delivery of placenta)
  - Clamps & constricts blood vessels
  - Controls postpartum bleeding

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MYOMETRIUM/ENDOMETRIUM

- Superficial compact layer
  - Highly glandular
  - Open to uterine cavity

ENDOMETRIUM FUNCTION

- Endometrium
  - Basal layer
  - Basal arteries
  - Regenerative layer
  - Inner layer (sheds during menstruation)
    - Middle spongy layer
      - Coiled arteries
    - Menstrual changes
      - Highly glandular
      - Open to uterine cavity

OVARIAN STRUCTURE
OVARIAN FUNCTION

1. Produce ova
2. Produce hormones

OVARIAN CYCLE HORMONES

- CNS
- Hypothalamus
- GnRH
- Anterior Pituitary
  - FSH
  - LH
- Ovary response
  - FSH
  - Follicular phase
  - LH
  - Luteal phase

UTERINE RESPONSE (ENDOMETRIAL RESPONSE)

- FSH
  - Menstrual phase of ovarian cycle
  - Proliferative phase = uterine response
- LH
  - Luteal phase of ovarian cycle
  - Secretory phase = uterine response
MENSTRUAL CYCLE

- **Cyclic changes**
  - Affect the endometrium

- **Duration**
  - 28 days (range = 23 – 35 days)

- **4 phases**
  - Mirror the ovarian cycle

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MENSTRUAL CYCLE PHASES

- Menstrual phase
  - Sloughing of endometrium with no implantation
  - FSH begins to rise

- Repair phase
  - Estrogen rises
  - FSH slow rise
  - Follicles develop

- Proliferative phase
  - Estrogen peaks
  - Variation in 28 days occurs here
  - Ovulation
  - LH & FSH peak
  - Secretory phase
  - Progesterone rises
  - Prepares endometrium for implantation
ENDOMETRIAL OPTIONS

- Ischemic phase
  - 10 – 12 days after ovulation with no implantation
  - Corpus luteum becomes corpus albicans
  - Hormones drop drastically
  - Spiral arteries constrict
  - Endometrium becomes ischemic
  - Menstrual cycle ensues
- OR -
- Implantation/pregnancy
  - Corpus luteum
  - Progesterone secretion to maintain pregnancy until placenta takes over

NORMAL PELVIC STRUCTURE

- 7 bones
  - Ischium (2) -- sacrum (1)
  - Pubic (2) -- coccyx (1)
  - Ilium (2)

- 3 joint types
  - 2 sacro-iliac
  - Symphysis pubis
  - Sacro-coccygeal joint
PELVIS FUNCTION: INTERNAL ROTATION OF FETAL HEAD

A proper bony pelvis facilitates internal rotation of fetal head during labor.

Four Basic Pelvic Types & Variations
...Remember...
“Structure determines Function”
so
Limiting features of the Bony pelvis
may impact
labor processes & birth success

Blended Babies

Each plane may have specific limiting features
LIMITING FEATURES PER PELVIC PLANE

**Inlet**
- AP diameter
- Sacral promontory

**Midplane**
- Sacrum/coccyx
- Spines
- Sidewalls

**Outlet**
- Pubic arch
- Ischial tuberosity diameter

**INLET PLANE: AP DIAMETER**
- AP diameter (anterio-posterior) = 11.5 centimeters
- Engagement
- Descent
- Flexion of head

**BONY LANDMARKS**
- Sacral promontory to the
- Symphysis pubis
**Mid-pelvis limiting issues:**
- Encroaching or prominent spines
- Converging sidewalls
- These limit internal rotation of fetal head

**MIDPLANE LIMITING FEATURES: SACRUM/COCYX**

Limiting:
- "J" shaped or flat sacral shape

**ROTATIONS TO OCCIPUT ANTERIOR (OA) POSITION FOR OPTIMAL BIRTH**

- Occiput Posterior (OP) 135 degrees
  - From OP to...
  - Direct OA
- Only 45 degrees of rotation
  - From OA to...
  - Direct OA
- Helpful hint:
  - Triangle shape = posterior fontanelle
  - Diamond shape = anterior fontanelle
  - "Baby likes to look at diamonds"
OCCIPIT - POSTERIOR MATERNAL POSTURING

Outlet Plane
- Limiting features:
  - Pubic arch
    - < 90 degrees
  - Ischial tuberosity diameter
    - < 10 cm

SYMPHYSIS PUBLIS: INCLINATION
CARDINAL MOVEMENTS

- Engagement
-下降
- Internal Rotation
- Extension
- External Rotation
- Flexion
- Translation