Introduction to Obstetrics & Gynecology

Comprehensive Lecture Summary & Clinical Overview

Introduction to Obstetrics & Gynecology Sub-specialties

Gynecology Sub-specialties

Gynecology has evolved significantly. While some traditional diseases have become less common, new age-related conditions have emerged. The procedures have advanced, and the field has branched into several sub-specialties:

- **Gynecologic Oncology:** Deals with female reproductive cancers, such as ovarian, uterine, cervical and vulvar cancers.
- **Minimally Invasive Gynecology (Laparoscopy & Hysteroscopy):** Many procedures are now performed laparoscopically. Surgeons make a small incision through the umbilicus, insufflate the abdomen with CO2 gas and insert a camera and instruments.

  -Hysteroscopy: Approaching the endometrial cavity through the cervix to remove fibroids or polyps or to correct congenital Mullerian anomalies(like a septate or bicorn uateuterus)and vaginal/cervical anomalies.

  -Natural Orifice Transluminal Endoscopic Surgery (NOTES): In females, surgeons can access the pelvic cavity through the vagina via the Pouch of Douglas, avoiding abdominal incisions entirely.

- **Robotic Surgery:** Excellent for pelvic and urogynecological surgeries. While standard laparoscopy offers a 2D view, robotic cameras provide 3D vision and can navigate the retroperitoneal space behind major blood vessels and theureters. The robotic instruments articulate like a human hand.
- **Reproductive Endocrinology & Infertility(IVF):** Deals with fertility treatments and managing conditions like Polycystic Ovary Syndrome (PCOS).
- **Adolescent Gynecology:** Focuses on gynecological conditions affecting young females, including congenital anomalies.
- **Urogynecology:** Focuses on pelvic floor dysfunction, including pelvic organ prolapse (where organs descend through the vagina) and various types of urinary incontinence. Diagnosis often involves urodynamic studies and management ranges from conservative medical treatments to surgical vaginal approaches.

Obstetrics Sub-specialties

Obstetrics focuses on pregnancy and childbirth

- **Maternal-Fetal Medicine (Perinatology):** Deals with high-risk pregnancies, medical complications (e.g. chronic hypertension, preeclampsia), and fetal anomalies.

  -Prenatal Diagnosis: Utilizing invasive procedures like Amniocentesis(sampling amniotic fluid) and Chorionic Villus Sampling (CVS - sampling placental tissue) to diagnose chromosomal anomalies like Down syndrome.

  -Intrauterine Fetal Surgery: For conditions like Twin-to-Twin Transfusion Syndrome(TTTS), where twins share one placenta, causing one to become atrophic and the other fluid-overloaded. Surgeons use laser ablation of the arteriovenous anastomoses with great success. Surgery is also used for fetal urinary tract obstructions; surgeons can bypass the obstruction intra-amniotically to drain the urine, preventing fetal kidney damage and death.

- **Labor Ward Management:** The delivery room functions similarly to an intensive care unit. While 60-70% of women deliver smoothly, 20-30% require specialized or intensive care.

Antenatal Care & Patient Follow-up

1. First Trimester (0-12Weeks)

- **Expected Date of Delivery(EDD):**Calculated using Naegele's Rule: Take the first day of the Last Menstrual Period (LMP), add 7 days, and subtract 3 months (or add 9 months).
- **History Taking:** The most critical clinical step. Collect demographics, socialhistory (e.g., smoking), chief complaint, and confirm the pregnancy (home test or serum beta-hCG).
- **Medical History:** Assess for heart disease, respiratory illness or autoimmune diseases. Review all medications to rule out teratogenic drugs. Confirm folic acid intake (ideally starting 3 months prior to conception).Assess for severe nausea/vomiting (Hyperemesis Gravidarum) and inability to tolerate oral intake.
- **Investigations:** Renal function tests, electrolytes, CBC.

  Administer IV fluids and antibiotics if indicated.
- **Ultrasound:** Used to confirm the site of implantation, fetal viability and rule out anembryonic pregnancy (blighted ovum).

2. Second Trimester (13-27Weeks)

- **Follow-up:** Monitor for complications like spotting or bleeding.
- **Anomaly Scan (Level 2 Ultrasound):** Performed between 18 and 24 weeks by maternal-fetal specialists. It thoroughly checks all fetal organs(brain, heart, stomach, etc) to rule out structural defects or obstructions.

3. Third Trimester (28Weeks-Delivery)

- **Fetal Growth Assessment(Ultrasound):** We measure four main parameters:
    1. Biparietal Diameter(BPD)
    2. Head Circumference(HC)
    3. Abdominal Circumference(AC)
    4. Femur Length(FL)
- **Placenta & Fluid:** Assess amniotic fluid volume and placental location. Rule out Placenta Previa (where the placenta covers the cervix, causing painless bleeding).
- **Delivery Planning:** Evaluate indications for a Cesarean section, such as a history of two previous C-sections or fetal malpresentation (breech or transverse instead of cephalic). Labor requires close monitoring of maternal vital signs and fetal well-being as it can last (16-20)hours.

Common Gynecological Pathologies

Polycystic Ovary Syndrome(PCOS)

Diagnosis requires meeting at least two of the three **Rotterdam Criteria**:

- **Hyperandrogenism:** Clinical features(acne, hirsutism) or biochemical evidence.
- **Oligo-ovulation or Anovulation:** Presenting as irregular cycles or amenorrhea.
- **Polycystic Ovarieson Ultrasound:** Increased ovarian volume (>10ml) with multiple small follicles.

Management:

-First-line: Lifestyle modifications (weight reduction, diet, exercise, stress management).

-Second-line: Targeted symptom relief, such as laser hair removal for hirsutism, oranti-androgenic medications like **Spironolactone**.

Endometriosis

A complex disease with various presentations. The exact etiology is unknown, but the most widely accepted theory is the **Retrograde Menstruation theory** (Sampson's theory), where menstrual blood flows backward through the fallopian tubes into the pelvic cavity.

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