Amenorrhea

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Definition:
Primary Amenorrhea

- No menses by age 13 in the absence of growth or development of secondary sexual characteristics
- No menses by age 15 regardless of the presence of normal growth and development of secondary sexual characteristics
- If secondary sexual characteristics develop before 10, no menses within 5 years

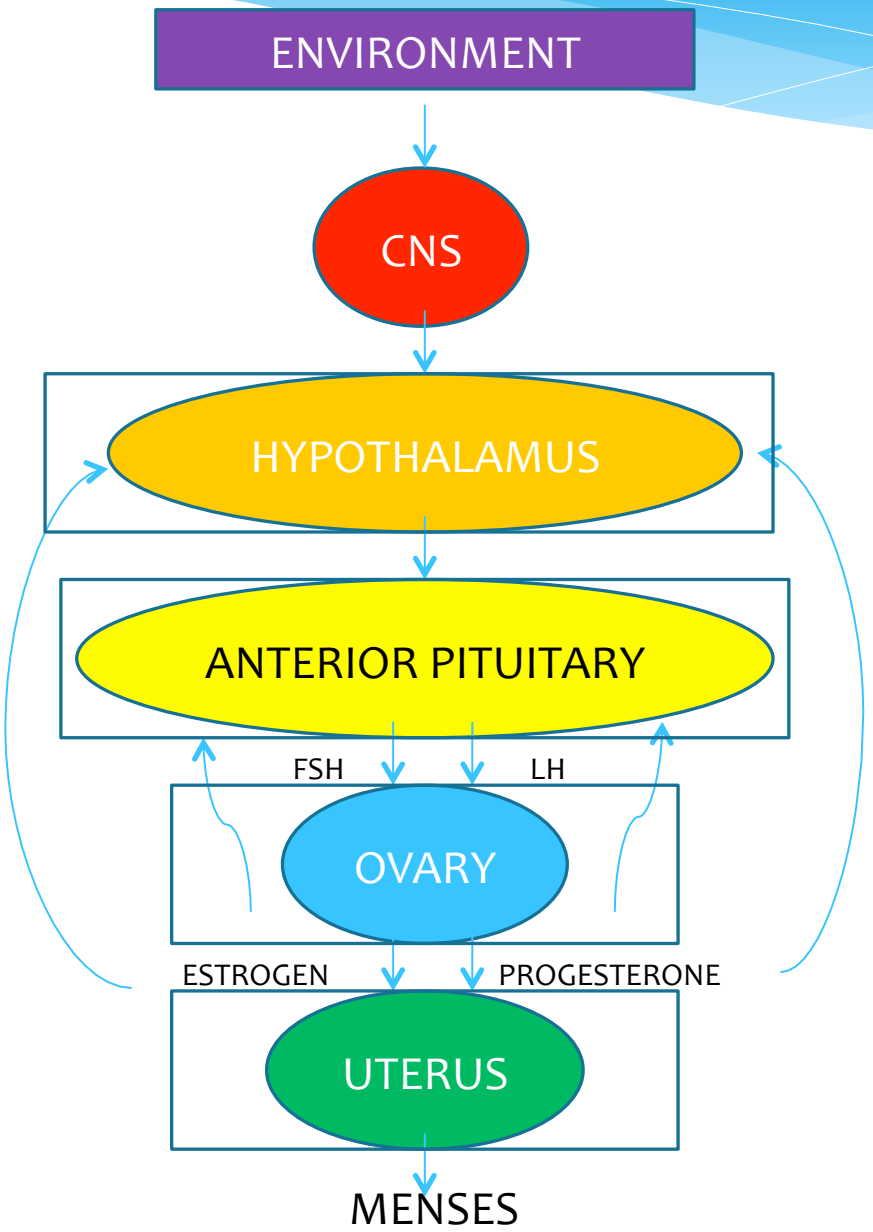
Definition: Oligomenorrhea

Once normal menstrual cycles are experienced, they can become irregular or event absent for various reasons. If a woman has less than 9 cycles per year

Definition:
Secondary Amenorrhea

In women who have menstruated previously, no menses for an interval of time equivalent to a total of at least 3 previous cycles, or 6 months

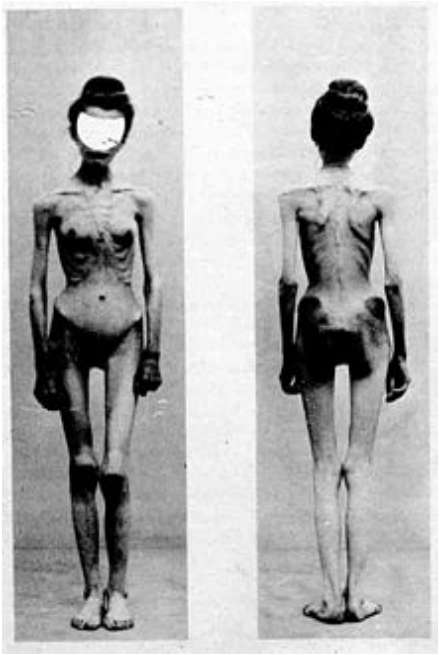
Basic Principles of Menstrual Function



Compartment	Amenorrhea Diagnosis	
	Primary	Secondary
Hypothalamus	• Kallman Syndrome • Childhood tumors or infiltrative lesions	• Functional Hypothalamic amenorrhea • Eating disorders
Anterior Pituitary	• Childhood tumors or infiltrative lesions	• Hypothyroidism • Hyperprolactinemia • Pituitary adenoma (Prolactinoma) • Sheehan's syndrome • (Chronic Medical Conditions)
Ovary	• Turner's syndrome • Gonadal dysgenesis (including Swyer's syndrome) • Premature Ovarian failure • Chemotherapy/Radiation Therapy	• Polycystic Ovary Syndrome • Premature Ovarian failure
Uterus & Genital Outflow tract	• Imperforate Hymen • Transverse Vaginal Septum • MRKH syndrome • Androgen Insensitivity	• Cervical Stenosis • Asherman Syndrome

Disorders of the Hypothalamus

Functional Hypothalamic amenorrhea (FHA)



FHA: Diagnosis

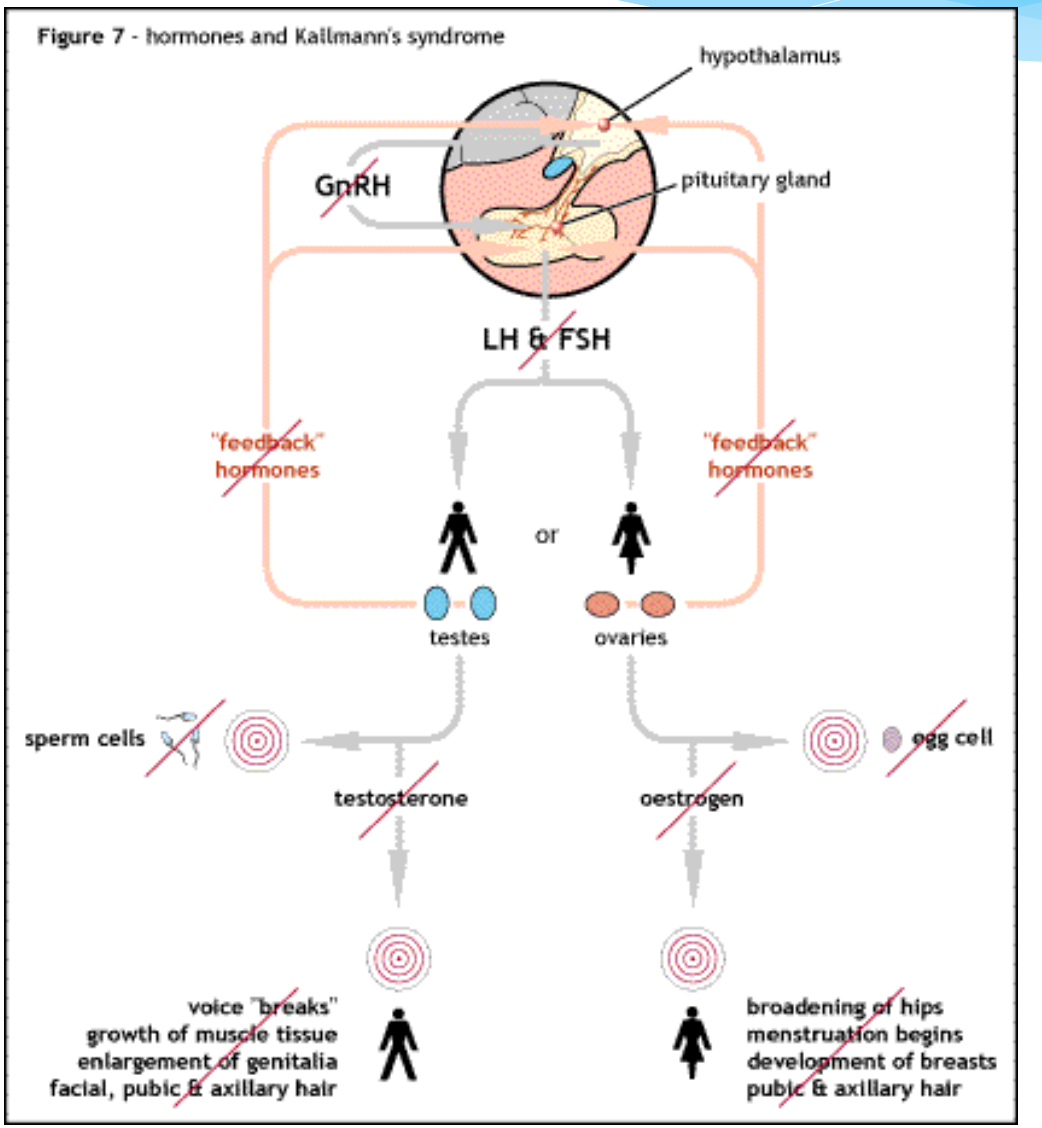
- Thorough medical and surgical history
- Questions interrogating body image

FHA: Treatment considerations

- Multi Disciplinary approach
- Possible Hospitalization

- Behavioral therapy
- Hormone therapy
- Calcium and Vitamin D supplementation

Kallman Syndrome



Kallman syndrome: Diagnosis

Clinical History: Look for a familial pattern and the classic presentation – delayed puberty and anosmia

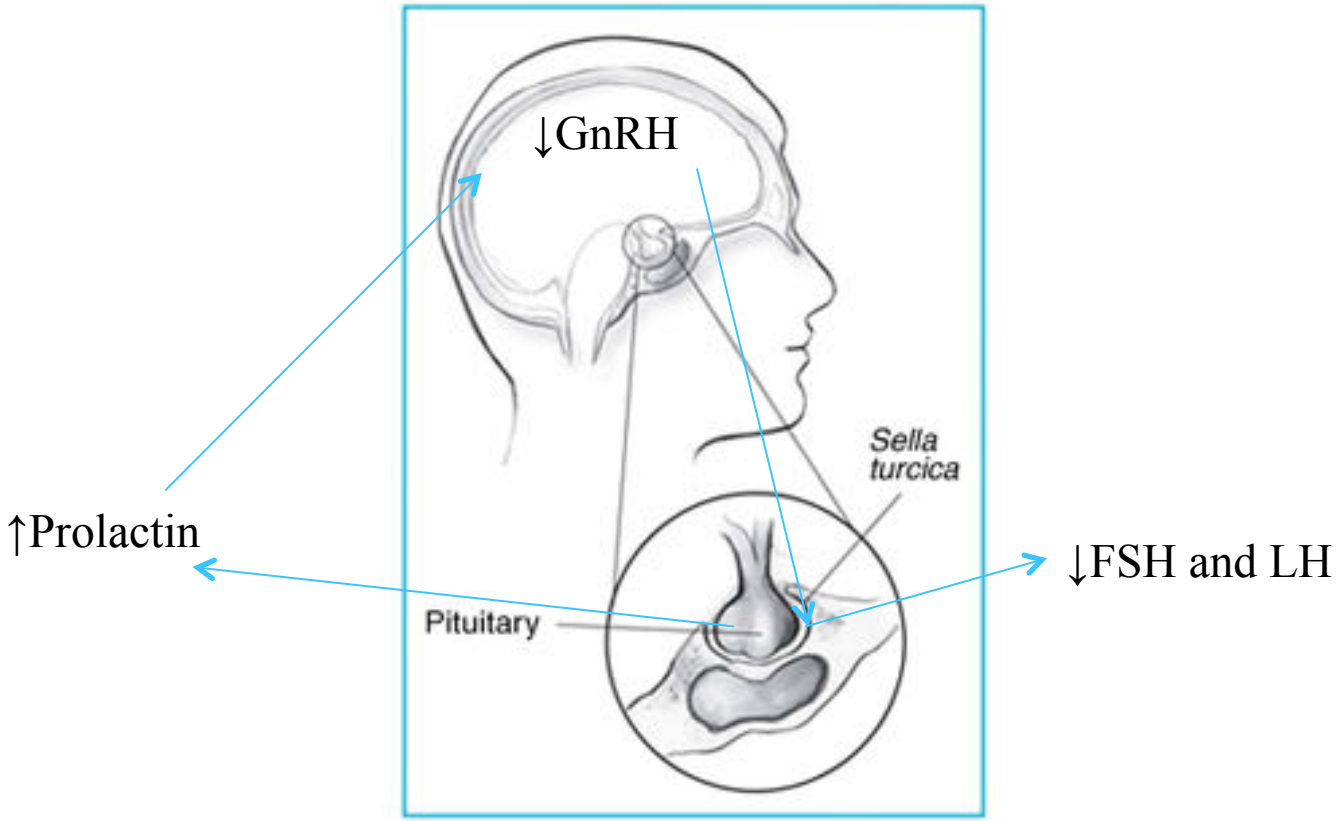
Labs: Pre-pubertal FSH and LH levels, Normal female karyotype

Kallman syndrome: Treatment

Hormone Therapy!

Disorders of the Pituitary

Hyperprolactinemia



Hyperprolactinemia

Clinical Presentation: Shortened luteal phase, oligomenorrhea or amenorrhea, galactorrhea, and occasionally headache and or visual changes

Etiologies:

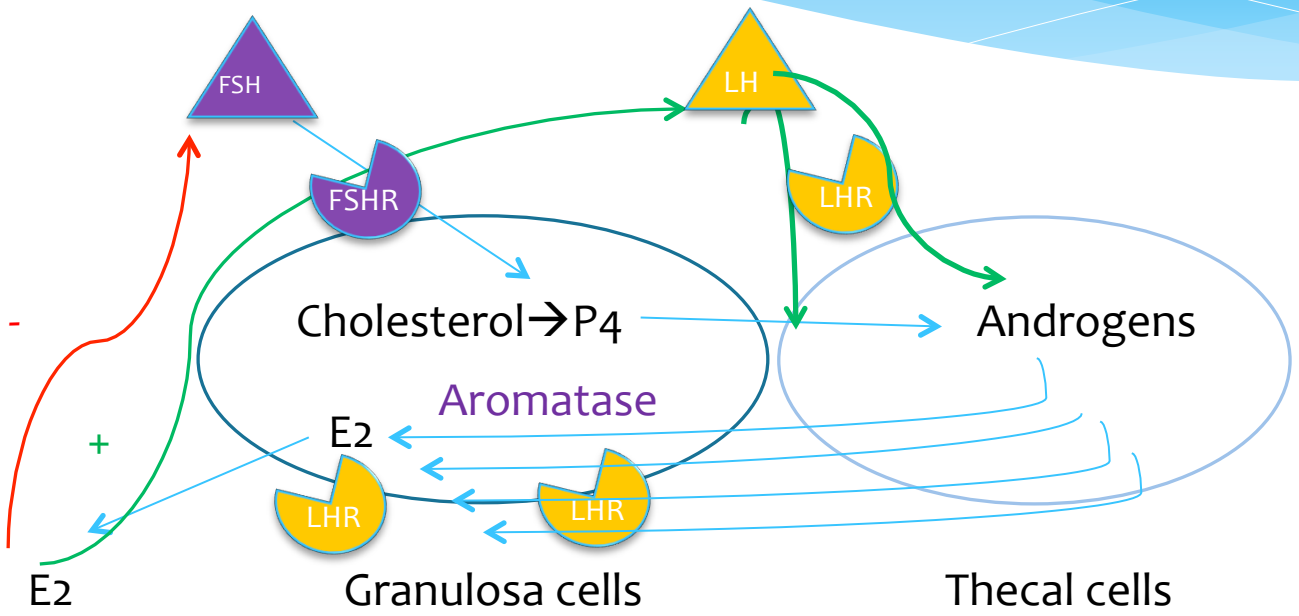
- Hypothyroidism
- Medications (Antipsychotics)
- Pituitary adenoma

Evaluation: TSH, MRI

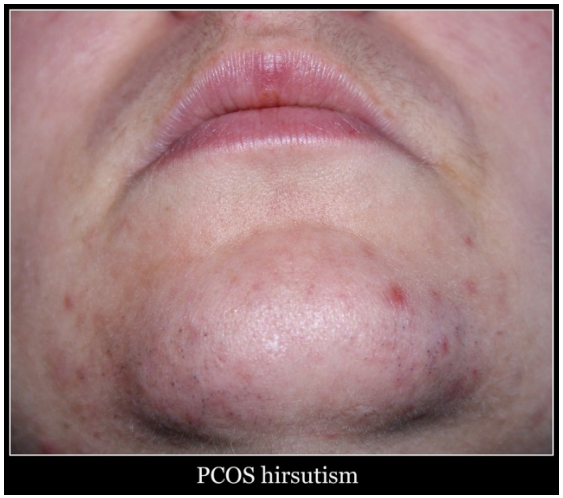
Treatment: Dependent on etiology and desire for fertility

Disorders of the Ovary

2 Cell 2 Gonadotropin theory



Polycystic Ovary Syndrome: Diagnosis

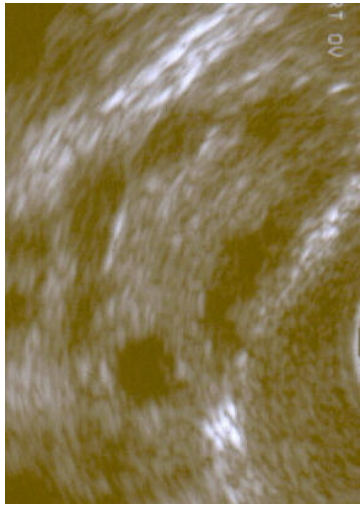

PCOS hirsutism

Rotterdam Criteria:

(1)Oligo- or anovulation

(2)Clinical and or biochemical evidence of hyperandrogenism

(3) Ultrasound evidence of polycystic ovaries


Polycystic Ovary

- Must meet 2 of 3 criteria for diagnosis
- Only one ovary is necessary to qualify as a polycystic ovary

Polycystic Ovary Syndrome: Treatment considerations

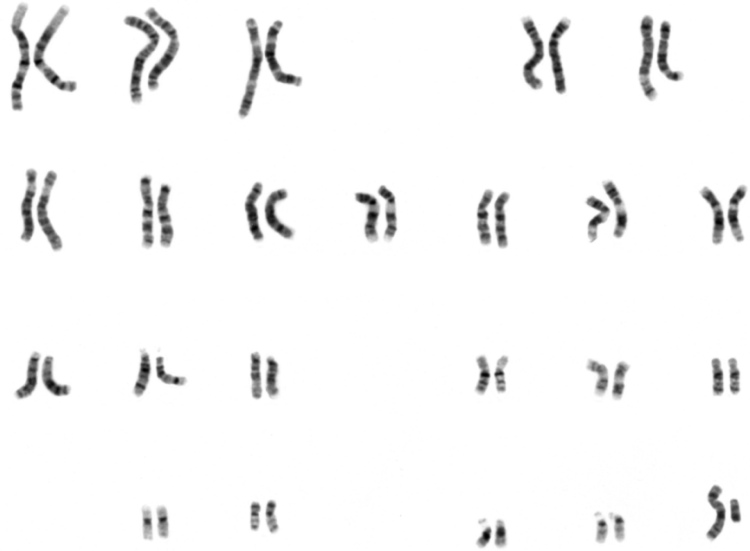
Increased risk:

- Insulin resistance and Diabetes mellitus
- Metabolic Syndrome
- Endometrial hyperplasia and Endometrial cancer
- Obstructive sleep apnea
- Depression

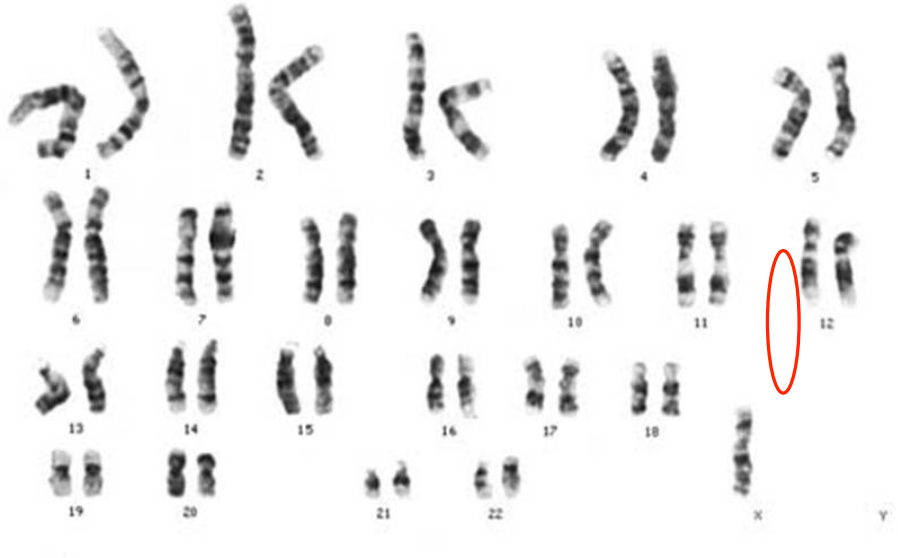
Treatment:

- Disease surveillance and prevention
- Lifestyle changes
- Endometrial Protection
- Fertility: Ovulation induction

Gonadal dysgenesis: Turner Syndrome



Normal 46X X Karyotype



Abnormal 45 X Karyotype

Gonadal dysgenesis: Turner Syndrome

Patients with Turner Syndrome are at an increased risk for:

- Coarctation of the aorta
- Hearing Loss
- Thyroid Dysfunction
- Metabolic syndrome
- Celiac Disease

Treatment: Growth Hormone, Hormone therapy

Premature Ovarian Insufficiency

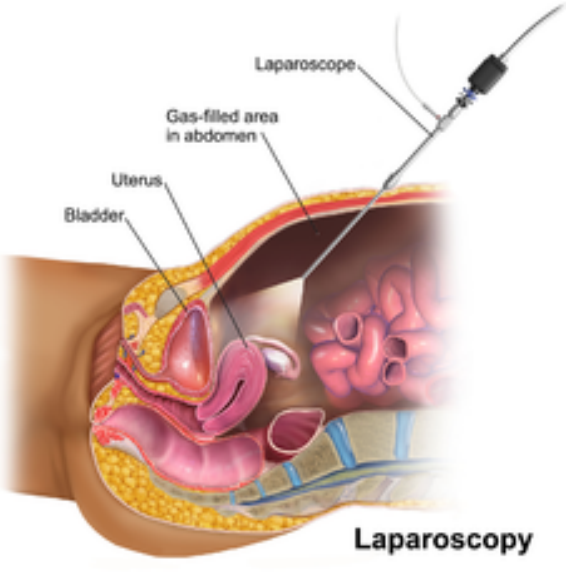
Diagnosis: Menstrual irregularity along with postmenopausal gonadotropin levels on 2 separate occasions at least 4 weeks apart.

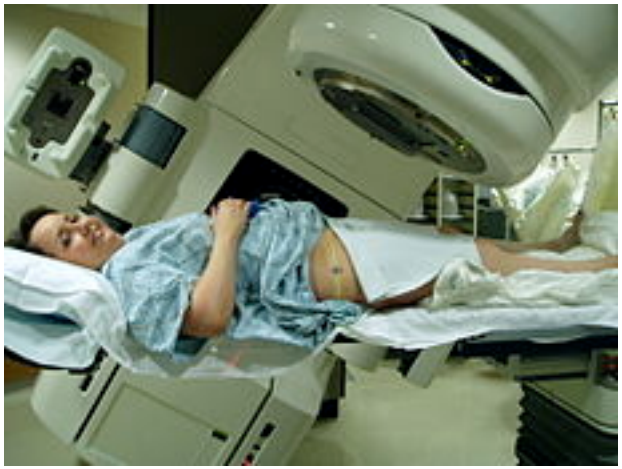
Following diagnosis, obtain:

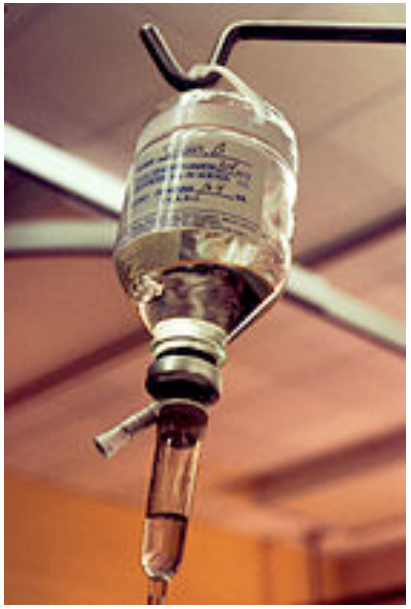
- Karyotype
- Screen for FMR premutation
- Anti-thyroid and Anti-adrenal antibodies
- DEXA scan

Treatment: Hormone therapy, Calcium and Vitamin D supplementation

Ovarian Surgery, Chemotherapy, Radiation Therapy

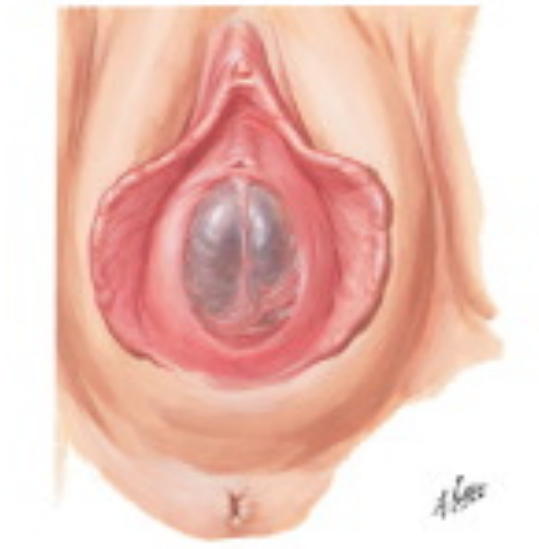






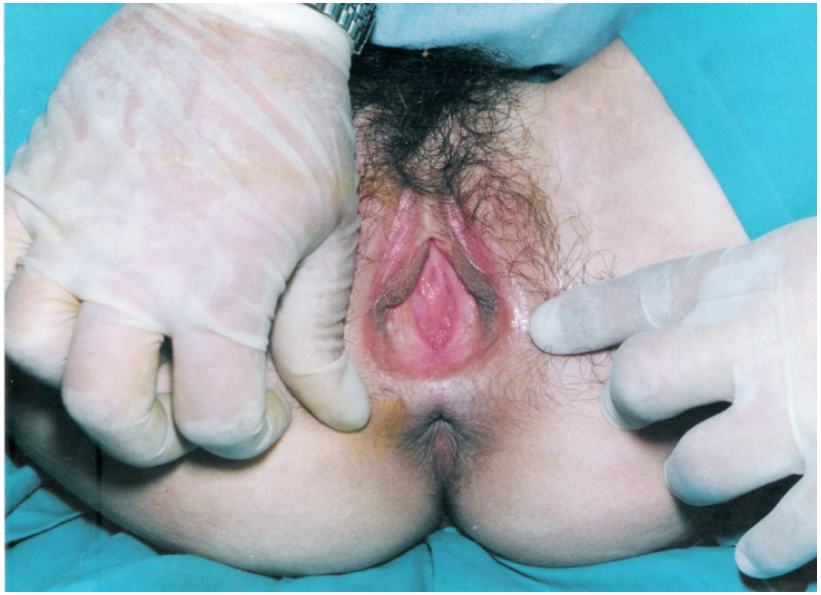
Disorders of the Genital Outflow Tract

Imperforate Hymen



Imperforate Hymen

Transverse Vaginal Septum, Mullerian Agenesis, and Androgen Insensitivity



Blind ending vaginal pouch

Differential diagnosis:

- Transverse Vaginal Septum
- MRKH Syndrome
- Androgen Insensitivity Syndrome

Asherman Syndrome and Cervical Stenosis

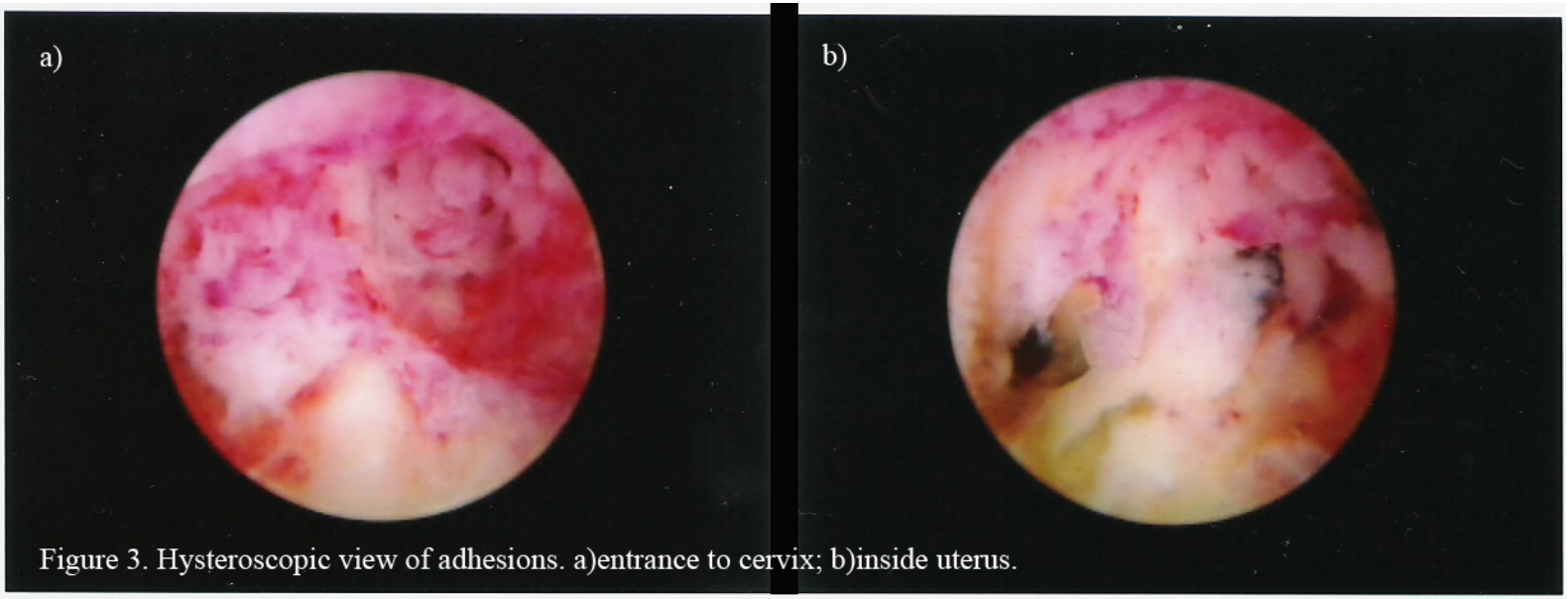
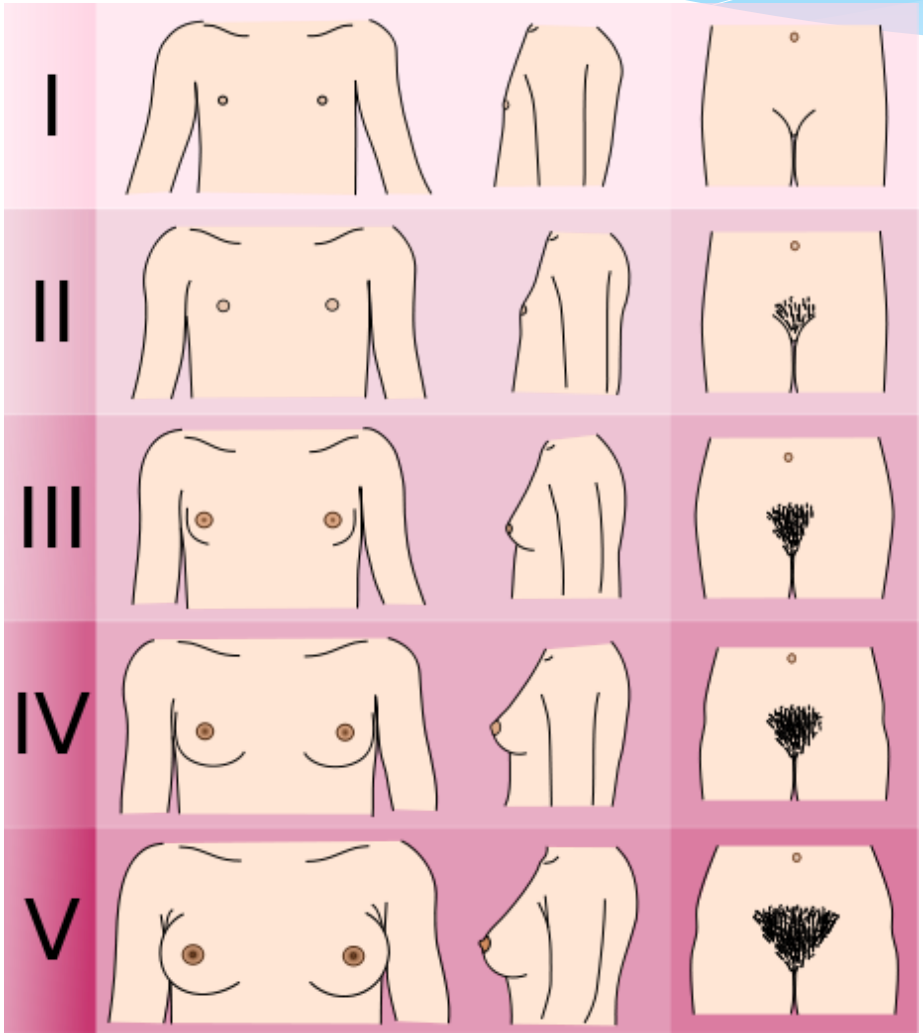


Figure 3. Hysteroscopic view of adhesions. a)entrance to cervix; b)inside uterus.

Evaluation: Physical Exam



Evaluation: Initial Laboratory Tests

	FSH	LH	Estradiol
Hypogonadotropic Hypogonadism (Hypothalamic or pituitary etiology)	Low to Normal	Low to Normal	Low
Eugonadotropic Hypogonadism (Genital outflow tract)	Normal	Normal	Normal to Low
Hypergonadotropic Hypogonadism (Ovarian etiology)	High	High	Low

Key Diagnostic Testing

* Pelvic Ultrasound or MRI
* Serum FSH/LH
* Serum TSH, Free T4
* Serum Fasting Prolactin
* +/- Brain MRI
* +/- Karyotype
* +/- Total Testosterone

Summary

Etiologies for primary and secondary amenorrhea may involve the hypothalamus, pituitary, ovary, or uterus and genital outflow tract.

Gathering a thorough medical history and a targeted physical exam are important in determining your next steps in diagnostic testing.

It is best to start with a serum pregnancy test, pelvic imaging, FSH, estradiol, fasting prolactin, and TSH. Additional testing is based on clinical presentation and symptoms.

Treatment should be tailored to the underlying disorder, and failing to treat can lead to long term consequences.