Adolescent Gynecology: Clinical Pearls for Pediatricians

Clinical Pearls in Adolescent Gynecology

Akilah Weber, MD
Assistant Professor UTSW, Department of OB/GYN
Pediatric & Adolescent Gynecology Children's Medical Center Dallas

Disclosures

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Topics

1. Menstrual Disturbances
   - Amenorrhea (Primary and Secondary)
   - Menorrhagia / Heavy Menstrual Bleeding
   - Dysmenorrhea

2. Ovarian Masses
   - Ovarian Cyst
   - Ovarian Tumors

3. Sexually Active Adolescents
   - Contraception
   - Sexually Transmitted Infection Screening
   - Pap Smear

Menstrual Abnormalities

Menstrual Disturbances

- Amenorrhea
- Menorrhagia
- Dysmenorrhea

Menstrual Abnormalities

Primary Amenorrhea
- No menses by age 14 in absence of secondary sexual characteristics
- No menses by 2 years after completing sexual development
- No menses by age 16 regardless of secondary sexual characteristics

Secondary Amenorrhea
- Absence of menses for 3-6 months or 3 consecutive cycles
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### Menstrual Abnormalities

**Three Main Components:**
- Intact CNS with appropriate hypothalamic-pituitary output
- Proper ovarian response
- Intact outflow tract

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**Hypothalamus**
- Familial delay
- Stress
- Competitive Athletics
- Eating disorders
- Tumor / Hx of radiation
- Chronic disease
- Kallman Syndrome

**Pituitary Gland**
- Hypopituitarism – idiopathic
- Tumor
- Infarction
- Hx of Radiation
- Surgery

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**Thyroid or Adrenal Gland**
- Hypo – or Hyperthyroidism
- Congenital Adrenal Hyperplasia
- Tumor
- Cushings Disease
- Addisons Disease

**Ovaries**
- Gonadal dysgenesis (ex: Turners Syndrome)
- Premature ovarian insufficiency / failure
- Tumor
- Surgery
- Hx of radiation or chemotherapy
- Polycystic Ovarian Syndrome

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**Uterus or Cervix**
- Synechiae
- Agenesis or hypoplastic
- Pregnancy
- Cervical agenesis

**Vagina or Hymen**
- Vaginal Agenesis
- Vaginal transverse septum
- Imperforate Hymen

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**Evaluation of Amenorrhea**
- Thorough history – differentiate between primary and secondary
- Examination of external genitalia and breast
- Baseline hormonal labs
- Pelvic Imaging

**Management**
- Varies based on specific etiology
- Refer to gynecology

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**Approximately 24% of teens have dysfunctional uterine bleeding (DUB)**
- Especially within first two years of undergoing menarche
- 14% have heavy menstrual bleeding and/or heavy and prolonged menstrual bleeding
  - Platelet dysfunction
  - Clotting Factor deficiency
  - Thrombocytopenia
  - von Willebrand Disease
### von Willebrand Disease
- Most common inherited bleeding disorder
- Due to insufficient, abnormal or an absence of the von Willebrand factor (vWF)
- vWF adheres platelets to subendothelium
- Helps platelets aggregate
- Protects factor VIII from being destroyed

#### Prevalence of vWD
- 5-35% in teens with menorrhagia
- Decreased quality of life
- Oral contraceptives reduce menstrual blood loss
  - Increase vWF
  - Increase Factor VIII levels
  - Shown to be just as effective as DDAVP
- Levonorgestrel IUD effective in patients with bleeding disorder

### Laboratory test:
- CBC and platelet count
- PT and PTT
- von Willebrand assays:
  - von Willebrand factor antigen
  - von Willebrand ristocetin cofactor activity
  - Factor VIII
- TSH

If any of the above are abnormal refer to appropriate specialist

### Treatment Options for HMB:
- Non-steroidal anti-inflammatory agents (NSAID)
- Oral contraceptive pills or another form of “hormonal therapy”
- Cyclic Progestin
- Tranexamic acid (age >=18 years of age)

If the above does not improve symptoms, refer to gynecology
Menstrual Abnormalities

Clinical Pearls
- Evaluation of amenorrhea warranted at age 14 if no secondary sexual characteristics or at age 16 regardless of secondary sexual characteristics.
- Many adolescents will have “abnormal” menses within the first few years after menarche.
- Evaluation for bleeding disorder should be done if bleeding is excessive or the patient is anemic.
- Early referral to appropriate specialist for treatment can alleviate symptoms and improve quality of life.

Ovarian Cysts
- Follicular Cyst
- Hemorrhagic Cyst
- Corpus Luteum Cyst

Ovarian Tumors
- Germ cell
- Sex Cord / Sex Stromal
- Epithelial Cell

Ovarian Masses

Management
- Observe, esp. < 8 cm
  - Torsion precautions
- Repeat ultrasound
- Offer oral contraceptives
- Surgical intervention
  - Acute abdomen
  - > 8 cm
  - Persistence
  - Solid components, increased blood flow, multiloculated with papillations

Presentation
- Abdominal pain
- Increasing abdominal girth
- Nausea/vomiting
- Hormonally active
- Incidental finding

Ovarian solid masses uncommon
2/3 solid masses are germ cell tumors
- Most are benign dermoids
- Sex cord tumors usually hormonally active
  - Precocious puberty
  - DUB
  - Masculinization
Evaluation – Imaging
- Pelvic Ultrasound
- Pelvic CT
- Pelvic MRI

Evaluation – Laboratory Test
- Tumor Markers
  - AFP – endodermal sinus tumor
  - mixed germ cell tumor
  - immature teratoma
  - HCG – embryonal sinus tumor
  - choriocarcinoma
  - mixed germ cell
  - LDH – dysgerminoma
  - CA 125 – epithelial cell tumor
  - Inhibin, anti-Mullerian hormone – granulosa cell tumor

Other Labs?

Management
- Surgical intervention
  - Laparoscopy vs. Laparotomy
  - Cystectomy vs. Salpingo-Oophorectomy
  +/‐ Staging
- Gynecology Oncology vs. Pediatric Surgery
- Follow up imaging +/‐ oncology

Torsion
- Ovarian Torsion – the twisting of an ovary on its ligamentous support
- Adnexal Torsion – the twisting of either the ovary, fallopian tube or both

Incidence in 1 – 20 yo: 4.9 per 100,000 females
- 5th most common gynecologic emergency
- Clinical Suspicion but Surgical Diagnosis

Ovarian Masses
- Twisting of suspensory ligament of affected ovary
- Compromise venous and lymphatic outflow
- Diffuse edema and enlargement
- Compromise arterial flow
- Ischemia and infarct
Torsion

- Clinical Symptoms
  - Abdominal pain: 100%
  - Vomiting: 85%
  - Leukocytosis: 56%
  - Fever: 18%
- Mimic symptoms of other clinical conditions:
  - PID
  - Appendicitis
  - Nephrolithiasis
  - Gastroenteritis
  - Diverticulitis


Sonographic Evaluation
- Most common finding was an enlarged ovary/adenal mass
  - Median volume was 12 times that of the normal ovary
- Appearance varied
  - Complex or heterogenous: 63%
  - Simple cyst: 20%
  - Solid: 12%
- Doppler flow often present
  - Either arterial or venous flow was documented present in 62% of the torsed ovaries


Serum Markers –
- Interleukin-6: In adults, studies have shown women with an elevated IL-6 and an ovarian mass have 16 fold increase risk of ovarian torsion
- Study in females 6-21 showed elevated IL-6 with abdominal pain could be torsion, appendicitis, or another intra-abdominal process
- No difference IL-6 levels between torsed ovary verses ovarian cyst in those with abdominal pain


Treatment
- Laparoscopy vs laparotomy
- Detorsion +/- cystectomy
- Oophorectomy RARELY indicated

Ovarian Masses

Clinical Pearls
- Ovarian cyst and common and most can be observed
- Ovarian masses are usually benign
- Conservative surgical management for ovarian malignancy is usually appropriate
- Torsion is a clinical suspicion and a surgical diagnosis
- Ovarian preservation is the goal in managing ovarian torsion

The Sexually Active Adolescent Female
Sexually Active Teens

2011 Youth Risk Behavior Survey

- 47% had had intercourse once**
- 6% had intercourse before the age of 13**
- 15% had intercourse with 4 or more persons already**
- 34% had sex with at least one person in the previous 3 months
- 40% did not use a condom during the last intercourse**
- 77% did not use any other form of birth control before the last sexual encounter**

**No change from 2009 survey

United States

- 47% sexually active
- 6% before age 13
- 15% with >= 4 people
- 34% sex w/in last 3 months
- 40% no condom use
- 77% no other birth control

Texas

- 52% sexually active
- 7% before age 13
- 17% with >= 4 people
- 36% sex w/in last 3 months
- 46% no condom use
- 84% no other birth control

Contributing Factors:

- Decreased health education
  - 19% of TX kids surveyed were never taught about AIDS or HIV
  - Among TX high schools, 17% required to take 2 or more health education courses
  - Among TX high schools, 29% taught 4 key topics related to condom use in a required course
- Increased abstinence only teaching
- MEDIA, MEDIA, MEDIA

Media Influence

America Academy of Pediatrics: Policy Statement – Sexuality, Contraception and Media 2010

- US Teens spend more than 7 hr/day with a variety of different media
- More than 75% of prime time programs contain sexual content
- Increase in “reality” TV
- Music has become very sexually explicit
- Teen magazines devote an average of 2.5 pages per issue to sexual topics
- Internet, social networking, advertisements, etc.

Risks With Early Sexual Activity

- Guilt
- Regret
- Low self esteem
- Bad Reputation
- Unintended pregnancy
- Sexually transmitted infection

Sexually Transmitted Infections
Despite representing 25% of the population, persons 15-24 acquire 50% of all sexually transmitted infections.

**Chlamydia**

- Symptoms:
  - Most infections are asymptomatic.
  - Only about 30% will have a vaginal discharge.
  - Other (less likely) symptoms: Pain with urination, Pain with sex, Irregular vaginal bleeding, Lower abdominal pain.

**Gonorrhea**

- Symptoms:
  - Most infections are asymptomatic.
  - Vaginal discharge, Pain with urination, Bleeding in between menses, Bleeding after sex.

**STIs**

- Chlamydia
- Gonorrhea
- Trichomoniasis
- Herpes Simplex Virus (HSV)
- Human Papillomavirus (HPV)
- Hepatitis B & C
- Syphilis
- HIV/AIDS

**CDC Screening Recommendation**:
- Annual screening for sexually active females <= 25 years of age.

**CDC Recommended Treatment Regimens**:
- Azithromycin 1 gm x 1 dose
- Doxycycline 100 mg bid x 7 days

**Follow up**:
- Test of cure (at 4 weeks) not necessary unless compliance is questioned or symptoms persist.
- Repeat testing at 3 months, to access for reinfection, is recommended.

**Long term consequences**:
- Pelvic Inflammatory Disease
- Chronic pelvic pain
- Infertility
Gonorrhea

- Long term consequences:
  - Pelvic Inflammatory Disease
  - Chronic Pelvic Pain
  - Infertility
  - Disseminated Gonorrhea

CDC Screening Recommendations:
- Screen sexually active females <25 y.o. at increased risk for infection

CDC Treatment Recommended Regimen:
- Due to the fact co-infection with chlamydia it is recommended to use a cephalosporin and azithromycin or doxycycline
- **NEW (8/2012)** - Due to increased resistance the ONLY antibiotic recommended treatment for gonorrhea is Ceftriaxone

Follow up:
- Patients with persistent symptoms should be retested with a culture based gonorrhea test

Other STI “test”?

<table>
<thead>
<tr>
<th>Vaginal Swab / Culture</th>
<th>Serum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichomoniasis</td>
<td>Hepatitis B</td>
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<tr>
<td>Herpes Simplex Virus</td>
<td>Hepatitis C</td>
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<tr>
<td></td>
<td>Syphilis</td>
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<tr>
<td></td>
<td>HIV/AIDS</td>
</tr>
</tbody>
</table>

Pap Smear

- **Females 14-19 years old: 24.5% prevalence of HPV**
- In adolescents with an intact immune system, 90% of cases of HPV will resolve within 24 months
- Cervical cancer is extremely rare in the adolescent population and the few cases do not appear to have been preventable by screening
- **ACOG recommends that cervical cytology not be obtained until the age of 21, regardless of:**
  - Age of coitarche
  - Number of lifetime partners
  - History of other STI
  - Previous normal cytology
- Exceptions:
  - HIV positive adolescents
  - Immuno-compromised, sexually active adolescents

If you have a patient with a previously abnormal pap, refer to a gynecologist for further evaluation and conservative management
**Pap Smear**

- HPV testing is not recommended at any time in adolescents
  - If done, results should not influence management
  - There is no role for HPV testing prior to giving HPV vaccine

**Contraception**

- **Is birth control safe in adolescents?**
- **When is too soon to start birth control?**

**American Congress of Obstetricians and Gynecologists:**

- Risks associated with use of oral contraceptives in teenagers are “negligible”
- “For adolescents, the benefits associated with the use of oral contraceptives outweighs the risks”

Over time, there has been an increase in usage of OC, and other forms, in teens

**Contraception**

<table>
<thead>
<tr>
<th>Hormonal Methods</th>
<th>Non Hormonal Methods</th>
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<tbody>
<tr>
<td>Birth Control Pill</td>
<td>Condoms</td>
</tr>
<tr>
<td>Birth Control Ring</td>
<td>Copper IUD</td>
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<tr>
<td>Birth Control Patch</td>
<td>Sponge</td>
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<tr>
<td>Medroxyprogesterone injection</td>
<td>Cervical cap</td>
</tr>
<tr>
<td>Hormonal IUD</td>
<td></td>
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</tbody>
</table>

**Male Condom**

- **What is it?**
  - Sheath worn over the penis during intercourse
  - 3 types: Latex, Polyurethane, or Lambskin (natural)

- **How does it work?**
  - Acts as a barrier to prevent sperm from entering the vagina
**Contraception**

**Advantages**

- Easy to obtain
- Less expensive
- Best method to decrease changes of getting some sexually transmitted infections

**Disadvantages**

- Have to have it with you
- Allergic reaction to latex
- Small chance of breakage (0.4%)

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**The Pill**

**What is it?**

- Small tablets, taken orally daily
- Most contain estrogen and progesterone

**How does it work?**

- Prevent the development and the release of the egg in the ovary
- Prevent sperm from reaching the egg
- Change the lining of the uterus

**Advantages**

- Regular, lighter periods
- Extended cycle
- Clearer skin
- Decreased cramps
- Protective against ovarian and uterine cancer
- Decreases risks of ovarian cyst

**Disadvantages**

- Must take every day
- Responsibility
- Does NOT protect against sexually transmitted infections

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**Who should not take the pill**

- History of blood clots
- Migraine headaches with an aura
- High blood pressure
- Certain kinds of heart diseases
- Diabetes with vascular involvement

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**Are there any pill alternatives?**

- Mini pill – progestin only
- Chewable pill

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**The Contraceptive Patch**

**What is it?**

- Patch that contains estrogen and progesterone
- The hormones are absorbed through the skin

**How does it work?**

- Prevent the development and the release of the egg in the ovary
- Prevent sperm from reaching the egg
- Change the lining of the uterus

**Advantages**

- Apply once a week
- Protective against ovarian and uterine cancer
- Decrease chance of ovarian cyst formation

**Disadvantages**

- Skin irritation or change
- Receive 60% more estrogen than the pill
- Does NOT protect against sexually transmitted infections
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2.7

Contraception

The Contraceptive Ring

- What is it?
  - A flexible ring which contains estrogen and progesterone
  - Placed in the vagina and lasts for 3 weeks
  - Small amount of hormones released daily

- How does it work?
  - The ring is inserted into the vagina like a tampon
  - Prevents the development and the release of the egg in the ovary

Advantages

- Insert new ring every 4 weeks
- Less systemic side effects
- Regular, lighter periods
- Protects against uterine and ovarian cancer
- Decreases risk of forming ovarian cyst

Disadvantages

- Patient must place it herself
- Remember to remove it after 3 weeks
- Does NOT protect against sexually transmitted infections

Contraception

Medroxyprogesterone IM

- What is it?
  - Synthetic form of progesterone given as an injection every three months

- How does it work?
  - Prevents ovulation
  - Thins the lining of the uterus
  - Thickens the mucus in the cervix

Advantages

- Only receive every 3 months
- Periods may become lighter
- Decrease in menstrual cramps

Disadvantages

- Need to see a medical provider every 3 months
- Periods may become more irregular, prolonged or heavy
- Weight gain
- Does NOT prevent sexually transmitted infections
- Bone mineral loss

Bone Mineral Density & “The Shot”

- Adolescence is the period that you gain bone density
- DepoProvera has a negative effect on bone density
  - 5.7 – 7.5% loss in bone density after 2 years
  - Greatest loss appears to occur within first few years
- Studies show a return to baseline after discontinuing DepoProvera

American Congress of Obstetricians & Gynecologists:

- DMPA is a safe and effective long term contraceptive method
- Concerns of effect on BMD should not prevent prescribing DMPA nor limit its use to 2 years
- Should not perform BMD monitoring solely due to DMPA use
2.7 Contraception

The Contraceptive Rod

- **What is it?**
  - Tiny rod, about the size of a matchstick, that contains progesterone
  - It is inserted under the skin in your arm and lasts for 3 years
- **How does it work?**
  - A small amount of hormone is released daily
  - Prevents an egg from being released from the ovary

**Advantages**
- Long term reversible contraception
- Effective form of birth control
- Protect against uterine and ovarian cancer

**Disadvantages**
- A trained health care provider must insert it
- Irregular bleeding
- Does NOT protect against sexually transmitted infections

What are they?

- Small (~1.25 inch tall) devices which are placed inside the uterus
- One type releases a small amount of progesterone daily and lasts for 5 years
- One type contains no hormones and lasts for 10 years

How do they work?

- Acts as a spermicide, thickens cervical mucus
- Hormonal IUD also prevents egg from being released from the ovary

**Advantages**
- Long term and reversible
- Hormonal IUD—decrease menstrual flow
- Very effective method of birth control

**Disadvantages**
- Requires a pelvic exam
- Does NOT protect against sexually transmitted infections
- Initial slight increased risk of pelvic infection
- Copper IUD—irregular bleeding

Pelvic Inflammatory Disease and the IUD:

- The IUD came on the market in the early 20th century
- 1970’s-1980’s Dalkon Shield IUD associated with a 5x increased risk of PID
- 1984 FDA approved Copper IUD
- 2000 FDA approved Progesterone IUD
- Newer IUD have less risk of PID
  - Day 0 – Day 21: 9.7/1,000 woman years
  - Day 21 – 8 years: 1.4/1,000 woman years

American Congress of Obstetricians and Gynecologists:

- Benefits of preventing pregnancy outweigh potential risks
- All adolescents should be screened for gonorrhea or chlamydia prior to insertion and screening can occur at the time of insertion
- Prophylactic antibiotics are not necessary
- Patients with positive test results have no adverse effects if treated promptly
Sexually Active Teen

Clinical Pearls:
1. Over half of teenagers in Texas admit to being sexually active
2. Adolescents and young adults account for the highest rates of gonorrhea and chlamydia
3. Screen appropriate patients for sexually transmitted infections
4. Treatment recommendations for gonorrhea are new
5. NO Pap smears, until age 21
6. Contraceptive choices should not be limited solely based on age

References

12. CDC website
13. ACOG Committee Opinion #90
22. ACOG Committee Opinion #415
23. ACOG Committee Opinion #392