Reviewed By
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Video Case

Dysmenorrhea

Objectives:

- → Define primary and secondary dysmenorrhoea.
- → List causes of secondary dysmenorrhoea.
- → Explain the pathophysiology of dysmenorrhoea.
- → Define dysmenorrhea and distinguish primary from secondary dysmenorrhea .
- → Describe the pathophysiology and identify the etiologies of dysmenorrhea.
- → Discuss the steps in the evaluation and management options for dysmenorrhea

- → Slides
- → Important
- → Golden notes
- → Extra
- → 439 Doctor's notes
- → 441 Doctor's notes
- → 441 Female Presentation
- → Reference

Video Case | Editing File| Presentation

Primary Dysmenorrhea

Definition:

Primary dysmenorrhea refers to **recurrent**, **crampy** lower abdominal pain, along with nausea, vomiting, and diarrhea that occurs during menstruation **in the absence of pelvic pathology**. It is the **most common** gynecologic complaint among **adolescent girls.**

Characteristics:

→ Onset of pain generally does not occur until **ovulatory menstrual cycles** are established.

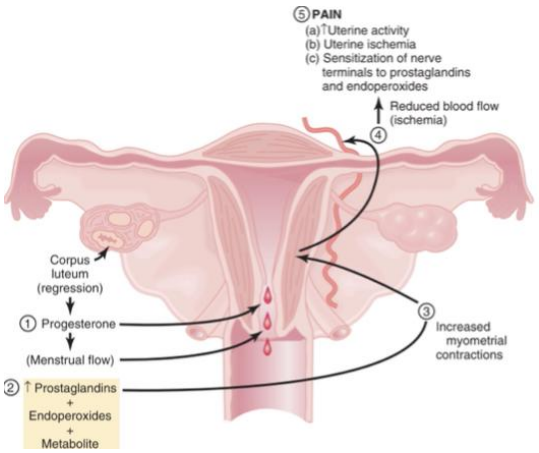
→ Maturation of the hypothalamic-pituitary-gonadal axis leading to ovulation occurs in half of teenagers within 2 years postmenarche, and the majority of the remainder by 5 years postmenarche.

→ Pain is described as cramp-like and is usually strongest over the lower abdomen and may radiate to the back or inner thighs. In addition to: nausea, vomiting، fatigue، diarrhea and headache.

→ Symptoms typically begin several hours **(24 hrs) prior to the onset of menstruation and continue** for 1–3 days **(48 hrs) "Premenstrual syndrome" .**

→ Severity can be categorized by a grading system based on the degree of menstrual pain, presence of systemic symptoms, and **impact on daily activities.**

Pathogenesis:



Symptoms appear to be caused by excess production of endometrial **prostaglandin** F2α resulting from the spiral arteriolar constriction and necrosis that follow progesterone withdrawal as the corpus luteum involutes.

The prostaglandins cause dysrhythmic uterine contractions, hypercontractility, and increased uterine muscle tone, leading to **uterine ischemia** that causes severe crampy lower abdominal pain.

The effect of the prostaglandins on the gastrointestinal smooth muscle also can account for nausea, vomiting, and diarrhea via stimulation of the gastrointestinal tract

Diagnosis:

→ Primary dysmenorrhea is a **diagnosis of exclusion; conditions causing secondary dysmenorrhea must be ruled out.**

→ Screen for: **Gonorrhea** and **Chlamydia** to evaluate for infection.

→ **Examination: Normal findings on pelvic examination**

Secondary Dysmenorrhea

Definition:

→ Secondary dysmenorrhea refers to painful menstruation **in the presence of pelvic pathology.**

→ It is **more common** among **women >30** years of age

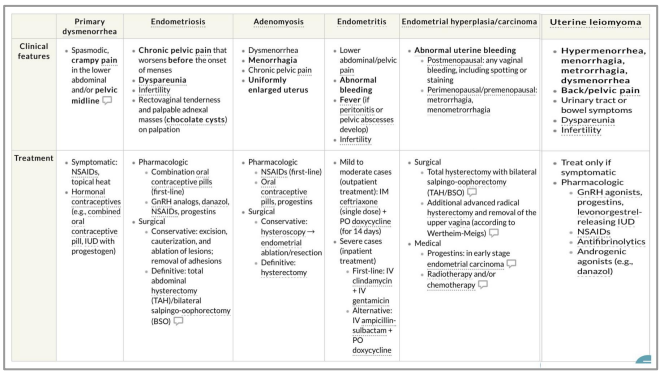
Causes:

- **Endometriosis (most common)**
- **Pelvic inflammatory disease (PID)**
- Uterine fibroid
- Adenomyosis
- Intrauterine device (IUD)
- Uterine leiomyoma
- Psychological factors
- Congenital mullerian anomaly
- Adhesion
- Ovarian cyst

Differential diagnosis of secondary dysmenorrhea:

Explained in much more details in future lectures

	Uterine fibroids	Adenomyosis	Endometriosis
Risk factors	• Early menarche • Nulliparity	• Early menarche • Increased parity	• Retrograde menstruation
Clinical features	• Dysmenorrhea • Menorrhagia	• Dysmenorrhea • Menorrhagia	• Dysmenorrhea • Dyspareunia • Infertility
Uterine findings	• Irregular enlargement of the uterus (pelvic mass attached to uterus)	• Enlarged boggy uterus	• Painful uterosacral nodules with fixed retroverted uterus
Diagnosis	• Initial: pelvic US • Definitive: hysteroscopy	• Initial: transvaginal US (thickened myometrium) • Definitive: histology (biopsy)	• Initial: transvaginal US • Definitive: laparoscopy[1]



	Primary dysmenorrhea	Endometriosis	Adenomyosis	Endometritis	Endometrial hyperplasia/carcinoma	Uterine leiomyoma
Clinical features	• Spasmodic, **crampy pain** in the lower abdominal and/or **pelvic midline**	• **Chronic pelvic pain** that worsens **before** the onset of menses • **Dyspareunia** • Infertility • Rectovaginal tenderness and palpable adnexal masses (**chocolate cysts**) on palpation	• Dysmenorrhea • **Menorrhagia** • Chronic pelvic pain • **Uniformly enlarged uterus**	• Lower abdominal/pelvic pain • **Abnormal bleeding** • **Fever** (if peritonitis or pelvic abscesses develop) • Infertility	• **Abnormal uterine bleeding** ◦ Postmenopausal: any vaginal bleeding, including spotting or staining ◦ Perimenopausal/premenopausal: metrorrhagia, menometrorrhagia	• **Hypermenorrhea, menorrhagia, metrorrhagia, dysmenorrhea** • **Back/pelvic pain** • Urinary tract or bowel symptoms • Dyspareunia • Infertility
Treatment	• Symptomatic: NSAIDs, topical heat • Hormonal contraceptives (e.g., combined oral contraceptive pill, IUD with progestogen)	• Pharmacologic ◦ Combination oral contraceptive pills (first-line) ◦ GnRH analogs, danazol, NSAIDs, progestins • Surgical ◦ Conservative: excision, cauterization, and ablation of lesions; removal of adhesions ◦ Definitive: total abdominal hysterectomy (TAH)/bilateral salpingo-oophorectomy (BSO)	• Pharmacologic ◦ NSAIDs (first-line) ◦ Oral contraceptive pills, progestins • Surgical ◦ Conservative: hysteroscopy → endometrial ablation/resection ◦ Definitive: hysterectomy	• Mild to moderate cases (outpatient treatment): IM ceftriaxone (single dose) + PO doxycycline (for 14 days) • Severe cases (inpatient treatment) ◦ First-line: IV clindamycin + IV gentamicin ◦ Alternative: IV ampicillin-sulbactam + PO doxycycline	• Surgical ◦ Total hysterectomy with bilateral salpingo-oophorectomy (TAH/BSO) ◦ Additional advanced radical hysterectomy and removal of the upper vagina (according to Wertheim-Meigs) • Medical ◦ Progestins: in early stage endometrial carcinoma ◦ Radiotherapy and/or chemotherapy	• Treat only if symptomatic • Pharmacologic ◦ GnRH agonists, progestins, levonorgestrel-releasing IUD ◦ NSAIDs ◦ Antifibrinolytics ◦ Androgenic agonists (e.g., danazol)

1. **Looking for:**
   → **Powder burn spots** (gunshot lesion): **"Classic finding"** hemosiderin granules deposit on peritoneal surface.
   → Scar tissue, yellow discolouration, peritoneal windows (deep areas of peritoneum) and endometrioma.
   → Since **biopsy** has a small chance of malignant transformation, it is done in severely symptomatic.

Dysmenorrhea

Approach to Dysmenorrhea:

History:

→ Ask questions about the pain
→ **Site:** lower abdominal, suprapubic **Associated Symptoms:**
→ fatigue, lower back pain, headache
→ **Severity:** how much it interferes with daily activity?
→ Sexual activity (to rule out pelvic inflammatory diseases caused by STD).

Physical Exam:

→ **Fibroids**: irregular enlargement of the uterus
→ **Adenomyosis**: enlarged, boggy uterus
→ **Endometriosis**: painful uterosacral nodules, restricted motion of the uterus
→ Screening for infection – Gonorrhea, Chlamydia

Management (both primary & secondary):

1

First line

→ **NSAIDs** (prostaglandin synthetase inhibitor)
→ **Side effect:** oligohydramnios

2

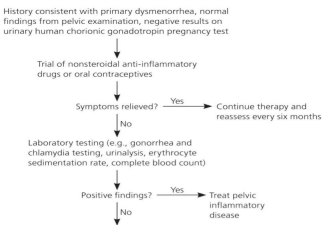
Second line

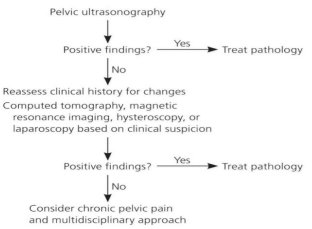
→ Oral contraceptives (**Suppress ovulation** > stabilize the level of progesterone and estrogen> decrease the endometrial prostaglandins)

3

Other

→ Heating pads
→ Exercise
→ Psychotherapy
→ Transcutaneous nerve stimulation
→ Acupuncture
→ Psychotherapy
→ Hypnotherapy





→ **Only on secondary dysmenorrhea:** treat underlying condition.
→ if appropriate treatment fails to relieve symptoms within 3 months, pelvic exam and additional evaluation (such as ultrasound, hysteroscopy or laparoscopy) is needed to rule out a secondary cause such as endometriosis.

Teaching case

A **14 year-old** (primary dysmenorrhea) G0 female presents with **severe dysmenorrhea** for the past six months. She began **menstruating 10 months ago**. Her first two periods were pain-free and 2 months apart. Since then, she has menstruated **every 28 days** (Regular menstruation > primary), and has associated nausea, diarrhea and headaches. She misses school due to the pain[1]. She says that she gets **partial relief by using 3-4 Advil** (primary), two or three times a day during her period. You speak to the patient without her mother about the possibility of sexual activity, which she denies. She is a good student, is involved in sports and afterschool programs. She denies use of drugs or alcohol. The review of systems, past medical history and social history are noncontributory. The patient's mother has endometriosis (secondary dysmenorrhea). Physical examination: She is afebrile. Abdominal exam is benign. Because the patient is virginal (rule out PID), pelvic examination is deferred. Abdominal pelvic ultrasound[2] revealed a normal size anteflexed uterus and normal sized ovaries with multiple small subcentimeter follicles. (Polycystic ovaries). There are no adnexal masses or tenderness. Laboratory: Urinalysis is negative for blood, nitrites and leukocytes.

Q1: Define and distinguish between primary and secondary dysmenorrhea?

Primary dysmenorrhea: Recurrent, crampy lower abdominal pain, along with nausea, vomiting, and diarrhea that occurs during menstruation **in the absence of pelvic pathology.**

- → Begins with the onset of ovulation
- → Present in up to 90% of teenagers.
- → Due to an excess of prostaglandin F2Alpha (PGF2a) production in the endometrium This potent smooth-muscle stimulant causes intense uterine contractions and resulting pain.
- → Systemic effects include nausea, fatigue, irritability, dizziness, diarrhea and headache in up to 45% of patients.
- → There are no abnormal physical findings in the gynecological exam for primary dysmenorrhea.
- → The pain is severe enough to affect her daily activities.

Secondary dysmenorrhea: painful menstruation **in the presence of pelvic pathology.**

- → **Extrauterine causes:** Endometriosis (endometrial glands outside the uterus), Tumors (benign or malignant) or cysts, Pelvic Inflammatory Infection, Adhesions, Psychogenic (rare).
- → **Intramural causes:** Adenomyosis (endometrial glands in the wall of the uterus), Leiomyomata (fibroids/benign tumors in the wall of the uterus), Intrauterine causes, Leiomyomata, Polyps, Endometritis, Cervical stenosis.
- → In case of endometriosis: there might be an endometrioma (ovarian cyst).

- → All periods have some degree of dysmenorrhea, in fact silent periods is a sign of anovulatory cycles.
- → In young girls after menarche they might not feel pain in the beginning but eventually develops them *(as the case)* and it's due to the maturation of the HPO axis and starting to have ovulatory cycles.
- → **You can differentiate between primary and secondary dysmenorrhea by:**
  1. **History**: ▪ **Age**: PRIMARY dysmenorrhea common in young age group, while SECONDARY is common in older age group. ▪ **Menstrual period history**: pattern (regularity), duration, amount). Ex: irregular period indicates secondary dysmenorrhea, menorrhagia > fibroid, infertility > endometriosis. ▪ **Age of menarche**. ▪ **Past gynaecological history.**
  2. **Clinical examination**
  3. **Investigations**

Teaching case

Q2: What is the differential diagnosis and most likely diagnosis?

DDx: Divide it into:

- → **Gynecological:** Endometriosis, fibroid, PID.
- → **Non-gynecological:** pelvic pain due to UTI, IBD, etc.
- → **Primary dysmenorrhea** is **most likely;** based on the onset of pain and associated systemic symptoms as well as the partial response to NSAIDs, and the absence of secondary dysmenorrhea risk factors (except for family Hx of endometriosis) and signs.
- → **Secondary dysmenorrhea** with underlying endometriosis is less likely; based on the normal physical examination, and the short interval since menarche. However, the patient may have an increased risk of endometriosis due to her mother's history. Most causes of secondary dysmenorrhea increase with age such as structural abnormalities (i.e. leiomyomata, polyps).

Q3: What additional evaluation is needed?

If appropriate treatment fails to relieve symptoms within 3 months, pelvic exam and additional evaluation (such as ultrasound, hysteroscopy or laparoscopy) is needed to rule out a secondary cause such as endometriosis.

- → Try therapy:
  - → **Response to therapy** → confirms primary dysmenorrhea.
  - → **No response to therapy**? → extra investigation to identify the secondary cause

Q4: How would you manage the diagnoses in #1 above?

- → **Primary dysmenorrhea:**
  - → (NSAIDs) are first line treatment. NSAIDs are prostaglandin-synthetase inhibitors that reduce uterine contraction & hence reduce bleeding.
    - → To optimize the relief NSAIDs are given 2-3 days before the onset of mensis, and 2-3 days into the mensis
  - → Combination hormonal contraceptives (pills, ring or patch) or progesterone-only contraceptives (progesterone injection or implant) second line treatment. They provide effective contraception and improve symptoms of dysmenorrhea by inhibiting ovulation and progesterone stimulation of prostaglandin production. Within three months 90% of women experience improvement.
- → **Secondary dysmenorrhea:** Pain management and treating underlying cause.
  - → Treatment includes continuous combined hormonal contraception (see primary), medical induction of menopause with a GnRH agonist (leuprolide) S.E of GnRH agonist is hot flushes, laparoscopic surgery for removal of endometriosis, fibroids or adhesions, or hysterectomy.
- → **Not related to the case:** A woman complaining of painful and heavy menses she tried OCP and levonorgestrel IUD but didn't like it, what would you advise her? **Endometrial Ablation**

Reference

be **primary** when there is no readily identifiable cause, or **secondary** to organic pelvic disease. The typical age range of occurrence for primary dysmenorrhea is betwe - orrhe s of age

PRIM

Pathc

Primary dysmenorrhea occurs during ovulatory cycles and usually appears within 6 to 12 months of the menarche. The etiology of primary dysmenorrhea has been attributed to uterine contractions with ischemia and production of prostaglandins. Women with dysmenorrhea have increased uterine activity, which results in increased resting tone, increased contractility, and increased frequency of contractions. During menstruation, prostaglandins are released as a consequence of endometrial cell lysis, with instability of lysosomes and release of enzymes which break down cell membranes.

The evidence that prostaglandins are involved in primary dysmenorrhea is convincing. Menstrual fluid from women with this disorder has higher than normal levels of prostaglandins (especially $PGF_{2\alpha}$ and PGE_2), and these levels can be reduced to below normal with nonsteroidal antiinflammatory drugs (NSAIDs), which are effective treatments. Infusions of $PGF_{2\alpha}$ or PGE_2 reproduce the discomfort and many of the associated symptoms such as nausea, vomiting, and headache. Secretory endometrium contains much more prostaglandin than proliferative endometrium. Women with primary dysmenorrhea have upregulated cyclooxygenase (COX) enzyme activity as a major cause of their pain. **Anovulatory endometrium (without progesterone) contains little prostaglandin, and these menses are usually painless. The thin endometrium in women using hormonal contraceptives also exhibits decreased prostaglandin synthesis.**

Figure 21-2 summarizes the relationships among endometrial cell wall breakdown, prostaglandin synthesis, uterine contractions, ischemia, and pain.

Clinical Features

The clinical features of primary dysmenorrhea are summarized in Box 21-2. Cramping usually begins a few hours before the onset of bleeding and may persist for hours or days. It is localized to the lower abdomen and may radiate to the thighs and lower back. The pain may be associated with altered bowel habits, nausea, fatigue, dizziness, and headache.

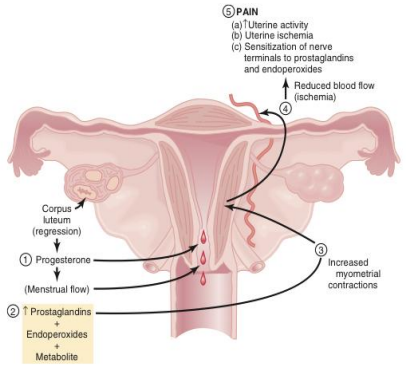


FIGURE 21-2 Postulated mechanism of pain generation in primary dysmenorrhea. Nonsteroidal antiinflammatory drugs inhibit cyclooxygenase, the enzyme that catalyzes the formation of prostaglandins from arachidonic acid. Hormonal contraceptives that block ovulation significantly reduce the formation of prostaglandins. Both drugs can mitigate this mechanism of pain and are effective treatment for primary dysmenorrhea. (Modified from Dawood MY: Hormones, prostaglandins and dysmenorrhea. In Dawood MY, editor: *Dysmenorrhea,* Baltimore, 1981, Williams & Wilkins.)

BOX 21-2

FEATURES OF PRIMARY DYSMENORRHEA

Initial Onset

90% experience symptoms within 2 years of menarche (i.e., when ovulation begins).

Duration and Type of Pain

Dysmenorrhea begins a few hours before or just after the onset of menstruation and usually lasts 48-72 hours.

Pain is described as cramp-like and is usually strongest over the lower abdomen, but may radiate to the back or inner thighs.

Associated Symptoms

Nausea and vomiting
Fatigue
Diarrhea
Lower backache
Headache

Pelvic Examination

Normal findings

BOX 21-3

TREATMENT OF PRIMARY DYSMENORRHEA

General Measures

Reassurance and explanation

Medical Measures

Nonsteroidal antiinflammatory drugs
Hormonal contraceptives (including hormone-releasing intrauterine devices and vaginal rings)
Progestins
Analgesics

Other Measures

Transcutaneous nerve stimulation
Acupuncture
Psychotherapy
Hypnotherapy

Treatment

NSAIDs, which act as COX inhibitors, are highly effective in the treatment of primary dysmenorrhea (Box 21-3). Typical examples include **ibuprofen** (400 to 600 mg every 6 to 8 hours), **naproxen sodium** (250 to 500 mg every 8 hours), and **mefenamic acid** (500 mg every 8 hours). Decreasing prostaglandin production by enzyme inhibition is the basis of all NSAIDs. Pain relief is better if NSAIDs are started 2 to 3 days before menstrual flow. Hormonal contraceptives, such as **oral contraceptive pills (OCs), patches, or transvaginal rings, reduce menstrual flow and inhibit ovulation and are also effective therapy for primary dysmenorrhea.** Extended cycle use of OCs or the use of long-acting injectable or implantable hormonal contraceptives or progestin-containing intrauterine devices minimizes the number of withdrawal bleeding episodes that users have. Some patients may benefit from using both hormonal contraception and NSAIDs.

Resistant cases may respond to high dose continuous daily progestogens (especially **medroxyprogesterone acetate** or **dydrogesterone**). Nonpharmacologic pain management, particularly **acupuncture or transcutaneous electrical stimulation (TENS) may be useful, as is psychotherapy, hypnosis, and heat patches.** Surgical procedures such as **presacral neurectomy and uterosacral ligament section have been largely abandoned.**

If a patient fails to respond to hormonal contraception and NSAID therapy, the diagnosis of primary dysmenorrhea should be questioned, and consideration given to a secondary cause. Ultrasonic imaging, laparoscopy, and possibly hysteroscopy should be performed to exclude pelvic disease.

SECONDARY DYSMENORRHEA

Pathophysiology

The mechanism of pain in secondary dysmenorrhea depends on the underlying (secondary) cause and in most cases is not well understood. Prostaglandins may also be involved in this type of dysmenorrhea, although NSAIDs and hormonal contraceptives that do not suppress menses altogether are less likely to provide satisfactory pain relief.

Clinical Features

The clinical features of some of the underlying causes of secondary dysmenorrhea are summarized in Box 21-4. In general, secondary dysmenorrhea is not limited to the menses, and can occur up to 2 weeks before as well as up to a week after the menses. In addition, secondary dysmenorrhea is less related to the first day of flow, develops in older women (in their 30s or 40s), and is usually associated with other symptoms such as dyspareunia, infertility, or abnormal uterine bleeding.

Treatment

Management consists of the treatment of the underly- dysmen- nents are nderlying

Chronic Pelvic Pain

CPP refers to pelvic pain of more than 6 months' duration that has a significant effect on daily function and quality of life. CPP includes reproductive and nonreproductive organ–related pain. Although CPP is

BOX 21-4

CHARACTERISTICS OF SOME CAUSES OF SECONDARY DYSMENORRHEA

Endometriosis

Pain extends to premenstrual or postmenstrual phase or may be continuous; may also have deep dyspareunia, premenstrual spotting, a fixed retroverted uterus, and tender pelvic nodules (especially on the uterosacral ligaments); onset is usually in the 20s and 30s but may start in the teens.

Pelvic Inflammation

Initially pain may be menstrual, but often with each cycle it extends into the premenstrual phase; may have intermenstrual bleeding, dyspareunia, and pelvic tenderness.

Adenomyosis, Fibroid Tumors

Uterus is generally symmetrically enlarged and may be mildly tender; dysmenorrhea is associated with a dull pelvic dragging sensation; hypermenorrhea and dyspareunia may be present.

Ovarian Cysts (Especially Endometriosis and Luteal Cysts)

Should be clinically evident.

Pelvic Congestion

A dull, ill-defined pelvic ache, usually worse premenstrually, relieved by menses; not all investigators agree that this is a cause of chronic pelvic pain.

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Good Luck!

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