

## Acute and Chronic Pelvic Pain in Women

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**P**ain located in the pelvis or lower abdomen is a common presenting symptom in both outpatient and acute care settings. Pelvic pain is associated with a wide range of conditions involving the reproductive, gastrointestinal, genitourinary, and musculoskeletal systems. Given the diverse etiology of pelvic pain, an accurate and efficient diagnosis of the underlying cause(s) can present a clinical challenge. A thorough history and physical examination are essential to characterize the pain and any accompanying symptoms and corroborate the patient's description of the pain. The findings on initial clinical evaluation help to discriminate among potential causes and guide further evaluation or therapy. This article discusses the evaluation of gynecologic and nongynecologic causes of acute and chronic pelvic pain with an emphasis on the history and physical examination.

### DEFINITIONS

Pelvic pain can be characterized as acute, chronic, or recurrent. *Acute pelvic pain* is defined as pain lasting for less than 3 months, while *chronic pelvic pain* generally lasts longer than 3 to 6 months. This timeline is arbitrary, and patients with cyclic episodic pain may be best classified as having recurrent pelvic pain rather than acute or chronic pain.<sup>1</sup> Pain with an identifiable specific cause is termed *organic pain*, while pain without a clearly identifiable cause that is exacerbated by psychosocial factors is termed *functional pain*.<sup>2</sup>

### EVALUATION

#### History and Physical Examination

The initial approach to the patient with pelvic pain should include a detailed and thorough history and physical examination. The history should be used to characterize the pain and should include questions about location, duration (constant or intermittent), onset, radiation, associated symptoms, severity, quality (eg, sharp pains, cramping, dull aching pain), and alleviating and aggravating factors. Relevant organ system symptoms (eg, urinary, gastrointestinal, and

### PELVIC PAIN

- Pelvic pain is associated with a broad range of conditions involving the reproductive, gastrointestinal, genitourinary, and musculoskeletal systems.
- Pelvic pain can be characterized as acute, chronic (duration generally  $\geq 3$  mo), or recurrent.
- A detailed sexual history is of paramount importance in the evaluation of acute pelvic pain as pelvic inflammatory disease and ectopic pregnancy are major considerations.
- The peak prevalence of chronic pelvic pain occurs at approximately age 30 years.
- Chronic pelvic pain is an indication for laparoscopic evaluation: no pathologic abnormalities are detected in 35% of cases, endometriosis is found in 33%, and adhesions are found in 24%.

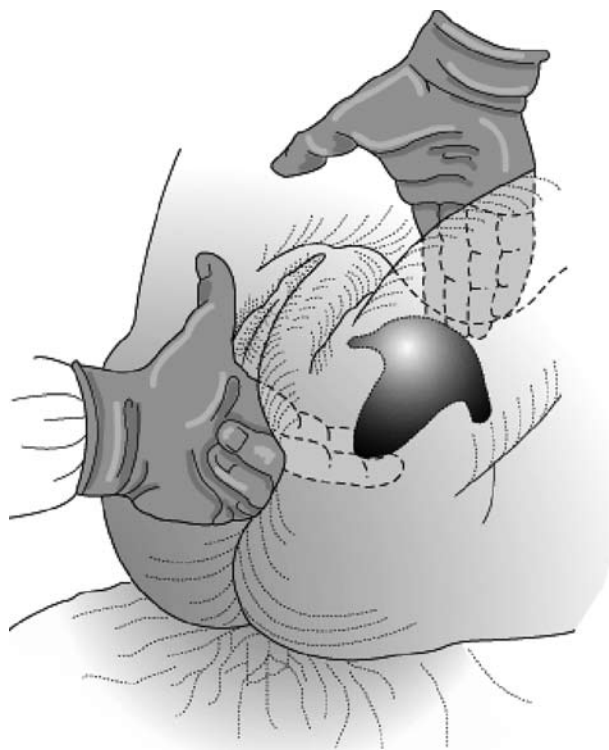
musculoskeletal) should be reviewed as there are many nongynecologic causes of pelvic pain. The physical examination serves to confirm the history.

#### Pelvic Examination

Performance of a pelvic examination is the standard of care for women with lower abdominal and pelvic symptoms. Following a thorough abdominal examination, a pelvic examination should be performed to assess for potential causes of the patient's symptoms. The external genitalia should be visually inspected for lesions first. The vagina and cervix should be visualized by speculum examination. The bladder, vaginal walls,

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**Figure.** Bimanual pelvic examination. (Reprinted with permission from Current obstetric & gynecologic diagnosis & treatment, 9th ed. Los Altos (CA): Lange Medical Publications; 2003:529. Figure 30-8. Copyright © 2003 by The McGraw-Hill Companies.)

and levator muscles should be palpated with 1 or 2 fingers after the speculum examination to assess for tenderness in these regions. The bimanual examination is performed with the gloved and lubricated index and middle finger of 1 hand with the thumb abducted and ring and little finger flexed into the palm (**Figure**). The cervix is palpated, noting its position, mobility, and tenderness with motion. The other hand is then used to press down on the lower abdominal wall to mobilize the uterus between the 2 hands in order to assess mobility and for masses and tenderness.<sup>3</sup> Palpable nodules on the uterine surface suggest leiomyomas. The adnexal structures are palpated next. The pelvic hand is placed in the lateral fornix of the vagina with the opposite hand on the ipsilateral lower abdominal quadrant. The adnexa are palpated to locate the ovaries and evaluate for masses and tenderness. The maneuver is repeated on the opposite side. Adnexal masses include ovarian cysts and tumors. Pelvic inflammatory disease (PID) can lead to tuboovarian abscesses.

Palpation of the ovaries is the most difficult part of the pelvic examination, particularly for the inexperienced examiner. The ovaries are palpable in menstruat-

ing women in only approximately 50% of cases.<sup>4</sup> There are significant interexaminer reliability differences among clinicians performing the pelvic examination.<sup>5</sup> Body habitus plays a role in the quality of examination as palpation of pelvic organs may be limited by obesity.<sup>6</sup> Training by gynecologic teaching associates who serve as patients for the examination can greatly improve the pelvic examination skills of physicians in training.<sup>7</sup>

## GYNECOLOGIC CAUSES OF PELVIC PAIN

### Acute Pelvic Pain

Acute pelvic pain is likely to be associated with an identifiable process. Common gynecologic causes of acute pelvic pain are outlined in **Table 1**. A detailed sexual history is paramount in the evaluation of acute pelvic pain as PID and ectopic pregnancy are major considerations.

**Pelvic inflammatory disease.** PID refers to infection and inflammation of the upper genital tract; it is predominantly caused by *Neisseria gonorrhoeae* and/or *Chlamydia trachomatis*, although other aerobic and anaerobic organisms are etiologic agents in upper genital tract infections. Physical examination findings in a patient with PID include lower abdominal tenderness, adnexal tenderness, and cervical motion tenderness. Patients are febrile and may complain of a purulent vaginal discharge; pelvic ultrasound is warranted in such cases. Ultrasound evaluation is helpful in evaluating for tuboovarian abscesses, which may require surgical intervention.

Early treatment with appropriate antibiotics effective against *N. gonorrhoeae* and *C. trachomatis* as well as anaerobic organisms is essential in preventing the long-term sequelae of PID, which include chronic pelvic pain, infertility, and an increase in the risk for ectopic pregnancy. The Centers for Disease Control and Prevention recommends empiric treatment of PID in sexually active young women and other women at risk for sexually transmitted diseases (STDs) if uterine/adnexal tenderness or cervical motion tenderness are present and no other cause for the illness can be identified.<sup>8</sup>

**Ectopic pregnancy.** Ectopic pregnancy should be considered in all sexually active female patients who present with lower abdominal pain. The serum  $\beta$ -human chorionic gonadotropin ( $\beta$ -hCG) pregnancy test and transvaginal ultrasound are indicated in a patient presenting with the classic triad for ectopic pregnancy: pelvic pain, vaginal bleeding, and an adnexal mass. The discriminatory zone for the  $\beta$ -hCG test is defined as the level above which a viable intrauterine pregnancy should be seen by transvaginal ultrasonography. The definition of the discriminatory zone

**Table 1.** Gynecologic Causes of Acute Pelvic Pain

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Pelvic inflammatory disease
Ectopic pregnancy
Adnexal torsion
Ruptured ovarian cyst
Adhesions

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varies between institutions and laboratories but generally ranges between 1000 and 2000 mIU/mL. The absence of an intrauterine pregnancy on pelvic ultrasonography with a  $\beta$ -hCG level above the discriminatory zone should greatly increase the index of suspicion for ectopic pregnancy.<sup>9,10</sup> Most ectopic pregnancies are located in the fallopian tube.

**Ovarian disorders.** Benign adnexal masses are common during the reproductive years, and physiologic cysts are frequent findings. Ovarian cysts and ovarian torsion are 2 considerations in the differential diagnosis of acute pelvic pain. Functional or physiologic cysts include follicular cysts, corpus luteum cysts, and theca lutein cysts. Large follicular cysts may cause pelvic pain and dyspareunia. Most follicular cysts resolve spontaneously. The development of a corpus luteum cyst follows normal ovulation as blood accumulates in the central cavity and is subsequently reabsorbed. A persistent corpus luteum cyst may cause pain or tenderness. Theca lutein cysts are caused by elevated levels of hCG that can result from molar pregnancy, choriocarcinoma, or clomiphene therapy. Treatment of the underlying condition or discontinuation of clomiphene results in spontaneous resolution of theca lutein cysts.

Adnexal torsion refers to twisting of the ovary and/or the fallopian tube, which can lead to ovarian edema, ischemia, infarction, and necrosis. The pain associated with torsion is acute in onset and unilateral in location. Ovarian torsion can occur spontaneously or can be caused by a cyst or underlying ovarian neoplasm that predisposes the ovary to rotate on its vascular pedicle. Unlike menstruation-related disorders, torsion can occur in premenopausal and postmenopausal women, although it is far less common after menopause. Ovarian torsion most often occurs on the right side and poses a diagnostic dilemma due to the difficulty in differentiating it from acute appendicitis.<sup>11</sup> Imaging studies are useful in establishing the presence of a mass in a patient with suspected torsion; however, torsion can be definitively diagnosed only by surgical evaluation of the adnexa.

Imaging studies are helpful for patients presenting with right lower quadrant pain of uncertain etiology.

**Table 2.** Causes of Chronic Pelvic Pain

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<b>Level A</b>
Endometriosis
Gynecologic malignancies
Residual ovary syndrome
Pelvic congestion syndrome
Pelvic inflammatory disease
<b>Level B</b>
Adhesions
Leiomyomata
<b>Level C</b>
Adenomyosis
Ovulatory pain
Adnexal cysts
Cervical stenosis
Chronic endometritis
Intrauterine contraceptive device
Uterine prolapse

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Note: Level A = good scientific evidence; Level B = limited scientific evidence; Level C = expert opinion.

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Most clinicians would use computed tomography (CT) to evaluate for suspected appendicitis unless the patient is pregnant, in which case ultrasonography would be the imaging study of choice. The role of magnetic resonance imaging (MRI) is evolving, especially in pregnant women with suspected appendicitis.<sup>12</sup>

### Chronic Pelvic Pain

The peak prevalence of chronic pelvic pain occurs at approximately age 30 years.<sup>1</sup> The etiology for chronic pelvic pain may derive from gynecologic, musculoskeletal, urinary, or gastrointestinal sources. In a study from the United Kingdom involving 5051 women who presented to primary care physicians with chronic pelvic pain, the source of the pain was the urinary tract in 30.8% of cases, gastrointestinal in 37.7%, and gynecologic in 20.2%.<sup>13</sup> The gynecologic causes of chronic pelvic pain are outlined in **Table 2**.<sup>14</sup> Chronic pelvic pain is an indication for laparoscopic evaluation. In studies that examined the role of laparoscopy in the evaluation of chronic pelvic pain, no pathologic abnormalities were detected in 35% of cases, while endometriosis and adhesions were found in 33% and 24% of cases, respectively.<sup>15,16</sup> (Endometriosis is discussed in the section on recurrent pelvic pain.)

**Uterine leiomyoma.** Uterine fibroids, or leiomyomas, are benign tumors of the uterus that can be associated with menorrhagia and pelvic pressure. Uterine leiomyoma is the most common gynecologic neoplasm that affects women of reproductive age.<sup>17</sup> Rapidly-growing leiomyoma-like masses after menopause should be considered a risk for leiomyosarcoma, a malignant counterpart of leiomyoma. Limited data indicate that MRI may be helpful in diagnosing malignant smooth muscle tumors of the uterus when more than 50% of the tumor shows high-intensity signal on T2-weighted images.<sup>18</sup>

**Adhesions.** Adhesions are frequently found at diagnostic laparoscopy performed as part of the evaluation of chronic pelvic pain, but their role in pelvic pain remains uncertain. Pelvic adhesions may be caused by endometriosis, previous surgery, or infection. Adhesions are common etiologic factors for infertility, dyspareunia, and small bowel obstruction and are the most common cause of recurrent or acute bowel obstruction. The clinician may suspect the presence of adhesions if the patient has a history of pelvic surgery, endometriosis, or pelvic infection and the pelvic examination demonstrates lack of mobility of the pelvic organs. Diagnosis may be confirmed only at the time of surgery. Treatment consists of adhesiolysis, but this has not been shown to be effective in achieving pain control, perhaps because of adhesion reformation.<sup>19</sup> The regrowth of adhesions after adhesiolysis is less likely when the laparoscopic technique is used compared with open surgery, which itself is a risk factor for subsequent formation of adhesions.<sup>20</sup>

**Pelvic congestion syndrome.** Pelvic congestion syndrome is a potential cause of chronic pelvic pain. This syndrome is associated with pelvic vascular congestion caused by chronically dilated uterine and ovarian veins that result from sluggish venous flow. Controversy remains as to whether pelvic congestion leads to chronic pain, and limited data exist to support the benefits of treatment.

Pelvic congestion syndrome is typically a condition of the reproductive years. Symptoms include a dull pelvic ache, backache, deep dyspareunia, and postcoital pain. The dull ache of pelvic congestion is exacerbated by prolonged standing and physical activity. Pelvic ultrasonography may be helpful in establishing a diagnosis by showing a thickened endometrium and enlarged ovaries, but pelvic venography is considered a more accurate study.<sup>21</sup> In fact, some authors advocate using transvaginal ultrasonography as a screening tool with follow-up venography for confirmation.<sup>22</sup> Treatment options for pelvic congestion syndrome include medroxyprogesterone and transcatheter embolization.

Hysterectomy and bilateral salpingo-oophorectomy is a treatment of last resort.

**Chronic endometritis.** Chronic endometritis refers to chronic inflammation of the endometrium that is histologically characterized by a plasma cell infiltrate. It can occur postpartum, can be caused by infection, intrauterine devices, and radiation therapy, or can be idiopathic. Women with chronic endometritis complain of vague, cramping, lower abdominal pain and also may complain of abnormal uterine bleeding. Uterine tenderness and cervical motion tenderness can be detected on physical examination. Tests for *C. trachomatis* and *N. gonorrhoeae* are indicated when infection is suspected. Endometrial biopsy may be helpful in eliciting a cause when the history is unrevealing. Evaluation of the endometrial cavity by hysteroscopy or ultrasonography may be indicated to rule out endometrial polyps or submucosal fibroids. Therapy should target the specific underlying cause. An empiric course of doxycycline for 10 days may be helpful in idiopathic cases.

#### Recurrent Pelvic Pain

Recurrent pelvic pain can be referred to as chronic cyclic pain because of its intermittent nature. Causes include dysmenorrhea, adenomyosis, endometriosis, and mittelschmerz (middle pain). History is key to making a diagnosis in the patient with recurrent pelvic pain, and patients should be asked about previous episodes of similar pain. For example, endometriosis and mittelschmerz present monthly at the same time in the menstrual cycle.

**Mittelschmerz.** Mittelschmerz, or pain with ovulation, is a diagnosis of exclusion. It occurs during days 14 to 16 of the menstrual cycle and is characterized by unilateral lower abdominal or pelvic pain that is sharp in nature and lasts less than 24 hours.

**Dysmenorrhea.** Dysmenorrhea, defined as painful menses, is generally described as crampy pelvic pain at the onset of menses. It may be primary or secondary. Primary dysmenorrhea (functional dysmenorrhea) is a painful menstruation with no detectable organic disease and is more common in adolescent women. Primary dysmenorrhea usually begins during adolescence within 3 years of the onset of menses, can be cyclic or acyclic, and is associated with normal pelvic anatomy.<sup>23</sup> Nonsteroidal anti-inflammatory agents (eg, ibuprofen, ketoprofen, and naproxen) are generally helpful in treating this condition. Secondary dysmenorrhea (acquired dysmenorrhea) is painful menstruation that is frequently associated with a pelvic pathology. It usually begins well after menarche. Endometriosis, uterine fibroids, cervical stenosis, PID, and adenomyosis are common causes.



**Adenomyosis.** Adenomyosis is a condition in which the endometrial glands embed into the myometrium (uterine muscle). Adenomyosis presents with cyclic, cramping pelvic pain, abnormal uterine bleeding, and dysmenorrhea that begins later in reproductive life. Adenomyosis most commonly affects women aged 35 to 45 years. Pelvic examination may reveal an enlarged uterus, and ultrasonography and MRI may be helpful in establishing the diagnosis by determining the presence and extent of adenomyosis. When transvaginal ultrasound findings are suggestive of adenomyosis, MRI can be used to confirm the diagnosis.<sup>24</sup> Adenomyosis may respond to gonadotropin-releasing hormone agonists (GnRH; leuprolide, goserelin), which are used only temporarily due to their side effects. Hysterectomy is curative for a woman who does not desire future childbearing.

**Cervical stenosis.** Most cases of cervical stenosis are caused by surgical manipulation of the cervix, especially laser cone biopsy. The risk for postoperative cervical stenosis in patients who undergo cervical cone biopsy increases with age.<sup>25</sup> Other acquired causes include inflammatory and neoplastic disorders. Cervicitis is caused by STDs, and appropriate antibiotic treatment as discussed in the section on PID is imperative to avoid such long-term complications. Cervical neoplastic disorders are best screened for and diagnosed by Pap smear evaluation. As mentioned, surgical treatments for cervical intraepithelial neoplasia such as conization are a cause of cervical stenosis. Dilatation of the cervical canal is therapeutic.

**Endometriosis.** Endometriosis is defined as the presence of endometrial gland tissue in locations outside the uterus. Various theories have been postulated to explain the etiology of endometriosis, including retrograde menstruation through the fallopian tubes resulting in implantation of endometrial tissue in the pelvis, hematogenous or lymphatic spread of endometrial cells, and coelomic metaplasia. None of these theories alone adequately explain the potential for endometriosis to occur in many diverse regions of the body.

Women with endometriosis typically complain of dysmenorrhea, dyspareunia, and low back pain. The pain associated with endometriosis generally increases during the premenstrual period and gradually declines during menstruation.<sup>26</sup> The clinical diagnosis of endometriosis is presumptive and must be confirmed surgically. Noninvasive evaluation can be undertaken first. MRI is better than ultrasonography, but laparoscopy is necessary for establishing a definitive diagnosis. On MRI or ultrasound, endometriosis can be suspected by the presence of a complex homogenous mass in or

**Table 3.** Nongynecologic Causes of Pelvic Pain

Acute	Chronic
Diverticulitis	Diverticular disease
Bowel obstruction	Irritable bowel syndrome
Adhesions	Inflammatory bowel disease
Hernia	Hernia
Urinary tract infection	Colorectal cancer
Urolithiasis	Interstitial cystitis
Musculoskeletal	Musculoskeletal

around the ovaries. These masses, termed endometriomas, are not seen in most cases of endometriosis. Most patients with endometriosis have multiple small ectopic foci of endometrium implanted on the pelvic peritoneal surfaces, ovaries, or uterus. These implants are not usually identified by MRI or ultrasonography.

Treatment options for endometriosis include analgesics (eg, nonsteroidal anti-inflammatory agents), oral contraceptives, progestin agents, danazol, GnRH agonists, and finally surgery. Use of oral contraceptive pills is considered suppressive and not curative. Medroxyprogesterone, a progestin that stops endometrial cell proliferation, produces a normal bleeding episode following withdrawal. For endometriosis, however, it is important to use progestins continuously, as withdrawal from progestins will recreate the symptoms of endometriosis. Danazol is a steroid analog that inhibits gonadotropin release, thereby inhibiting the midcycle surge of luteinizing hormone and follicle-stimulating hormone and preventing the growth of endometriotic tissue. Administration of GnRH agonists (leuprolide, goserelin) results in the elimination of ovarian steroidogenesis and hypoestrogenism, which leads to suppression of endometrial implants. GnRH agonists may be used for only 6 months as significant bone loss may occur with longer use. In women with infertility who have severe disease, surgical therapy via laparoscopic resection or ablation is the treatment of choice. Total abdominal hysterectomy with bilateral oophorectomy is curative for a patient who does not desire future childbearing.

### NONGYNECOLOGIC CAUSES OF PELVIC PAIN

For a patient presenting with lower abdominal and pelvic pain, gastrointestinal, urologic, and musculoskeletal causes of pain must be considered in addition to gynecologic causes (Table 3). The review of systems is helpful in eliciting nongynecologic causes for pelvic pain and should include the gastrointestinal, musculoskeletal, and genitourinary systems.

### **Gastrointestinal**

Irritable bowel syndrome (IBS) is characterized by abdominal pain, bloating, urgency, diarrhea, and constipation. Constipation is a frequent cause of chronic lower abdominal pain. The onset of IBS is associated with a change in stool frequency and form, and the pain of IBS is often relieved by defecation.<sup>2</sup> IBS is associated with many gynecologic disorders and is exacerbated during menstruation.<sup>27</sup> The patient's history is crucial in the diagnosis of IBS as no etiology is found with routine diagnostic testing; it is a symptom-based diagnosis.<sup>28</sup> According to the Rome III criteria for symptom-based diagnosis of functional gastrointestinal disorders, IBS is defined as abdominal pain or discomfort at least 3 days per month in the last 3 months associated with 2 or more of the following:

1. Improvement with defecation
2. Onset associated with a change in frequency of stool
3. Onset associated with a change in form (appearance of stool)<sup>29</sup>

In addition, the onset of symptoms must have occurred 6 months prior to diagnosis, and there must be no evidence of an inflammatory, anatomic, metabolic, or neoplastic process that explains the patient's symptoms.<sup>29</sup>

Appendicitis is a common cause of right lower quadrant pain and is the most common nongynecologic cause of acute pelvic pain.<sup>10</sup> Classically, appendicitis presents with maximal palpable tenderness found at McBurney's point (one third of the way from the anterior superior iliac spine to the umbilicus) in the right lower quadrant. Patients with classic clinical findings with laboratory corroboration can be taken directly to surgery. For equivocal cases, imaging studies such as CT and ultrasonography can be helpful. One must keep in mind that the determination of "equivocal" lies in the hands of the examiner.<sup>30</sup> Differentiating between appendicitis and other inflammatory processes, such as Crohn's disease, can be difficult, but imaging of adjacent bowel can be helpful.<sup>10</sup>

Diverticula are herniations of mucosal and submucosal layers through a muscular defect in the colonic wall in response to lifelong consumption of a low-fiber diet. Diverticulitis should be suspected in the adult patient with left lower quadrant pain, fever, and elevated white blood cell count. Fistulas may occur in association with diverticulitis. Diverticulitis also may present with perforation or abscess formation, which produces peritonitis. In the presence of known diverticulosis (eg, detected on previous studies such as colonoscopy or

barium enema done for screening purposes), the diagnosis of diverticulitis is almost certain. Patients with suspected diverticulitis are generally evaluated with CT, which is also helpful if the differential diagnosis includes appendicitis. Ultrasonography can also be used to diagnose a pelvic abscess. Patients with diverticulitis require antibiotics and bowel rest.

### **Musculoskeletal**

Patients with pelvic pain are not routinely evaluated for musculoskeletal dysfunction by gynecologists.<sup>31</sup> The myofascial pain syndrome is a musculoskeletal cause of pelvic pain in which myofascial pain originates from tender "trigger points" in skeletal muscle. The muscles of the lower abdomen can be evaluated by having the patient flex her abdominal muscles by lifting her head and shoulders off the examination table. The examiner can then press on the lower abdominal muscles with one finger in various points to elicit the trigger points. Various terms have been used to refer to a trigger point found during this maneuver ("Carnett's sign" or "jump sign").<sup>2,32</sup> Once identified, trigger points can be injected with local anesthetics; complications include bruising and bleeding at the site of injection. Systemic toxicity can be avoided by limiting the amount of local anesthetic used.<sup>31</sup>

Abdominal wall hernias are an often overlooked source for pain.<sup>33</sup> Hernias are diagnosed based on their location and fascial defects. There are 2 major types of hernias: groin hernias, which include inguinal and femoral hernias, and ventral hernias, which include incisional, umbilical, epigastric, and Spigelian hernias. A detailed discussion of each type of hernia is beyond the scope of this article. Abdominal wall hernias should be suspected if the pain intensity is related to position (eg, worse while sitting or standing but improved while lying), abdominal tenderness increases when the abdominal wall is tensed, or the pain is in an area of a surgical scar with a palpable mass.<sup>33</sup>

### **Urologic**

A ureteral stone can cause severe, acute pelvic pain. Patients with a ureteral stone are likely to present with hematuria. Plain pelvic radiographs may not be helpful in differentiating ureteral calculi from other pelvic calcifications. The most common periureteral calcifications that can be misinterpreted as being ureteral stone are pelvic phleboliths, or calcification of the venous wall (also called a venous stone). CT imaging can help to identify ureteral calculi.<sup>34</sup>

Urinary tract infections (UTIs) are a common infectious disease in primary care practice. Fecal coliform

bacteria are common causes of UTIs.<sup>35</sup> Not all bacteriuria should be treated as it may be the result of asymptomatic colonization of the urinary tract with nonpathogenic bacteria.<sup>36</sup> Interstitial cystitis, a chronic inflammatory condition of the bladder wall, is characterized by urinary urgency, frequency, and bladder and pelvic pain. The symptoms of interstitial cystitis can be easily confused with those of UTI, although with cystitis, urine cultures are negative and antibiotic therapy offers no relief as there is no underlying infection. The etiology of interstitial cystitis is uncertain, and the diagnosis remains difficult. Based on history, physical examination, and cystoscopy, it is essentially a diagnosis of exclusion.<sup>37</sup>

### Physical and Sexual Abuse

Numerous studies have documented an association between chronic pelvic pain and physical or sexual abuse. Specifically, 40% to 50% of women with chronic pelvic pain have a history of abuse.<sup>14</sup> The reasons for the association of abuse and chronic pelvic pain are not known. Some investigators have shown that pain thresholds are reduced in survivors of abuse. The clinician should be aware of the association and ask about physical and sexual abuse in all women with chronic pelvic pain. Further, physicians should make sure that women who are current victims of abuse are offered appropriate counseling and that their physical safety is assured.

### CONCLUSION

Pelvic pain may be acute, chronic, or recurrent as well as organic or functional. Multiple organ systems can contribute to pelvic pain, and the gastrointestinal, genitourinary, and musculoskeletal systems all must be considered in patients who present with this symptom. The physical examination serves to confirm suspicions from the history. Imaging studies such as CT, ultrasonography, and MRI can be helpful in eliciting a diagnosis.

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### REFERENCES

- Howard FM, editor. Pelvic pain: diagnosis and management. Philadelphia: Lippincott Williams & Wilkins; 2000.
- Holland-Hall CM, Brown RT. Evaluation of the adolescent with chronic abdominal or pelvic pain. *J Pediatr Adolesc Gynecol* 2004;17:23–7.
- Current obstetric & gynecologic diagnosis & treatment. 9th ed. Los Altos (CA): Lange Medical Publications; 2003.
- Beckmann CR. Obstetrics and gynecology. 4th ed. Baltimore (MD): Lippincott Williams & Wilkins; 2002.
- Close RJ, Sachs CJ, Dyne PL. Reliability of bimanual pelvic examinations performed in emergency departments. *West J Med* 2001;175:240–5.
- Padilla LA, Radosovich DM, Milad MP. Limitations of the pelvic examination for evaluation of the female pelvic organs. *Int J Gynaecol Obstet* 2005;88:84–8.
- Herbers JE Jr, Wessel L, El-Bayoumi J, et al. Pelvic examination training for interns: a randomized controlled trial. *Acad Med* 2003;78:1164–9.
- Sexually transmitted diseases treatment guidelines 2002. Centers for Disease Control and Prevention. *MMWR Recomm Rep* 2002;51:1–78.
- American College of Obstetricians and Gynecologists. Medical management of tubal pregnancy. Available at [www.guideline.gov/summary/summary.aspx?ss=15&doc\\_id=3954&nbr=3091](http://www.guideline.gov/summary/summary.aspx?ss=15&doc_id=3954&nbr=3091). Accessed 4 Aug 2006.
- Bau A, Atri M. Acute female pelvic pain: ultrasound evaluation. *Semin Ultrasound CT MR* 2000;21:78–93.
- Hoey BA, Stawicki SP, Hoff WS, et al. Ovarian torsion associated with appendicitis in a 5-year-old girl: a case report and review of the literature. *J Pediatr Surg* 2005;40:e17–20.
- Oto A, Ernst RD, Shah R, et al. Right-lower-quadrant pain and suspected appendicitis in pregnant women: evaluation with MR imaging—initial experience. *Radiology* 2005;234:445–51.
- Zondervan KT, Yudkin PL, Vessey MP, et al. Patterns of diagnosis and referral in women consulting for chronic pelvic pain in UK primary care. *Br J Obstet Gynaecol* 1999;106:1156–61.
- ACOG Practice Bulletin No. 51. Chronic pelvic pain. ACOG Committee on Practice Bulletins—Gynecology. *Obstet Gynecol* 2004;103:589–605.
- Brosens IA, Campo R, Gordts S, Brosens JJ. An appraisal of the role of laparoscopy: past, present and future. *Int J Gynaecol Obstet* 2001;74 Suppl 1:S9–14.
- Howard FM. The role of laparoscopy as a diagnostic tool in chronic pelvic pain. *Baillieres Best Pract Res Clin Obstet Gynaecol* 2000;14:467–94.
- Wallach EE, Vlahos NF. Uterine myomas: an overview of development, clinical features, and management. *Obstet Gynecol* 2004;104:393–406.
- Tanaka YO, Nishida M, Tsunoda H, et al. Smooth muscle tumors of uncertain malignant potential and leiomyosarcomas of the uterus: MR findings. *J Magn Reson Imaging* 2004;20:998–1007.
- Hammoud A, Gago LA, Diamond MP. Adhesions in patients with chronic pelvic pain: a role for adhesiolysis? *Fertil Steril* 2004;82:1483–91.
- Swank DJ, Jeekel H. Laparoscopic adhesiolysis in patients with chronic abdominal pain. *Curr Opin Obstet Gynecol* 2004;16:313–8.
- Campbell D, Halligan S, Bartram CI, et al. Transvaginal power Doppler ultrasound in pelvic congestion. *Acta Radiol* 2003;44:269–74.
- Park SJ, Lim JW, Ko YT, et al. Diagnosis of pelvic congestion syndrome using transabdominal and transvaginal

- sonography. *AJR Am J Roentgenol* 2004;182:683-8.
23. Laufer MR, Sanfilippo J, Rose G. Adolescent endometriosis: diagnosis and treatment approaches. *J Pediatr Adolesc Gynecol* 2003;16(3 Suppl):S3-11.
  24. Kuligowska E, Deeds L 3rd, Lu K 3rd. Pelvic pain: overlooked and underdiagnosed gynecologic conditions. *Radiographics* 2005;25:3-20.
  25. Houliard S, Perrotin F, Fourquet F, et al. Risk factors for cervical stenosis after laser cone biopsy. *Eur J Obstet Gynecol Reprod Biol* 2002;104:144-7.
  26. Moore J, Kennedy S. Causes of chronic pelvic pain. *Baillieres Best Pract Res Clin Obstet Gynaecol* 2000;14:389-402.
  27. Williams RE, Hartmann KE, Sandler RS, et al. Recognition and treatment of irritable bowel syndrome among women with chronic pelvic pain. *Am J Obstet Gynecol* 2005;192:761-7.
  28. Longstreth GF. Definition and classification of irritable bowel syndrome: current consensus and controversies. *Gastroenterol Clin North Am* 2005;34:173-87.
  29. Drossman DA. The functional gastrointestinal disorders and the Rome III process. *Gastroenterology* 2006;130:1377-90.
  30. Karnath BM, Luh JY. Suspected appendicitis. *N Engl J Med* 2003;349:305-6.
  31. Tu FF, As-Sanie S, Steege JF. Musculoskeletal causes of chronic pelvic pain: a systematic review of diagnosis: part 1. *Obstet Gynecol Surv* 2005;60:379-85.
  32. Sharp HT. Myofascial pain syndrome of the abdominal wall for the busy clinician. *Clin Obstet Gynecol* 2003;46:783-8.
  33. Suleiman S, Johnston DE. The abdominal wall: an overlooked source of pain. *Am Fam Physician* 2001;64:431-8.
  34. Arac M, Celik H, Oner AY, et al. Distinguishing pelvic phleboliths from distal ureteral calculi: thin-slice CT findings. *Eur Radiol* 2005;15:65-70.
  35. Chukker R, Dasgupta P, Sacks SH, et al. Urinary tract infections: new insights into a common problem. *Postgrad Med J* 2005;81:83-6.
  36. Zorc JJ, Kiddoo DA, Shaw KN. Diagnosis and management of pediatric urinary tract infections. *Clin Microbiol Rev* 2005;18:417-22.
  37. Chancellor MB, Yoshimura N. Treatment of interstitial cystitis. *Urology* 2004;63(3 Suppl 1):85-92.

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