

## Consensus Guidelines for the Management of Chronic Pelvic Pain

This guideline was developed by the Chronic Pelvic Pain Working Group and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

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### Abstract

**Objective:** To improve the understanding of chronic pelvic pain (CPP) and to provide evidence-based guidelines of value to primary care health professionals, general obstetricians and gynaecologists, and those who specialize in chronic pain.

**Burden of Suffering:** CPP is a common, debilitating condition affecting women. It accounts for substantial personal suffering and health care expenditure for interventions, including multiple consultations and medical and surgical therapies. Because the underlying pathophysiology of this complex condition is poorly

**Key Words:** Pelvic pain, myofascial pain syndromes, endometriosis, endosalpingiosis, adenomyosis, pelvic peritoneal defects, pelvic inflammatory disease, adhesions, ovarian cysts, residual ovary syndrome, ovarian remnant syndrome, pelvic congestion syndrome, hysterectomy, uterine fibroids, adnexal torsion, diagnostic imaging, laparoscopy, hormonal treatment, complementary therapies

understood, these treatments have met with variable success rates.

**Outcomes:** Effectiveness of diagnostic and therapeutic options, including assessment of myofascial dysfunction, multidisciplinary care, a rehabilitation model that emphasizes achieving higher function with some pain rather than a cure, and appropriate use of opiates for the chronic pain state.

**Evidence:** Medline and the Cochrane Database from 1982 to 2004 were searched for articles in English on subjects related to CPP, including acute care management, myofascial dysfunction, and medical and surgical therapeutic options. The committee reviewed the literature and available data from a needs assessment of subjects with CPP, using a consensus approach to develop recommendations.

**Values:** The quality of the evidence was rated using the criteria described in the Report of the Canadian Task Force on the Periodic Health Examination. Recommendations for practice were ranked according to the method described in that report (Table 1).

**Recommendations:** The recommendations are directed to the following areas: (a) an understanding of the needs of women with CPP; (b) general clinical assessment; (c) practical assessment of pain levels; (d) myofascial pain; (e) medications and surgical procedures; (f) principles of opiate management; (g) increased use of magnetic resonance imaging (MRI); (h) documentation of the surgically observed extent of disease; (i) alternative therapies; (j) access to multidisciplinary care models that have components of physical therapy (such as exercise and posture) and psychology (such as cognitive-behavioural therapy), along with other medical disciplines, such as gynaecology and anesthesia; (k) increased attention to CPP in the training of health care professionals; and (l) increased attention to CPP in formal, high-calibre research. The committee recommends that provincial ministries of health pursue the creation of multidisciplinary teams to manage the condition.

### Chapter 2: Scope, Definition, and Causes of Chronic Pelvic Pain

1. Because of the complex nature and multifactorial development of its common state, CPP should be increasingly incorporated into the educational curricula of health professionals (medical students, residents, nurses, physiotherapists, specialists) (III-B).

### Chapter 3: History-taking, Physical Examination, and Psychological Assessment

1. Thorough history-taking that generates trust between caregiver and patient and a pain-focused physical examination should be part of the complete evaluation of the patient with CPP (III-B).
2. Clinical measurement of pain level could be done at each visit for CPP (II-B).

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3. The patient can be asked two questions that are simple and effective: "On a scale of 0 to 10, 0 being no pain and 10 being the worst pain imaginable, How is your pain today and how was your pain 2 weeks ago?" It is important to provide a reference for 10 such as "pain that is so bad that you cannot care for your children, who are in imminent danger" (II-B).
4. The physical examination can be conducted differently in these patients, with special attention placed on individual pelvic structures, to help differentiate sources of pain. Identifying a focal area of tenderness can help target specific therapy (II-B).
5. Owing to the high prevalence of mental health and other significant psychological coexisting problems and sequelae of CPP, gynaecologists and family physicians should routinely screen patients for chronic pain syndrome and refer as appropriate (II-2A).
6. Access to multidisciplinary chronic pain management should be available for women with CPP within the publicly funded health care system in each province and territory of Canada (III-B).

**Chapter 4: Investigations**

1. Patient-assisted laparoscopy should be subjected to clinical trial (III-C).

**Chapter 5: Sources of Chronic Pelvic Pain**

1. Hysterectomy for endometriosis or adenomyosis with ovarian conservation can be an acceptable alternative. The patient should be informed of the possible consequences (residual ovary syndrome, persistent pain, and reactivation of endometriosis) (II-2A).
2. Ovarian cystectomy, rather than oophorectomy, should be an individual decision, based on the patient's age and wishes, fertility issues, and surgical feasibility (II-3B).
3. The management of symptomatic uterine fibroids should follow the clinical practice guidelines of the Society of Obstetricians and Gynaecologists of Canada (II-3B).

4. The management of adnexal torsion should be determined according to the patient's age and wishes, fertility issues, and surgical judgment (II-3B).
5. Since the rate of recurrence of endometriosis with hormone replacement therapy (HRT) in women undergoing hysterectomy plus bilateral salpingo-oophorectomy (BSO) is very low, HRT should not be contraindicated (I-B).
6. In women with an intact uterus, when total hysterectomy has not been performed because of technical difficulties, the recurrence of endometriosis contraindicates the use of HRT (I-B).
7. Hysterectomy can be indicated in the presence of severe symptoms with failure of other treatment when fertility is no longer desired (I-B).
8. Pelvic peritoneal defects (pockets) are frequently associated with endometriosis and should be treated surgically (II-B).
9. Endosalpingiosis is an incidental histologic finding and does not appear to require specific treatment (II-2B).
10. Current evidence does not support routine adhesiolysis for chronic pelvic pain. However, diagnostic laparoscopy remains of value (I-B).

**Chapter 6: Urologic and Gastrointestinal Causes of Chronic Pelvic Pain**

1. Cystoscopy by trained specialists, with or without diagnostic laparoscopy, should be considered when interstitial cystitis (IC) is suspected (III-B).
2. Women with chronic pelvic pain will require detailed gynaecologic, urologic, gastroenterologic, and psychological assessment. Appropriate evaluation can lead to optimal treatment and decrease the rate of inappropriate interventions (III-B).

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**CHAPTER 1: PHYSIOLOGICAL ASPECTS OF CHRONIC PAIN**

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This consensus statement cannot provide a complete summary on the physiological aspects of pain, but the members of the consensus panel felt that a brief summary, particularly in relation to chronic pain, was warranted. Additional references are provided.<sup>1-4</sup>

**PERIPHERAL NERVES**

Pain sensation begins with the stimulation of a nociceptor, or nerve ending, and resultant activation of a sensory nerve. A signal passes through the lightly myelinated A delta fibres, which are responsible for the appreciation of cold and mechanical stimuli that produce stinging, sharp, fast pain. Also stimulated are the C fibres, which are associated with mechanical and thermal stimuli and transmit warm pain. Specialized bodies are responsible for the appreciation of texture (Meissner's corpuscles), vibration, tickle, and deep pressure (pacinian corpuscles) and for proprioception (Ruffini's corpuscles). The peripheral nerves use L-glutamate, substance P, and calcitonin G-related peptide as neurotransmitters. Release of chemicals (such as

potassium, bradykinin, and arachidonic acid) from inflammatory processes is an endogenous source of pain sensation.

Therapy directed to the peripheral nerves involves the use of prostaglandin inhibitors, such as nonsteroidal anti-inflammatory drugs and acetylsalicylic acid, as well as disruptors of sodium channel activity, such as carbamazepine.<sup>2</sup>

**CENTRAL NERVOUS SYSTEM**

Stimuli travelling to the spinal cord pass through the cord's dorsal roots, which contain the nuclei of the sensory nerves from both the soma and the viscera. These nerves convey stimuli to the spinothalamic tract of the spinal cord through an important synapse governed by a complex array of neurotransmitter messages that involve the N-methyl-D-aspartate (NMDA) receptor.<sup>5,6</sup>

**Table 1. Criteria for quality of evidence assessment and classification of recommendations**

Level of evidence*	Classification of recommendations†
I: Evidence obtained from at least one properly designed randomized controlled trial.	A. There is good evidence to support the recommendation for use of a diagnostic test, treatment, or intervention.
II-1: Evidence from well-designed controlled trials without randomization.	B. There is fair evidence to support the recommendation for use of a diagnostic test, treatment, or intervention.
II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group.	C. There is insufficient evidence to support the recommendation for use of a diagnostic test, treatment, or intervention.
II-3: Evidence from comparisons between times or places with or without the intervention. Dramatic results from uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category.	D. There is fair evidence not to support the recommendation for a diagnostic test, treatment, or intervention.
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.	E. There is good evidence not to support the recommendation for use of a diagnostic test, treatment, or intervention.

\*The quality of evidence reported in these guidelines has been adapted from the Evaluation of Evidence criteria described in the Canadian Task Force on the Periodic Health Exam.<sup>9</sup>

†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the Canadian Task Force on the Periodic Health Exam.<sup>9</sup>

When stimuli through the sensory nerves become very intense, a process called “winding up” can develop, generating a great deal of electrical activity in this receptor.<sup>7,8</sup> One of the main roles of the brain in the response to pain is the generation of inhibitory signals, which descend through the cord to prevent some inappropriate actions. The winding-up process may damage some of these inhibitory impulses. Another phenomenon that may occur is more diffuse dispersal of the message within the cord, such that the subject appreciates the pain over several dermatomes and not simply the one at which the signal originated. Longer duration of the pain signal is responsible for neuroplasticity, the permanent alteration of neuronal function in the spinal cord that results in allodynia (pain from stimuli that are not normally painful), hyperalgesia (excessive sensitivity to pain), and other types of inappropriate pain.

## **THERAPY**

Therapy at the level of the cord is directed to the NMDA receptor. Novel neuroleptics, such as gabapentin, inhibit excessive stimulation of the secondary neurons in the spinal cord, as do carbamazepine, phenytoin, and clonazepam. Modulation of gamma-aminobutyric acid -receptors may be inhibited by electric stimulation.

Therapy directed at the central processes of central inhibition include the use of opiates that act on the dorsal horns

of the spinal cord and agents that increase the inhibition of serotonin uptake, thereby increasing its availability (paroxetine and amitriptyline). This is an area of intense research activity.

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## CHAPTER 2: SCOPE, DEFINITION, AND CAUSES OF CHRONIC PELVIC PAIN

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### SCOPE

Chronic pelvic pain (CPP) in women is one of the most common and difficult problems encountered by health care providers. CPP accounts for about 1 in 10 outpatient gynaecology visits and is the indication for an estimated 15% to 40% of laparoscopies and 12% of hysterectomies in the United States.<sup>1</sup> The true incidence and prevalence, as well as the socioeconomic impact, of the problem are unknown. In a Gallup poll of 5325 US women, 16% reported problems with pelvic pain: because of CPP, 11% limited their home activity, 11.9% limited their sexual activity, 15.8% took medication, and 3.9% missed at least 1 day of work per month.<sup>2</sup>

### DEFINITION

Various definitions of CPP have been used, but most investigators consider a minimum duration of 6 months to define the pain as chronic. However, because of the delay in seeking help and then getting appropriate referrals, there has been a trend toward using 3 months instead. Either way, these cut-off points are arbitrary and lack empiric validation.

Chronic pain syndrome usually encompasses the following clinical characteristics<sup>3</sup>:

- duration of 6 months or longer;
- incomplete relief with most treatments;
- significantly impaired function at home or work;
- signs of depression, such as early awakening, weight loss, or anorexia; and
- altered family roles.

Individual response to chronic pain varies tremendously. Whereas some women with CPP suffer for much longer than 6 months without exhibiting the affective and behavioural changes of a chronic pain syndrome, others exhibit a full-blown chronic pain syndrome fairly quickly. This speaks to the complexity of the problem and the multiple contributing factors. If interacting physical and psychological factors are present early in the clinical course of a pain problem, attribution of cause and effect can be difficult. Also, pain intensity is often not proportional to tissue damage. When multiple factors are present, treatment of only some of them will lead to incomplete relief and frustration for both patient and clinician.

**Table 2.1 Common causes of chronic pelvic pain and common coexisting conditions**

Gynaecologic	Urologic	Gastrointestinal	Musculoskeletal	Psychological
Endometriosis	Interstitial cystitis	Irritable bowel syndrome	Myofascial pain (trigger points)	Depression
Endosalpingiosis	Urethral syndrome	Chronic appendicitis	Pelvic floor myalgia and spasms	Physical or sexual abuse (previous or current)
Adenomyosis	Chronic urinary tract infection	Constipation	Nerve entrapment syndromes	Sleep disturbance
Pelvic adhesions	Bladder stones	Inflammatory bowel disease	Mechanical low back pain	Psychological stress (marital, work)
Chronic pelvic infections			Disc disease	Substance abuse (alcohol, narcotics, other drugs)
Ovarian cysts			Hernias	
Residual ovary syndrome				
Ovarian remnant syndrome				
Post-hysterectomy pain				
Pelvic congestion syndrome				
Fibroids				
Vulvodinia*				

\*Not dealt with in this consensus guideline.

## CAUSES

There are many recognized causes of CPP; the Table 2.1 lists those that are common. Many gynaecologic pathological conditions (adhesions, endometriosis, etc.) are more frequent in women with CPP, but the development of a chronic pain syndrome is often multifactorial. Clinical evaluation must therefore be thorough from a medical, surgical, and psychological standpoint. Organic and physiological changes affecting the reproductive tract, surrounding viscera, and musculoskeletal system can coexist and must be recognized. In addition, depression, sleep disturbance, and sexual dysfunction often become part of the picture and complicate treatment. For example, a patient may first experience pain and deep dyspareunia from endometriosis, next have secondary vaginismus and vestibulitis, then exhibit abdominal trigger points and irritable bowel symptoms, and finally become depressed and disabled. All these components of the patient's pain must be treated concurrently. If the initial pain symptoms had been treated adequately, the patient's problem might not have progressed to a chronic pain syndrome.

A useful model for understanding CPP is Steege's integrated model,<sup>4</sup> which includes the following elements:

- biological events sufficient to initiate nociception
- alterations of lifestyle and relationships over time

- anxiety and affective disorders and
- circular interaction ("vicious cycle") among these elements.

There is evidence that a multidisciplinary approach to management (see Chapter 11 in Part two in the next issue) is more effective.

## Recommendation

Because of the complex nature and multifactorial development of its common state, CPP should be increasingly incorporated into the educational curricula of health professionals (medical students, residents, nurses, physiotherapists, specialists) (III-B).

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## CHAPTER 3: HISTORY-TAKING, PHYSICAL EXAMINATION, AND PSYCHOLOGICAL ASSESSMENT

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### HISTORY-TAKING

Nowhere is the history more important than in assessing patients with chronic pain. It is crucial to get a detailed chronologic history of the problem, with careful attention to aggravating and alleviating factors, as well as results of previous attempts at treatment. It is useful to get a sense of what the patient thinks is contributing to her pain, as often she will have insight into her condition and fears that need to be addressed. The clinician should elicit symptoms denoting possible involvement of the gastrointestinal system, urinary tract, musculoskeletal system, and pelvic floor musculature and assess for psychological factors. Most important, the clinician should establish the current impact of the pain on the patient's quality of life and the amount of medication used; these factors, followed over time, can be used as indicators of response to treatment.

A detailed questionnaire can be given to the patient before her visit to facilitate history-taking and make it more

thorough and efficient. The pain questionnaire designed by the International Pelvic Pain Society ([www.pelvicpain.org/pdf/FRM\\_Pain\\_Questionnaire.pdf](http://www.pelvicpain.org/pdf/FRM_Pain_Questionnaire.pdf)) is a useful resource and will allow data collection through a centralized database in the future.

During the initial interview, it is important to convey interest, to listen with attention, and to validate the patient's experience. Unfortunately, patients who have had pain for many years often feel dismissed by physicians frustrated at their inability to cure. These physicians apply the Cartesian model; that is, if no visible pathological condition is found, the problem must be psychological. As detailed in Chapter 2, a biopsychosocial evaluation, which acknowledges the possibility of multiple contributing factors, is more appropriate. When the patient feels that her experience of the pain is believed and that the clinician will do his or her best to help, a good therapeutic relationship can be established, which

will lead to better compliance with the proposed treatment plan and perhaps to acceptance by the patient of more realistic goals of treatment, such as improved function and quality of life, as opposed to complete resolution of pain.

### **PHYSICAL EXAMINATION<sup>1</sup>**

The physical examination of a patient with CPP is very different from a routine gynaecologic examination. It may be necessary to defer the examination to the second visit because of time or the patient's distress after recounting her history. It is important to convey to the patient that she will control the timing of the examination and may elect to terminate it at any time.

If the pain is intermittent, it is best to examine the patient when she is in pain. The goal of the examination is to look for pathological conditions but also to reproduce the patient's usual pain to help identify physical contributors. The examiner should elicit feedback from the patient, preferably using a numeric scale to determine whether the pain is the same as or different from her usual chronic pain, documenting the score for each tender area. The examiner should also give feedback to the patient about what is being looked for and what pelvic structures seem to be painful.

The following sequence of examination is important. The bimanual exam should be done last, as it is the most threatening, often the most painful, and the least discriminatory part of the examination.

#### **General Demeanour, Mobility, and Posture**

These can be observed the moment the patient walks into the office and while she sits recounting her history. Be aware of an abnormal gait, guarding, and careful positioning.

#### **Back**

Look for scoliosis, sacroiliac tenderness, trigger points, and pelvic asymmetry (gluteal fold out of alignment with the line between the thighs). (See Chapter 7 in Part two in the next issue for details on musculoskeletal examination.)

#### **Abdomen**

With the patient supine, look for skin lesions or hypersensitivity, especially around scars. Examine all quadrants of the abdomen for trigger points: vigorous pain responses to light localized pressure, occasionally paired with a muscle twitch). Do the head-raise test: if pain is lessened with head-raising (and resultant tensing of the rectus muscles), then it is likely intraperitoneal, as the rectus protects the peritoneum from stretch; if, however, the pain is worsened or unrelieved by head-raising, then an abdominal wall source should be suspected.

#### **Vulva**

The patient is placed in the lithotomy position and may be offered a mirror to participate in the examination and gain more information about her body. A cotton swab is used to perform a sensory examination and to identify areas of tenderness. Particular attention should be given to identifying vulvar vestibulitis, as it is common in CPP patients. This condition causes introital discomfort with intercourse and is often felt as a tearing and burning sensation.

#### **Single-Digit Vaginal Examination**

Insert one finger into the introitus and have the patient contract and relax her perineal floor around the finger to assess tone and muscle control and whether vaginismus is present. Palpate the levator ani and coccygeus muscles and their attachments. Palpate the vaginal side walls, looking for reflex sympathetic hypersensitivity. Palpate the levator muscles. Palpate the piriformis and obturator muscles (see Chapter 7 in Part two in the next issue for details on musculoskeletal examination). Palpate the urethra and bladder base. Gently touch the cervix and then the uterosacral ligaments, searching for nodularity and localized tenderness. Gently move the cervix, looking for uterine mobility and motion tenderness. Palpate the adnexal areas for ovarian tenderness and the internal inguinal ring for inguinal tenderness.

#### **Bimanual Examination**

This may not be possible and should not be attempted in the presence of severe vaginismus. Perform the exam as gently as possible to delineate the uterus and adnexae, looking for mobility, tenderness, and masses. The presence of abdominal wall trigger points may render the exam difficult and confusing; freezing the trigger points with local anesthetic before performing the bimanual exam can help isolate tender areas. If cul-de-sac disease is palpated, a rectovaginal exam should be done to determine its extent.

#### **Speculum Examination**

This may not be possible if the patient has considerable vaginismus. Use a small speculum. Look at the cervix, vaginal fornices, and vaginal walls. Cervical lesions, mucosal lesions, infections, and endometriosis implants can be identified. Use a long cotton swab to palpate the cervix and vaginal fornices, looking for localized tenderness. Post-hysterectomy dyspareunia may arise from localized lesions or nerve entrapment at the vaginal vault: palpating the vault with a long cotton swab may assist in identifying focal sources of pain.

**Figure 3.1 Functional Pelvic Pain Scale Instructions: Please fill out this form by placing an X in the box that best describes your pain when it is the WORST, even if it occurs at different times of your cycle. If any of these functions do not apply to you, please write N/A (not applicable) in the box beside that function.**

Function	0 No pain; normal function	1 Some pain; with function	2 Moderate pain; with function	3 Severe pain; with function	4 Cannot function because of pain
Bladder					
Bowel					
Intercourse					
Walking					
Running					
Lifting					
Working					
Sleeping					

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## **PSYCHOLOGICAL ASSESSMENT**

Modern definitions of pain acknowledge both sensory and affective aspects of the experience. Furthermore, particularly when moderate or severe, CPP can have a negative impact on the woman's capacity to function in family, sexual, social, and occupational roles. This condition is called chronic pain syndrome. Thorough evaluation of the woman experiencing CPP must include an assessment of her emotional experience and other aspects of the chronic pain syndrome.

A psychosocial assessment conducted by a health psychologist or psychiatrist consists of an extensive interview and an evaluation of the woman's response to standardized pain and psychological tests that assess disability associated with pain (Figure 3.1 illustrates one such test, the Functional Pelvic Pain Scale),<sup>2-4</sup> emotional distress,<sup>5-7</sup> and quality of life.<sup>8</sup>

The domains covered in a psychosocial assessment include: (a) the woman's understanding of pain generators; (b) the impact of the pain on functional roles (e.g., disability in family, sexual, work, and recreational activities) and emotional functioning (e.g., anxiety about pain and depression secondary to pain); (c) the woman's pain coping style (e.g., ignoring the pain, becoming inactive, or going to the emergency department for injections); (d) pain modulators (e.g., stress, which exacerbates pain); (e) the woman's perception of the meaning of her pain with regard to her current and future life experience; (f) the quality of the

woman's relationships with health care providers; (g) the woman's mental health history (past and current), especially clinical psychopathological disorders (e.g., major depressive disorder), abuse and neglect (sexual, physical, or emotional), and substance use or abuse; and (h) current psychosocial stress and social support, including the woman's strengths.

The data generated by the psychological assessment are useful for determining appropriate psychosocial interventions directed towards alleviating the psychological and behavioural sequelae of chronic pain through lifestyle modification and alterations in pain coping style. If relevant, interventions may be aimed at treating secondary or primary mental health disorders and reducing psychosocial stress, which may moderate the pain experience. For patients with moderate to severe pain, these interventions are typically critical components of a comprehensive health care plan.

Clearly, gynaecologists and family physicians cannot be expected to conduct a thorough psychosocial assessment. However, they have an important role in identifying patients who will likely benefit from psychosocial assessment and treatment. Women who are identified as experiencing considerable psychosocial impact from their CPP can be referred to a mental health practitioner with training and experience in working with patients experiencing the psychosocial sequelae of chronic health conditions.

The following screening questions can be used in the office to identify women who would benefit from further

psychological evaluation. Each question is followed by an explanation and suggestions for how the information can be evaluated.

### **Main Concern**

What concerns you most about the pain?

*Rationale:* This open-ended question often elicits the woman's perception about what is most distressing about the pain, and interventions can be tailored accordingly.

### **Understanding of Pain and Treatment Expectations**

What do you believe to be the cause of your pain? Do you feel that anything has been overlooked? What do you hope to gain as a result of treatment?

*Rationale:* Women with CPP may have misconceptions and fears concerning the cause of the pain (e.g., cancer), which in turn increase distress. They benefit from an accurate, physical-based understanding of pain generators (e.g., disease and myofascial trigger points). In contrast, psychological or psychogenic explanations for the pain often cause more distress and create fear that the pain will not be appropriately investigated or treated. Patient expectations for treatment outcome (i.e., cure or elimination) may not be realistic and may contribute to the viewing of treatment as unsuccessful.

### **Pain Impact**

How has your pain affected your ability to function day to day? Has pain affected your daily activities, work, relationships, sleep, or sexual functioning?

*Rationale:* This question elicits the impacts of pain. As appropriate, interventions can be focused on reducing the impacts as well as the underlying condition. Moreover, the acknowledgement that the pain has affected the woman's quality of life can often contribute to increased rapport and decreased distress.

### **Mood Disorders**

How has the pain affected your mood? Are you feeling irritable or depressed? Are you feeling anxious or tense?

*Rationale:* Depression is the most common emotional consequence of chronic pain. Office screening for clinical depression is often required. Clinical depression develops in 25% to 50% of patients with chronic pain and if left untreated may become an obstacle to alleviation of the pain.

### **Current Stress**

How much stress do you have in your life? Very little, a moderate amount, or a high or severe level? If the level is high or severe, how do you feel that you are coping with pain and stress?

*Rationale:* CPP can be considered a source of chronic stress, adding to other sources of stress, from daily hassles to major life events, and taxing a woman's coping resources. Improved stress management can facilitate pain coping. If the stress level is high or severe and coping is poor, consider a mental health consultation.

### **Abuse History**

Although abuse is rarely a cause of pelvic pain, a history of abuse often makes it more difficult for a woman to deal with pelvic pain. Have you ever been a victim of physical, sexual, or emotional abuse? If you have, please explain. Are you currently being abused? Are you concerned about your safety or the safety of your children? (Explore safety concerns and take action as appropriate.)

*Rationale:* Screening for past and current abuse is viewed as routine in general practice. According to general population studies, one would expect 25% to 50% of women with CPP to have abuse histories. Untreated or unresolved abuse may affect overall health and interfere with the patient's coping with pain. Contrary to popular belief, research has not substantiated a psychological causal link between abuse and chronic pelvic pain.

### **Support System**

Who is there to support you as you cope with your pain (stress and abuse)?

*Rationale:* Women with social support cope more effectively with chronic pain. Consider referring isolated women with major problems to appropriate community resources.

### **Individual or Couple Counselling**

Are you interested in counselling for pain coping skills, depression, stress management, or unresolved abuse?

*Rationale:* Counselling by the appropriate health care provider (a pain specialist with mental health training) is an adjunct to rather than a replacement for medical management of CPP. As well, the promotion of a multidisciplinary approach to management expands treatment options and creates more realistic expectations for outcome (i.e., reduced pain, improved coping, and improved quality of life).

## **SUMMARY STATEMENTS**

1. Cognitive-behavioural therapies are the treatment of choice for helping women develop effective pain coping strategies (II-3).
2. Current evidence indicates that multidisciplinary management of CPP is the most effective treatment approach for women with chronic pain syndrome (I).



## Recommendations

1. Thorough history-taking that generates trust between caregiver and patient and a pain-focused physical examination should be part of the complete evaluation of the patient with CPP (III-B).
2. Clinical measurement of pain level could be done at each visit for CPP (II-B).
3. The patient can be asked two questions that are simple and effective: "On a scale of 0 to 10, 0 being no pain and 10 being the worst pain imaginable, how is your pain today and how was your pain 2 weeks ago?" It is important to provide a reference for 10 such as "pain that is so bad that you cannot care for your children, who are in imminent danger" (II-B).
4. The physical examination can be conducted differently in these patients, with special attention placed on individual pelvic structures, to help differentiate sources of pain. Identifying a focal area of tenderness can help target specific therapy (II-B).
5. Owing to the high prevalence of mental health and other significant psychological coexisting problems and sequelae of CPP, gynaecologists and family physicians should

routinely screen patients for chronic pain syndrome and refer as appropriate (II-2A).

6. Access to multidisciplinary chronic pain management should be available for women with CPP within the publicly funded health care system in each province and territory of Canada (III-B).

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## CHAPTER 4: INVESTIGATIONS

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### INTRODUCTION

After thorough history-taking and physical examination, specific diagnostic tests may be appropriate in patients with chronic pelvic pain (CPP). These may include complete blood count, culture of cervical swabs, and urinalysis.

### DIAGNOSTIC IMAGING

Diagnostic imaging should be performed only when indicated by the history and physical findings.

Transvaginal ultrasonography is useful for evaluating pelvic masses and adenomyosis and is more sensitive than transabdominal scanning.<sup>1</sup> When a mass is found in the pelvis, ultrasonography is effective in distinguishing cystic from solid lesions. Doppler studies evaluate the vascular characteristics of the lesion.

Magnetic resonance imaging (MRI) is useful for characterizing pelvic masses. It may be a useful, non-invasive tool in the diagnosis of deep endometriosis, although it has limitations in detecting small implants.<sup>2,3</sup> Endometriomas are readily visualized with MRI. Blood products are often seen

within masses. Adjacent bowel loops may be tethered to the mass. Differential diagnoses include cystic teratomas (dermoids) and hemorrhagic cysts.<sup>3</sup> MRI remains the imaging test of choice for adenomyosis.<sup>3</sup>

A study compared the diagnostic accuracy of laparoscopy, preoperative MRI, and histologic examination of specimens in 48 women with pelvic pain.<sup>4</sup> MRI detected fewer endometriosis lesions than laparoscopy or histologic examination, with sensitivity of 69% and specificity of 75% in detecting biopsy-confirmed endometriosis. Only 67% of lesions detected laparoscopically showed histologic evidence of endometriosis.

### DIAGNOSTIC LAPAROSCOPY

Laparoscopy is indicated in patients with CPP in whom a pelvic abnormality is suspected, the goal being to find and treat contributing conditions. A thorough clinical assessment may lead to avoidance of unnecessary surgical procedures.

Forty percent of diagnostic laparoscopies are done for CPP, and 40% of these reveal nothing abnormal. Of those revealing abnormalities, 85% show endometriosis or adhesions.<sup>5</sup> Negative results of laparoscopy do not exclude disease or mean there is no organic basis for the patient's pain.

In a retrospective controlled study of 100 women with CPP undergoing laparoscopy, Kresch and colleagues<sup>6</sup> found adhesions and endometriosis to be the most common abnormalities, detected in 51% and 32% of the women, respectively. In the control group of 100 women undergoing tubal ligation and without a history of pelvic pain, adhesions were noted in 14%, but these differed from the adhesions in the CPP patients in that they were generally fine and did not restrict organ mobility. Adhesions in the CPP group were denser, tighter, and associated with restricted mobility of the involved organs.

Findings on physical examination are not reliable predictors of laparoscopic findings. Up to 50% of patients with negative results of physical examination have abnormal laparoscopic findings.<sup>5</sup> In a review of 11 studies of laparoscopic findings in women with CPP, Howard<sup>5</sup> found that 28% of women without CPP had abnormal laparoscopic findings adhesions and endometriosis being the most common, at 17% and 5%, respectively.

### **What is Adequate Laparoscopy?**

After laparoscopic entry, a thorough, standardized examination is performed. A panoramic view of the pelvis, with the patient in the Trendelenburg position and the uterus anteverted, allows a general survey. A manipulating instrument is inserted, and the bowel, appendix, liver, diaphragm, and upper abdomen are inspected. The manipulating instrument is then used to mobilize pelvic structures to visualize all peritoneal surfaces, the ovaries and ovarian fossae, and the cul-de-sac of Douglas, as well as the anterior cul-de-sac. The instrument is used to probe areas of tenderness reported by the patient on pelvic examination, as well as adhesions and pelvic deformity.

Surgeons should be aware of the varied appearances of endometriosis, atypical lesions being more common in younger patients. Biopsy for histologic confirmation is recommended. Palpation of scar tissue with the probe may reveal endometrial nodules underneath. Peritoneal windows may have endometrial implants at their base.

The diagnosis of pelvic venous congestion may be obscured by Trendelenburg positioning. Dense adhesions distorting the anatomy may be responsible for CPP, especially if they

correlate with pelvic tenderness on preoperative pelvic examination.

Videolaparoscopy or photography should be considered to document abnormality or normality, which provides useful feedback to the patient and a permanent record.

### **Laparoscopic Pain Mapping**

Laparoscopic pain mapping, or patient-assisted laparoscopy (PAL), is a technique involving conscious sedation and local analgesia that is used to identify sources of CPP by reproducing the patient's symptoms with probing or traction of pelvic tissues. Howard<sup>7</sup> found no difference in outcome between 50 patients treated after laparoscopic pain mapping and a historical cohort of 65 patients who underwent traditional laparoscopy and treatment. Most reports have been of small groups of patients and have not reported outcomes 6 to 12 months after surgery. No randomized trials have compared pain mapping with standard laparoscopy. PAL remains an experimental procedure.

### **SUMMARY STATEMENTS**

1. Permanent documentation of laparoscopic findings is highly desirable (III).
2. Increased use of MRI in the evaluation of CPP should be expected (III).

### **Recommendation**

Patient-assisted laparoscopy should be subjected to clinical trial (III-C).

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## CHAPTER 5: SOURCES OF CHRONIC PELVIC PAIN

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Various abnormalities may lead to chronic pelvic pain (CPP); however, not all women with these conditions will exhibit CPP.

### ENDOMETRIOSIS

A detailed consensus statement on endometriosis was published by the Society of Obstetricians and Gynaecologists of Canada (SOGC) in 1999.<sup>1</sup>

Endometriosis is a condition of unknown etiology and pathogenesis. It is defined clinically as the presence of endometrium outside of the endometrial cavity. Both endometrial glands and stroma have to be present for a histologic diagnosis of endometriosis.

Current etiologic theories suggest genetic and environmental interaction, as in many chronic conditions, including adenomyosis. A search is under way for genetic pleomorphisms that might increase the risk of the disease. Possibly the immune system is altered in some way, perhaps by exposure to environmental toxins, to permit persistence of endometriotic implants in the peritoneal lining.

The incidence of endometriosis in the general population is thought to be 1% to 7%.<sup>2</sup> In women undergoing laparoscopy for CPP, the prevalence of endometriosis is more than 30%.<sup>3</sup> Accrual of such data is difficult, as they are derived from selected populations of subjects with access to laparoscopy for several unrelated reasons (e.g., pain, infertility, and tubal ligation). In one of the largest studies on the incidence of the disease, most of the risk factors identified were not modifiable (e.g., age at menarche and frequent menses).<sup>4</sup> One protective modifiable risk factor was prior use of oral contraceptives.

Although the data suggest an association between endometriosis and CPP, it is difficult to prove that endometriosis causes the pain. There is evidence that the incidence of endometriosis in asymptomatic women is much higher than previously thought, perhaps as high as 45%.<sup>5</sup> The pain is thought to be due to inflammation, but the process is not fully understood. The severity of endometriosis does not necessarily correlate with the severity of the pain.<sup>6</sup>

Endometriosis-associated CPP may be managed with an estrogen–progestin combination, a progestin alone, danazol, or a gonadotropin-releasing hormone (GnRH) agonist, with or without nonsteroidal anti-inflammatory drugs.<sup>7–10</sup>

In a randomized controlled trial of laparoscopic management with laser treatment, adhesiolysis, and uterine nerve transection compared with expectant management after

diagnostic laparoscopy, operative treatment was significantly more effective than expectant management in reducing symptoms, as assessed subjectively and from pain scores 6 months postoperatively.<sup>11</sup>

There is no consensus on the merits of preoperative versus postoperative medical treatment of CPP. Some theoretical advantages of preoperative treatment include decreased inflammation in the endometriotic implants and decreased pelvic vascularity. Disadvantages may include increased difficulty in diagnosis of the endometriosis and high costs of the medications and their side effects.

There have been at least three randomized, placebo-controlled clinical trials of surgical therapy followed by medical management.<sup>10,12,13</sup> Although it is not clear from these studies whether postoperative medical therapy is efficacious, there is some evidence that 6 months of postoperative treatment with GnRH analogues, danazol, or medroxyprogesterone acetate lowers pain levels at 6 months but possibly not at 12 months.

Finally, if fertility is not desired, in the face of failed medical and conservative surgical therapy, hysterectomy with or without oophorectomy may be considered in accordance with the SOGC practice guidelines.<sup>14</sup> According to the Canadian Hospital Morbidity File of Statistics Canada, there were 120 854 hysterectomies performed during 1988 and 1989; the listed indications included fibroids (in 37.3% of cases), menstrual disorder (in 17.7%), endometriosis (in 15.7%), prolapse (in 11.4%), other (in 9.1%), and cancer (in 8.7%).<sup>15</sup>

Hysterectomy with bilateral oophorectomy is generally regarded as the most effective procedure for the treatment of CPP associated with endometriosis. However, after such radical surgery, one study found a 3% rate of recurrence of endometriosis.<sup>16</sup> Possible mechanisms include residual ovarian tissue or exogenous stimulation by hormones. Another study found a recurrence rate of 3.5% (0.9% per year) among 115 women randomly assigned to receive hormone replacement therapy (HRT) after bilateral salpingo-oophorectomy (BSO) with or without hysterectomy but no recurrence among 57 women assigned to not receive HRT after BSO.<sup>17</sup> Among the women receiving HRT, the recurrence rates were higher among those with peritoneal involvement greater than 3 cm (2.4% per year vs.

0.3%) and incomplete excision (22% among the 9 women who underwent BSO with or without subtotal hysterectomy vs. 2% among the 106 who underwent BSO and hysterectomy). The relative risk was 11.8 (confidence interval [CI] 1.4–15.6,  $P = 0.03$ ).

A retrospective study reported that 18 (62%) of 29 women had recurrent pain and 9 (31%) required re-operation after hysterectomy with retention of the ovaries.<sup>18</sup>

In addition to a woman's desire to maintain fertility, her age, the severity of her symptoms, and the site of major endometriotic involvement must be evaluated when considering definitive surgery as an option for pain management.

### **ENDOSALPINGIOSIS**

Endosalpingiosis first described by Sampson<sup>19</sup> in 1927, is the presence of ectopic fallopian tube-like ciliated epithelium without stroma. As with endometriosis, the histogenesis is unknown. Possible mechanisms include coelomic metaplasia or implantation of tubal epithelial tissue. The distribution and gross appearance of the lesions of endosalpingiosis are the same as those of endometriosis. Several case studies have reported that endosalpingiosis may be associated with CPP.

A prospective study of 1107 consecutive women undergoing laparoscopy over a year for a variety of indications found histologically proven endosalpingiosis in 7.6%, endometriosis in 27.5%, and both in 4.4%.<sup>20</sup> Endosalpingiosis was found in 7.9% of the women with pelvic pain, 7.3% of those without pelvic pain, 11.7% of those with infertility, and 8.3% of those without symptoms who were undergoing sterilization. The authors concluded that, in contrast to endometriosis, endosalpingiosis plays only a minor role in infertility and lower abdominal pain.

Another study of 16 women with endosalpingiosis who presented with a variety of symptoms, including pelvic pain (in 5) and no pelvic pain (in 5), determined that endosalpingiosis seems to be an incidental finding associated with other pelvic problems rather than a frequent cause of pelvic pain.<sup>21</sup>

### **ADENOMYOSIS**

Adenomyosis is a condition of unknown etiology and pathogenesis. It is defined histologically as the presence of endometrial glands and stroma deep within the myometrium. The uterus is usually enlarged and diffusely boggy to palpation. The adenomyotic foci may be diffusely distributed or be well localized, forming adenomyomas (nodules of hypertrophic myometrium and ectopic endometrium). The reported incidence of adenomyosis

ranges from 5% to 70%.<sup>22</sup> Most cases occur in parous women in the fourth and fifth decades of life.<sup>23</sup> Not all women with adenomyosis are symptomatic. Symptoms may include pelvic pain, dysmenorrhea, and menorrhagia.

Transvaginal sonography may aid in the diagnosis of adenomyosis.<sup>24</sup> The sensitivity and specificity of pre-hysterectomy ultrasonography varied from 52% to 89% and from 50% to 99%, respectively, in 6 series (43 to 405 women).<sup>25</sup>

Several studies have shown magnetic resonance imaging (MRI) to be an excellent, minimally invasive tool for diagnosing adenomyosis,<sup>26</sup> with sensitivity and specificity ranging from 86% to 100% in symptomatic women.<sup>27</sup> One recent, prospective, double-blind study of 119 consecutive patients undergoing hysterectomy showed endovaginal ultrasonography to be as accurate as MRI in the diagnosis of uterine adenomyosis.<sup>28</sup>

Treatment options include danazol and GnRH agonists. Adenomyotic foci have been shown to contain progesterone and estrogen receptors and may undergo decidualization when exposed to progesterone; symptoms may then become more apparent.<sup>29</sup> Progestogenic agents alone or in combination with estrogen may therefore not be effective. Adenomyosis in women with infertility can be treated with a variety of medications.<sup>24</sup>

In one study of 15 women with MRI-diagnosed adenomyosis (and concurrent fibroids in 12), 12 of 13 patients reported improvement in quality of life after uterine artery embolization.<sup>30</sup>

Surgery is still the main method of diagnosing and managing adenomyosis. Hysterectomy is the gold standard for relief of symptoms. However, there may be a role for hysteroscopic endometrial resection if the adenomyosis has been confirmed to involve mostly the superficial 3 mm of the myometrium.

For a recent review of adenomyosis, see the article by Matalliotakis and colleagues.<sup>31</sup>

### **PELVIC PERITONEAL DEFECTS (POCKETS)**

A defect, or a pocket, in the pelvic peritoneal floor was first illustrated by Sampson<sup>19</sup> in 1927 as he was describing endometriotic implants in the peritoneal cavity. In 1981, Chatman<sup>32</sup> reported peritoneal defects in 25 (4%) of 635 consecutive patients undergoing diagnostic laparoscopy, 75% for CPP and 25% for infertility, among whom endometriosis was found in 192 women (30%). The frequency of peritoneal defects in women with CPP was 7%. In 7 (28%) of the 25 women, the defect was the only finding, but 17 (68%) had associated pelvic endometriosis.

In a follow-up study of an additional 309 patients undergoing laparoscopy for CPP, infertility, or both, Chatman and Zbella<sup>33</sup> found that 53 patients had pelvic peritoneal defects, 9 having more than one defect, and 42 (79%) also having endometriosis. Of the 309 women, 148 had endometriosis. The authors concluded that, when such defects are found at laparoscopy, the presence of endometriosis should be investigated thoroughly.

The defects have been postulated to result from peritoneal irritation or invasion by endometriotic tissue, with resultant scarring and retraction of the peritoneum.<sup>19,31</sup> Batt and Smith<sup>34</sup> postulated that peritoneal pockets and associated endometriosis localized to the posterior pelvis may represent a congenital form of endometriosis that is due to rudimentary duplication of the müllerian system during embryogenesis. Redwine<sup>35</sup> reported that almost one-fifth of 132 women with endometriosis had peritoneal pockets. Two-thirds of the defects had endometriotic tissue around the rim or inside, but since one-third lacked associated endometriosis, and since fibrosis was not present as a possible cause, endometriosis did not seem to have been the likely primary cause. Redwine postulated that such peritoneal invaginations and endometriosis may be ontologically related to a separate developmental factor.

Vilos and Vilos<sup>36</sup> excised 140 pelvic peritoneal pockets ranging from 0.5 to 6 cm wide or deep from 106 women 15 to 50 years of age who had CPP. Of the pockets, 46% were below the uterosacral ligaments (right, 40; left, 25), 41% above the uterosacral ligaments and medial to the ureters (right, 20; left, 38), 6% lateral to the ureters (right, 6; left, 2), 3% in the rectovaginal septum, and 3% anterior to the broad ligament (right, 3; left, 1). Associated pelvic endometriosis was seen in 85% of patients. Histologic examination of the pockets revealed endometriosis in 39%, chronic inflammation in 20%, endosalpingiosis in 12%, calcification in 4%, and no abnormalities in 25%. Excision and suturing of the defects provided immediate relief of CPP in some 75 women. The authors postulated that the pockets were herniations of the pelvic peritoneum over pelvic floor spaces and were related to the inflammatory effects of the various conditions.

In a follow-up study of 2115 women with CPP, Vilos and associates<sup>37</sup> reported on 25 women who also complained of cyclic pain radiating to the leg (right leg in 15 women, left leg in 9 women, and both legs in 1 woman), pain over the buttocks and paresthesia of the thighs, knees, or both, exacerbated during menses. Laparoscopic findings were endometriosis nodules in 5 patients, peritoneal pockets, endometriosis, or both in 19 patients, and inflammatory peritoneum in 1 patient. Associated pelvic endometriosis was identified and confirmed in 17 women (68%); no

additional lesions were found in the other 8 (32%). After excision of the 15 pockets, histologic examination showed endometriosis in 9 (60%), endosalpingiosis in 2 (13%), chronic inflammation in 1 (7%), and normal tissue in 3 (20%). After laparoscopic excision, sciatic symptoms were eliminated in 19, were lessened in 4, and remained the same in 2; symptoms recurred in 3 patients after 2 years. The authors concluded that cyclic leg pain is associated with pelvic peritoneal pockets, endometriosis nodules, or surface endometriosis of the posterolateral pelvic peritoneum. They hypothesized that the pain was likely referred from the pelvic peritoneum rather than due to direct irritation of the lumbar plexus of the sciatic nerve.

## **ADHESIONS**

Intraperitoneal adhesions are caused mainly by surgery and to a lesser extent by endometriosis and abdominal and pelvic inflammation or infection.<sup>38</sup> The financial impact of adhesions is enormous.<sup>39</sup> In the United States, adhesiolysis was responsible for 303 836 hospitalizations during 1994, primarily for procedures on the digestive and female reproductive systems, which accounted for 846 415 days of inpatient care and \$1.3 billion in hospitalization and surgeon expenditures.<sup>40</sup>

Adhesions are found in 25% to 50% of women with CPP, but their role as a cause of CPP remains controversial.<sup>41,42</sup> Diamond and Freeman<sup>39</sup> reviewed four uncontrolled, cohort studies involving 269 women and 4 men and found rates of 69% to 82% for relief or reduction of chronic pain after adhesiolysis.

One study randomly assigned 48 women with CPP and laparoscopically diagnosed pelvic adhesions to adhesiolysis by laparotomy ( $n = 24$ ) or “wait-and-see” management ( $n = 24$ ).<sup>38</sup> Adhesiolysis proved to be of no more benefit than the wait-and-see approach. Only the 15 women with severe multiple vascularized adhesions involving the serosa of the small bowel or, to a lesser extent, the colon benefitted from adhesiolysis ( $P < 0.01$ ). The authors concluded that adhesiolysis is not indicated for the treatment of pelvic pain in women with mild or moderate pelvic adhesions but that it may benefit women with severe adhesions involving the intestinal tract.

A recent multicentre, blinded, randomized trial of laparoscopic adhesiolysis versus diagnostic laparoscopy alone in 87 women and 13 men with chronic abdominal pain found that at 12 months after randomization, 27% of patients in the adhesiolysis group ( $n = 52$ ) and 27% of the controls ( $n = 48$ ) reported resolution or substantial reduction of pain.<sup>43</sup> There were no complications in the diagnostic laparoscopy group, but 5 of the 52 patients in the adhesiolysis group had complications (some had more than one

complication): small bowel perforation in 2 patients and hemorrhage during surgery (necessitating blood transfusion), abdominal abscess, rectovaginal fistula, and protracted paralytic ileus after surgery in 1 patient each. The authors concluded that laparoscopic adhesiolysis cannot be recommended as a treatment for adhesions in patients with chronic abdominal pain.

A recent publication<sup>44</sup> reviewed the relation between adhesions and pelvic pain and the effectiveness of adhesiolysis in pain control. The most common laparoscopic findings in patients with or without pelvic pain were endometriosis and adhesions. Multiple adhesiolysis techniques were used, and outcomes of surgery ranged from no pain relief to relief in 90% of patients. The authors concluded that a correlation between pelvic pain and adhesions remains uncertain. Adhesiolysis has not been shown to be effective in achieving pain control in randomized clinical studies.

### **PELVIC INFLAMMATORY DISEASE (PID)**

PID is a common condition that carries several long-term sequelae, one of which is CPP. CPP has been reported to occur in 18% to 33% of women after an episode of PID, regardless of mode of antibiotic therapy.<sup>45,46</sup> The corresponding figure was 5% in a control series of women who had never had PID.<sup>43</sup> Although pelvic adhesions after PID are thought to be the cause of CPP, the exact etiology remains unknown. One study showed a reduction in physical and mental health among women with CPP after PID.<sup>47</sup> Women with CPP were less likely to be black ( $P < 0.001$ ) and more likely to report a history of PID ( $P < 0.004$ ), a greater number of previous PID episodes ( $P < 0.001$ ), and continued pelvic pain at 30 days ( $P < 0.001$ ). CPP was associated with greater age ( $P = 0.079$ ), being married ( $P = 0.084$ ), lesser education ( $P = 0.074$ ), and 3 or more days between the onset of PID symptoms and treatment ( $P = 0.182$ ). CPP was associated with lower physical ( $P < 0.001$ ) and mental health composite scores ( $P < 0.001$ ) 5 days after enrolment.<sup>45</sup>

Among 684 sexually active women with PID followed up for a mean of 35 months,<sup>48</sup> self-reported persistent and consistent condom use was associated with lower rates of PID sequelae. After adjustment for covariates, the relative risk for condom users versus nonusers was 0.5 (95% CI 0.3–0.9) for recurrent PID, 0.7 (95% CI 0.5–1.2) for CPP, and 0.4 (95% CI 0.2–0.2) for infertility.

### **OVARIAN CYSTS**

Unilateral CPP is often attributed to ovarian cysts, if present. Chronic ovarian cysts, however, do not usually produce pain. Although small studies have shown successful

treatment of CPP in patients with ovarian cysts,<sup>49</sup> no randomized clinical trials have addressed this issue.

### **RESIDUAL OVARY SYNDROME (ROS)**

ROS is characterized by either recurrent pelvic pain or a persistent pelvic mass after hysterectomy.<sup>50</sup>

One study reported an incidence of ROS of 2.8% (73 cases) after 2561 hysterectomies with preservation of one or both ovaries over a 20-year period.<sup>51</sup> There was no correlation between unilateral or bilateral ovarian preservation and development of ROS. Indications for removal of one or both of the residual ovaries included CPP in 52 patients (2.0%), persistent asymptomatic pelvic mass in 18 patients (0.7%), and acute pelvic pain in 3 patients (0.1%). Re-exploration occurred within 5 years in 1.3% and within 10 years in 2.1% of patients. Ovarian malignancy was found in 9 women (serous in 6 patients, mucinous in 1 patient, and borderline in 2 patients), for a rate of 3.5 per 1000 cases in which ovaries were preserved. Indications for hysterectomy included combinations of fibroid uterus (in 62 patients), abnormal uterine bleeding (in 34), uterine prolapse (in 8), and grade 1 cervical intraepithelial neoplasia (in 1).

### **OVARIAN REMNANT SYNDROME (ORS)**

ORS is the persistence of functional ovarian tissue after the intended removal of the ovary. The true incidence of ORS is not known. The condition is often not suspected in women with CPP who have had oophorectomies.<sup>52</sup> The syndrome arises from unintentional, incomplete dissection and removal of the ovary during a difficult or emergency oophorectomy or implantation and growth of displaced ovarian tissue in the abdomen or pelvic cavity during oophorectomy. The condition is often encountered in patients with severe endometriosis and pelvic adhesions or similar conditions associated with severe pelvic adhesions.

In a cohort study of 119 women presenting with CPP who had previously undergone oophorectomy, ovarian remnants were found in 18%.<sup>53</sup> Five years after removal of the ovarian remnants, 80% of women reported complete resolution of the CPP. Women with ovarian remnants may present with CPP, sometimes cyclical, or a pelvic mass. The absence of vasomotor symptoms should make one suspicious of ORS in a woman with CPP who has previously undergone bilateral oophorectomy. On vaginal examination, a tender lateral pelvic cyst may be palpated. Premenopausal levels of follicle-stimulating hormone and estradiol, along with the ultrasonographic detection of a pelvic cystic structure, are helpful in diagnosis.

Treatment of ORS may be attempted with agents such as GnRH analogues with add-back therapy. There are no reports of large series addressing this issue. The main

management option at present is surgical excision of the ovarian remnant with a retroperitoneal approach, wide local excision, and lysis of adhesions.<sup>39,54</sup> The risks of ureteric and bowel injury should be discussed with the patient preoperatively.

### **PELVIC CONGESTION SYNDROME**

For more than half a century, dilated pelvic veins have been observed in some women with CPP. Symptoms may include a dull aching pain as well as menstrual disorders. Vulvar varicosities may be associated. Pelvic venography, Doppler ultrasonography, and MRI have been used to diagnose pelvic congestion syndrome.<sup>55–57</sup> A recent study of asymptomatic kidney donors showed a 38% incidence of pelvic congestion syndrome, diagnosed by MRI detection of dilated pelvic veins. Hysterectomy as a management option for pelvic congestion syndrome has fallen out of favour. Although there have been case reports of ovarian vein ligations and percutaneous embolizations, no controlled clinical trials have evaluated the safety and long-term effectiveness of these approaches.

### **POST-HYSTERECTOMY CPP**

CPP has been listed as the principal preoperative indication for 10% to 12% of hysterectomies in the United States<sup>58,59</sup> and Canada.<sup>14</sup> Stoval et al.<sup>60</sup> evaluated 99 women with CPP of unknown etiology after excluding endometriosis and adhesions. Histopathologic analysis of surgical specimens revealed adenomyosis in 20% of patients, fibroids in 12%, and both in 2%. At an average follow-up of 22 months, 22% of the women reported persistent pelvic pain.

Hillis and colleagues<sup>59</sup> reported on a prospective cohort study of 279 women from the Collaborative Review of Sterilization Study (CREST) who underwent non-emergency hysterectomy for the relief of CPP. After 1 year, 74% of the women reported complete resolution of pain, 21% reported decreased but continued pain, and 5% reported unchanged or increased pain. The probability of persistent pain was higher among women less than 30 years old, those with no identified pelvic disease, those who were economically disadvantaged, those with more than two pregnancies, and those with a history of PID. For each of these subgroups, 30% to 40% continued to have pelvic pain. Unilateral or bilateral salpingo-oophorectomy was not found to play a role.

A separate set of 97 women with dysmenorrhea as their primary complaint reported resolution (95%), reduction (4%), or no change (1%) in their dysmenorrhea 1 year after hysterectomy.<sup>59</sup>

### **POST-HYSTERECTOMY ENDOMETRIOSIS**

Among women with a previous hysterectomy and BSO (for different conditions), when laparoscopy was performed because of CPP, endometriosis was found in 34%.<sup>61</sup>

### **PELVIC PAIN IN THE ABSENCE OF GENITAL PELVIC ORGANS**

Behera and associates<sup>62</sup> evaluated laparoscopically 115 women, 22 to 68 years old, with chronic pain after hysterectomy and BSO. Findings at laparoscopy were adhesions in 107 patients, adnexal remnants in 32 (ovarian in 26 and tubal in 6), abnormal appendix in 19, and abnormal peritoneum in 14. Four peritoneal biopsies revealed endometriosis. Six appendices showed disease: endometriosis in two, chronic inflammation in one, and obliterated lumen in three. Of the 104 patients who were followed up for 1 to 12 years, 61 (59%) reported a reduction in pain and the other 43 no change in pain. Reduced pain was reported by 70% of those with ovarian remnants, 62% of those with endometriosis, 52% of those with adhesiolysis, and 50% of those with appendectomy.

### **UTERINE FIBROIDS**

Uterine fibroids (leiomyomas) are benign monoclonal tumours derived from the smooth muscle of the uterus. These tumours may be due to genetic pleiomorphisms, with a genetic–environmental interaction. They may be submucosal, intramural, subserosal, or pedunculated. A detailed clinical practice guideline on uterine myomas was published in the *Journal of Obstetrics and Gynaecology Canada* in 2003.<sup>63</sup> Although dysmenorrhea and pelvic pressure symptoms may be due to the fibroids, other conditions, such as endometriosis, adenomyosis, irritable bowel syndrome, and interstitial cystitis, should be suspected when patients present with pain as the main symptom.

Pain associated with uterine fibroids may present as dysmenorrhea, pressure symptoms, or both. Resection of submucosal uterine fibroids associated with menorrhagia and dysmenorrhea, as well as myomectomy or hysterectomy for large, symptomatic uterine fibroids, may reduce the chronic pain. However, no clinical trials have specifically assessed surgical intervention for uterine fibroids as therapy for CPP.

The Maine Women's Health Study,<sup>64</sup> a prospective cohort study of 418 women undergoing hysterectomy, found that 35% of the procedures were performed for uterine fibroids. Hysterectomy was highly effective for the relief of symptoms and was associated with a marked improvement in quality of life.

## ADNEXAL TORSION

Adnexal torsion may produce pain by mechanical, hypoxic, or chemical tissue changes. Unilateral CPP is often attributed to ovarian cysts, if present. Chronic ovarian cysts, however, do not usually produce pain. Although small studies have shown successful treatment of CPP in patients with ovarian cysts,<sup>49</sup> no randomized clinical trials have addressed this issue.

### Recommendations

1. Hysterectomy for endometriosis or adenomyosis with ovarian conservation can be an acceptable alternative. The patient should be informed of the possible consequences (residual ovary syndrome, persistent pain, and reactivation of endometriosis) (II-2A).

2. Ovarian cystectomy, rather than oophorectomy, should be an individual decision, based on the patient's age and wishes, fertility issues, and surgical feasibility (II-3B).

3. The management of symptomatic uterine fibroids should follow the clinical practice guidelines of the Society of Obstetricians and Gynaecologists of Canada (II-3B).

4. The management of adnexal torsion should be determined according to the patient's age and wishes, fertility issues, and surgical judgment (II-3B).

5. Since the rate of recurrence of endometriosis with hormone replacement therapy (HRT) in women undergoing hysterectomy plus bilateral salpingo-oophorectomy (BSO) is very low, HRT should not be contraindicated (I-B).

6. In women with an intact uterus, when total hysterectomy has not been performed because of technical difficulties, the recurrence of endometriosis contraindicates the use of HRT (I-B).

7. Hysterectomy can be indicated in the presence of severe symptoms with failure of other treatment when fertility is no longer desired (I-B).

8. Pelvic peritoneal defects (pockets) are frequently associated with endometriosis and should be treated surgically (II-B).

9. Endosalpingiosis is an incidental histologic finding and does not appear to require specific treatment (II-2B).

10. Current evidence does not support routine adhesiolysis for chronic pelvic pain. However, diagnostic laparoscopy remains of value (I-B).

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## CHAPTER 6: UROLOGIC AND GASTROINTESTINAL CAUSES OF CHRONIC PELVIC PAIN

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Chronic pelvic pain (CPP) is a complex syndrome that involves biologic and psychosocial phenomena. This chapter will focus on urologic and gastrointestinal causes (Table 6.1), particularly the two most frequently found in women with CPP.

### INTERSTITIAL CYSTITIS (IC)

IC is a poorly understood chronic inflammatory condition of the bladder whose study is complex and frustrating. Its causes are unknown, its pathophysiology remains uncertain, and the efficacy of treatment regimens is questionable. The prevalence of IC in the United States is 10 to 67/100 000; women predominate 10 to 1.<sup>1-3</sup> Possible causes include infection, lymphatic or vascular obstruction, immunologic deficiencies, glycosaminoglycan layer deficiency, presence of a toxic urogenous substance, neural factors, and primary mast cell disorder.<sup>4</sup>

#### Characteristics and Clinical Significance

Most patients present with pelvic pain and irritative voiding symptoms, such as frequency, urgency, and nocturia. Patients void 8 to 15 times per day, with an average volume of 70 to 90 mL. Voiding can occur once or twice per night. Pain can radiate to any location in the pelvis, in the suprapubic area, to the perineum, vulva, vagina or low back, and even to the medial thighs. Pain can increase during or after sexual intercourse. Symptoms fluctuate during the menstrual cycle, with a premenstrual flare, in 18% of women with IC.<sup>5</sup> Patients often have overlapping symptoms related to the pelvic organs—urologic, gastrointestinal, gynaecologic, and pelvic floor. Up to 75% of patients with CPP who visit gynaecologists have urologic symptoms.<sup>6</sup>

In one retrospective study of 60 women with CPP,<sup>7</sup> the patients were noted to have presented with dyspareunia and dysmenorrhea, along with CPP, with or without urinary symptoms. Pelvic, uterine, and bladder tenderness were noted on physical examination. Laparoscopy, cystoscopy, and hydrodistention of the bladder were performed in each patient. Of the 60 women, 58 (97%) had IC, according to the guidelines of the US National Institutes of Health (NIH). Of the 48 (80%) who had biopsy-confirmed active endometriosis, 47 (98%) had IC. Endometriosis is commonly associated with CPP but is not always responsible for the pain. In this study, 78% of the patients had both endometriosis and IC. The decision to perform cystoscopy should not be based on symptoms alone, because 25% of women with IC would have been missed.

**Table 6.1 Causes of chronic urologic and gastrointestinal pelvic pain**

Urologic	Gastrointestinal
Interstitial cystitis (IC)	Irritable bowel syndrome
Bladder dysfunction	Chronic constipation
Urethral diseases	Diverticular diseases
Bladder neoplasm	Inflammatory bowel disease
Chronic urinary tract infection	Appendiceal diseases
Radiation cystitis	Meckel's diverticulum
Renal stone or urolithiasis	Neoplastic lesions
	Chronic intermittent bowel obstruction

In another study, 45 women scheduled to undergo laparoscopy for CPP were recruited and screened for IC with the Interstitial Cystitis Symptom Index and Problem Index.<sup>8,9</sup> Cystoscopy with hydrodistention of the bladder was performed at the time of laparoscopy. The prevalence of IC was 38%. Of the 21 women with endometriosis 7 (33%) had IC; of the 10 with adhesions, 4 (40%) had IC; and of the 14 with normal results of laparoscopy, 6 (43%) had IC. The presence of IC did not necessarily correlate with the laparoscopic findings. It is therefore not possible to suggest that cystoscopy is necessary only if the results of laparoscopy are negative or to suggest that cystoscopy is unnecessary if endometriosis or other pelvic disorders are found (III-C).

#### Diagnosis

The diagnostic criteria and tests for IC are controversial; Table 6.2 outlines some of those currently recommended. Since the criteria of the NIH and the National Institute of Diabetes and Digestive and Kidney Diseases are too restrictive for clinical use, symptom-based clinical diagnosis has become increasingly popular. Microscopic hematuria and infections should be ruled out with urinalysis and urine culture. If cystoscopy is performed, glomerulation, submucosal hemorrhage, and terminal hematuria may be found. Hydrodistention at the time of cystoscopy is therapeutic in 20% to 30% of patients, who experience relief for 3 to 6 months.<sup>10,11</sup> Cystoscopic findings may help with prognosis, because patients with ulcers and significantly reduced bladder capacity do not respond as favourably to treatment.<sup>10,12</sup> The intravesical potassium chloride (KCl) sensitivity test is a minimally invasive diagnostic test for IC that can be done in the office. It may identify a subgroup of IC patients with epithelial permeability dysfunction and

**Table 6.2 Current diagnostic criteria and tests for IC<sup>10</sup>**

Clinical
Pain and bladder irritability
Exclusion of infection and cancer
Diagnostic symptom scores (e.g., on indexes of O'Leary et al. <sup>9</sup> )
Clinical and cystoscopic (NIH-NIDDK criteria)
Ulcer, non-ulcer IC
Performed with general or spinal anesthesia
60% rate of underdiagnosis
Useful in prognosis
Bladder biopsy
Country- and region-specific
Low diagnostic rate
Morbidity
Treatment predictor
Urodynamics
No need for complex UDS
Sensory or motor instability
Potassium chloride sensitivity test
25% rate of underdiagnosis
High false-positive and false-negative rates
Potentially painful
Urinary markers
Glycoprotein-51 and antiproliferative factor
Potentially useful

NIH: National Institutes of Health; NIDDK: National Institute of Diabetes and Digestive and Kidney Diseases

may predict the response to pentosan polysulfate sodium (Elmiron).<sup>13,14</sup> Only 66% to 75% of IC patients will have a positive KCl test result. False-positive results can occur with detrusor instability, radiation damage, and bacterial cystitis.<sup>14</sup>

### **Treatment**

Treatment options for IC include systemic agents, instillation therapy, and surgical management. Pentosan polysulfate sodium is widely used and probably works by repairing the altered permeability of the bladder surface.<sup>15</sup> Only 28% to 32% of patients will have improvement with this therapy.<sup>13</sup>

One study evaluated retrospectively the use of gonadotropin-releasing hormone (GnRH) analogues or oral contraceptives (OCs) in the treatment of IC with premenstrual flare of symptoms.<sup>5</sup> Of 23 women with known IC who had irritable bladder symptoms that fluctuated with the menstrual cycle, 15 chose to undergo laparoscopy, repeat cystoscopy, and hydrodistention. They were then offered a 6-month course of treatment with either

GnRH analogues or OCs. Symptoms were markedly reduced during therapy in eight of the nine women treated with GnRH analogues but relapsed in five after the treatment was stopped. Of the six women treated with OCs, five improved during treatment. The five women without endometriosis improved with hormonal treatment.

### **Summary**

IC should always be considered in the differential diagnosis of CPP, especially in women presenting with bladder or pelvic pain or dyspareunia, even if the symptoms increase in the premenstrual period. Gynaecologists, urologists, and family physicians should work together to increase their diagnostic accuracy with this unusual condition. Gynaecologic teaching traditionally does not focus on syndromes originating from the bladder. Urologic and gastrointestinal training has not focused on pelvic pain syndromes. IC patients frequently end up in the gynaecologist's office, which helps to explain the usual delay in diagnosis of IC of more than 5 years.<sup>16,17</sup>

## **IRRITABLE BOWEL SYNDROME (IBS)**

IBS affects up to 15% of adults, twice as many women as men.<sup>18</sup> Patients present with abdominal pain and discomfort, bloating, and disturbed bowel habits (diarrhea, constipation, or both). The multifactorial pathophysiology includes altered bowel motility, visceral hypersensitivity, and psychosocial factors.

### **Characteristics and Clinical Significance**

Symptoms suggesting IBS exist in 50% to 80% of patients presenting with CPP.<sup>19</sup> Many women with IBS consult a gynaecologist rather than a gastroenterologist. Gynaecologic disease can also be misdiagnosed as IBS, which indicates an overlap between gynaecologic and gastrointestinal symptoms. In fact, IBS can be associated with dyspareunia, and bowel symptoms worsen during menstruation in 50% of women. There is also an increased prevalence of IBS in women referred for menorrhagia and intermenstrual bleeding.<sup>20</sup> In a study of 728 women referred to a gynaecology clinic, the prevalence of IBS was 37%, compared with 28% in a control group.<sup>21</sup> Of 71 women with CPP presenting to a gynaecologic clinic, 52% had symptoms suggesting IBS.<sup>22</sup> A clear gynaecologic diagnosis was reached in only 8% of those with IBS-type symptoms, compared with 44% of those without such symptoms. After 1 year, 65% of the women with IBS-type symptoms were still symptomatic, compared with 32% of those who had presented without such symptoms. In another study, IBS was diagnosed in 48% of women undergoing diagnostic laparoscopy for CPP, 40% of women undergoing elective hysterectomy, and 32% of age-matched controls.<sup>23</sup> CPP was often the only pre-hysterectomy diagnosis in the IBS patients, and women with IBS were much less likely to have reduced symptoms 1 year after laparoscopy or hysterectomy. Women with severe constipation can also experience CPP, and many undergo unnecessary gynaecologic surgery without pain relief before seeing a gastroenterologist.<sup>24,25</sup>

### **Diagnosis**

The Rome II criteria are currently the standard for clinical diagnosis of IBS.<sup>26</sup> In the preceding year, the patient should have had more than 12 weeks of abdominal discomfort or pain and at least two of the following:

- pain or discomfort that is relieved after defecation,
- association of the onset of pain or discomfort with a change in stool frequency, and
- association of the onset of pain or discomfort with a change in stool appearance.

The following symptoms can also be associated with IBS but are not necessary for diagnosis:

- abnormal stool frequency (fewer than three bowel movements per week or more than three per day),
- abnormal stool form,
- abnormal stool passage (straining, urgency, or the feeling of incomplete evacuation), and
- passage of mucus.

In the presence of bloating or a feeling of abdominal distension, organic disease must be excluded. For patients over the age of 45 years or with rectal bleeding, weight loss, anemia, or a family history of colorectal cancer, colonoscopy or sigmoidoscopy with a barium enema and a flexible instrument should be performed. For patients under the age of 40 and a negative history, evaluation should include sigmoidoscopy with a flexible instrument. Initial laboratory investigation should probably include a complete blood count, measurement of thyroid-stimulating hormone levels, and liver function tests.<sup>27</sup>

### **Treatment**

Dietary manipulation may be of benefit in some patients.<sup>19</sup> Elimination of dietary lactose, sorbitol, and fructose may be of value. About 40% of patients with IBS have lactose intolerance. Caffeinated products, carbonated products, and gas-producing foods should be avoided, because they may contribute to bloating. Smoking and gum chewing lead to more swallowing of air and may increase gas or bloating. Excessive alcohol consumption may lead to increased rectal urgency.

The medical management of IBS is based on the patient's symptoms. If pain is the predominant symptom, antispasmodic agents or tricyclic compounds may be helpful. Constipated patients benefit from increased dietary fibre along with osmotic laxatives, if needed. Many patients have increased gas when they increase their intake of dietary fibre, and about 15% cannot tolerate fibre therapy. Long-term use of stimulant laxatives should be discouraged. Diarrhea can sometimes be managed with increased dietary fibre and with antidiarrheal agents as needed. Loperamide (Imodium) is the most commonly used agent.<sup>28</sup> Serotonin receptor agonists stimulate colonic motility and may diminish visceral hypersensitivity. Peppermint oil, a major constituent of several over-the-counter remedies for IBS, appears, from several randomized clinical trials, to be effective.<sup>29</sup> It decreases abdominal distension, reduces stool frequency, decreases borborygmi, and reduces flatulence. A double-blind, placebo-controlled, randomized study reported a significant reduction in abdominal pain and nausea in premenopausal women with functional bowel disease treated with GnRH analogues.<sup>30</sup> GnRH analogues may help minimize long-term use of

other prescription medications, many of which provide only small improvement over placebo.

Combining psychological treatment with medical therapy improves the clinical response over that with medical therapy only.<sup>31</sup> One study determined that 21% of women under 40 with IBS had undergone a hysterectomy, whereas the national average rate was 6%.<sup>22</sup> Whether this represents inaccurate diagnosis by gynaecologists, the presence of multiple disorders in women with IBS, or an etiologic link between gynaecologic disorders and IBS is not clear.<sup>19</sup>

## SUMMARY STATEMENTS

1. Urinary and gastrointestinal symptoms are often present in women with CPP (II-2).
2. IC is a common cause of CPP and often coexists with endometriosis (III).
3. IBS can coexist with other pelvic diseases or be the sole cause of CPP in women (II-2).
4. Diagnosing IC or IBS in women with CPP will improve management (III).

## Recommendations

1. Cystoscopy by trained specialists, with or without diagnostic laparoscopy, should be considered when interstitial cystitis (IC) is suspected (III-B).
2. Women with chronic pelvic pain will require detailed gynaecologic, urologic, gastroenterologic, and psychological assessment. Appropriate evaluation can lead to optimal treatment and decrease the rate of inappropriate interventions (III-B).

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