Chronic pelvic pain & Dyspareunia:

Chronic pelvic pain (CPP):

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CPP refers to pelvic pain of more than 6 months duration than that has a significant effect on daily function and quality of life.

CPP includes reproductive and non-reproductive organ-related pain. Although CPP is an enigmatic disorder, it is one of the most common presenting complaints in gynecologic practice, as a public health problem, it results in great cost to society in terms of hospital services, loss of productivity and human misery.

Obviously, not all lower abdominal and low back pains are of gynecologic origin, careful evaluation is needed to distinguish gynecological pain from that of orthopedic, gastrointestinal, urologic, neurologic, and psychosomatic origin. The relationship between pelvic pain and underlying gynecologic pathology is often inexplicable, and frequently the pain is thought to be psychosomatic.

Anatomy and physiology:

The innervation of the pelvic organs that convey information related to pain are:

Nerves carrying painful impulses from the pelvic organs:

organ	***Spinal segments***	***nerves***
Perineum, vulva, lower vagina	S2-4	Pudendal,inguinal,genitofemoral, posterofemoral cutaneous
Upper vagina, cervix, lower uterine segment, posterior urethra, bladder trigon, uterosacral and cardinal ligaments, rectosigmoid, lower ureters.	S2-4	Pelvic parasympathetics
Uterine fundus, proximal fallopian tubes, broad ligament, upper bladder, cecum, appendix, terminal large bowel	T11-12,L1	Sympathetic via hypogastric plexus
Outer 2/3 of fallopian tubes, upper ureter	T9-10	Sympathetic via aortic and superior mesenteric plexus
ovaries	T9-10	Sympathetic via renal & aortic plexus and celiac & mesenteric ganglia
Abdominal wall	T12-L1 T12-L1	Sympathetic via renal & aortic plexus and celiac & mesenteric ganglia Iliohypogastric

	T12-L1 L1-2	Ilioinguinal genitofemoral

Painful impulses that originate in the skin, muscles, bones, joints, and parietal peritoneum travel in somatic nerve fibers, whereas those originating in the internal organs travel in visceral nerves.

Visceral pain is more diffusely spread than somatic pain because of the phenomenon called *viscerosomatic convergence*, and the lack of a well-defined projection area in the secondary cortex for this identification*. viscerosomatic convergence* occurs in all second-order neurons in the dorsal horn of spinal cord that receive visceral input. The viscerosomatic neurons have large receptive fields than do the somatic second-order neurons. Visceral pain is therefore usually referred to the skin, which is supplied by the corresponding spinal cord segment (referred pain). For example, the initial pain of appendicitis is referred to the epigastric area because the affected structures are innervated by the thoracic cord segment T8, T9 & T10.

The structures of the female genital tract vary in their sensitivity to pain. The skin of the external genitalia is exquisitely sensitive. Pain sensation is variable in the vagina, and the upper vagina is somewhat less sensitive than the lower. The cervix is relatively insensitive to small biopsies but is sensitive to deep incision or dilatation. The uterus is quite sensitive. The ovaries are insensitive to many stimuli, but they are sensitive to rapid distension of the ovarian capsule or compression during physical examination.

Patient evaluation:

- ***History:*** a pain history should be obtained during the first visit, characteristics of the pain should be determined, including its location, radiation, severity, alleviating and aggravating factors, as well as the effect of menstruation, level of stress, work, exercise, systems should be ascertained. This process can be guided by the pain history Mnemonic outlined in the below:
    - ***Onset:*** when and how did the pain start? Does it change over time?
    - ***Location:*** localize specifically- can the woman out a finger on it?
    - ***Duration:*** *how long does it last?*
    - ***Characteristics:*** e.g. cramping, aching, stabbing, and itching.
    - ***Alleviating/aggravating factors:*** what makes it better (e.g. change of position, medication, stress reduction) or worse (e.g. menstrual cycle, stress, specific activity)
    - ***Associated symptoms:***

- ***Gynecologic*** (e.g. dyspareunia, dysmenorrhea, abnormal bleeding, discharge).
- ***Genitourinary*** (e.g. urinary frequency, dysuria, urgency, incontinence).
- ***Gastrointestinal*** (e.g. constipation, diarrhea, bloating, gas, rectal bleeding).
- ***Neurological*** (specific nerve distribution of the pain).

- ***Radiation:*** does the pain move to other areas of the body?
- ***Temporal:*** time of the day and relationship to daily activities.
- ***Sensitivity:*** on a scale of 0 to 10 (from no pain to severe imaginable).

- ***Physical examination:***

  The abdomen should be examined initially, and the patient should be asked to point to the exact location of the pain and its radiation. An attempt should be made to duplicate the pain by palpating each abdominal; quadrant. The severity of pain should be quantified on a 0 to 10 scale (0=no pain, 10= hitting thumb with a hammer).

  The abdominal wall should be examined for myofascial trigger points and for iliohypogastric (T12, L1), ilioinguinal (T12, L1) or genitofemoral (L1, L2) nerve entrapment. Each dermatome of the abdominal wall and back should be palpated with a fingertip and points of severe tenderness or "jump sign" should be marked with a pen. The patient should be asked to tense the abdominal muscles by performing a straight-leg rising maneuver (both legs raise at least 6 inches with both knees straight) or a partial sit-up. Points that are tenderer or that reproduce the patient's pain suggest nerve entrapment, impingement, or a muscular trigger point pain. These points should be injected with 2 to 3 ml of 0.25% bupivacaine. Chronic abdominal wall pain is confirmed if the pain level is reduced by at least 50% and outlasts the duration of the local anesthetic.

  A thorough pelvic examination should be performed with an attempt made to reproduce and localize the patient's pain. The examination should be performed gently so as to prevent involuntary guarding, which may obstruct the findings, the examination may be suggestive of specific pelvic pathology. For example, patient with endometriosis may have a fixed retroverted uterus with tender uterosacral nodularity. An adnexal mass may suggest ovarian pathology. Bilateral tender irregularly enlarged adnexal structures may suggest prior salpingitis with subsequent formation of adhesions and bilateral hydrosalpinges. A prolapsed uterus may account for pelvic pressure, pain, or low backache.

- ***Further investigations:***

  Psychological evaluation should be requested if an obviously traumatic event has occurred with the onset of pain; if there is obvious depression, anxiety, catastrophizing,

psychosis, or secondary gain; or to aid in the planning of pain management cessions. The latter may involve cognitive behavioral and stress reduction therapy.
Laboratory studies are of limited value in the diagnosis of CPP, although CBC, ESR and urinalysis are indicated. ESR is not specific and will be increased in any type of inflammation, such as subacute salpingo-oopheritis, TB, or inflammatory bowel disease. Patients who are engaging in sexual intercourse should have a pregnancy test if they have a uterus and are not postmenopausal. Pelvic ultrasonography should be performed because the pelvic examination may miss, particularly in obese patients or in those who are unable to relax. Routine urine analysis and studies to rule out STD are indicated depending on patient's symptoms and risk factors. If bowel or urinary symptoms are present, an abdominal and pelvic CT scan, endoscopy, cystoscopy, or CT urogram may be useful. Similarly, if there is clinical manifestation of musculoskeletal disease, a lumbosacral X-ray, CT scan, MRI scan, or orthopedic consultation may be in order. **Diagnostic laparoscopy is the ultimate method of diagnosis for patients with CPP of undetermined etiology.** Laparoscopic examination and bimanual examination may differ in 20-30% of cases. Laparoscopy should be performed if no etiology for the pain can be identified, or when indicated to treat specific pathology.

Differential diagnosis:

Causes of CPP:

Of women with CPP who are subjected to diagnostic laparoscopy, approximately a third have no apparent pathology, a third have endometriosis, somewhat less than the remaining third have adhesions or stigmata of past PID, and the small reminder have other causes;

1. Endometriosis.
2. Salpingo-oopheritis (PID).
3. Ovarian remnant syndrome.
4. Pelvic congestion syndrome.
5. Cyclic pelvic (uterine) pain.
6. Myomata uteri (degenerating).
7. Adenomyosis.
8. Adhesions.

- ***Endometriosis:***

Endometriosis may be missed visually at the time of diagnostic laparoscopy in 20-30% of women who have histologically proven disease, so it is justifiable to initiate hormonal treatment based on presumptive diagnosis of the disease once other diagnosis have been

ruled out. Current hormonal therapies are often very effective and may be preclude the need to undergo a costly surgical procedure that is not without risk.

The size and location of the endometriotic implants do not appear to correlate with the presence of pain, and the reason for the pain are not fully understood, although prostaglandins, cytokines, and innervation of lesions have been hypothesized.

- ***Chronic Pelvic Inflammatory Disease:***

  Chronic PID may cause pain because of anatomic distortions (hydrosalpinges and adhesions between the tubes, ovaries, and intestinal structures) that result from acute infection. It is also thought that PID may lead to "upregulation" of sensory processing from the previously inflamed tissue. Persistent active infection is called acute PID, even if fever and peritoneal signs are absent. Recurrent active infections that require antibiotic therapy must be ruled out.

- ***Adhesions:***

  Before ascribing symptoms to adhesions, one must have specifically noted adhesions, one must have specifically noted adhesions in the area of pain localization, because must patients with extensive pelvic adhesions discovered incidentally during surgery for other reasons are symptomatic**.**

- ***Ovarian Pain:***

  Ovarian cysts are usually asymptomatic, but episodic pain may occur secondary to rapid distension of the ovarian capsule or rupture or leakage of irritating fluid into the peritoneal cavity. An ovary or an ovarian remnant may occasionally become retroperitoneal secondary to inflammation of previous surgery, and cyst formation in these circumstances may be painful. Some women for unknown reasons, may develop multiple recurrent hemorrhagic cysts that seem to cause pelvic pain and dysparunia on an intermittent basis.

  Hormonal suppression of ovulation is usually an effective treatment for painful functional cysts. An ovarian cyst may also be an endometrioma, and if this is suspected based on history, physical examination, and U/S, surgical excision is usually indicated. Other benign and malignant ovarian neoplasms can contribute to CPP, but are often asymptomatic, a benign cystic teratoma (dermoid) for example can intermittently twist, and untwist, causing repeated episodes of subacute pain.

- ***Uterine Pain:***

  Adenomyosis (or endometriosis interna) can cause dysmenorrhea, dyspareunia and menorrhagia, but rarely it cause chronic daily intermenstrual pain.

Uterine myoma does not cause pelvic pain unless they are generating, undergoing torsion (twisting on their pedicles), or compressing nerves. A completely submucous leiomyoma can attempt to deliver via the cervix, which may cause considerable crampy uterine pain akin to childbirth. This is generally associated with heavy vaginal bleeding. During pregnancy, uterine myomas can cause pain from rapid growth or

Pelvic pain is not likely to be caused by variation of uterine position, **but deep dyspareunia may occasionally be associated with uterine retroversion,** especially when the uterus is fixed in place by adhesions or endometriosis. This pain has been ascribed to be irritation of pelvic nerves by the stretching of the uterosacral ligaments as well as to congestion of pelvic veins secondary to retroversion. A tender uterus that is in affixed retroverted position usually signify other intraperitoneal pathology, such as endometriosis or PID, and diagnosis rest on laparoscopic findings.

- ***Pelvic Congestion Syndrome:***

The consent of pelvic congestion syndrome still has many proponents. This entity has been described in multiparous women who have pelvic pain varicosities and congested pelvic organs. The pelvic pain is worse premenstrually and is increased by fatigue, standing and sexual intercourse. Many women with this condition are noted to have a mobile, retroverted, soft, boggy and slightly enlarged uterus. There may be associated menorrhagia and urinary frequency. Dilated veins may be seen on pelvic MRI with contrast. Factors other than venous congestion maybe involved in the genesis `of pain, because most women with pelvic varicosities have no pain. Surgery for this condition, consisting of hysterectomy and oophorectomy, maybe beneficial for women who have completed their families, as is ovarian hormonal suppression (decreased blood flow to the pelvic organs) and cognitive behavioral therapy. A few uncontrolled studies have suggested that embolization of involved veins by an interventional radiologist may be helpful.

- ***Genitourinary Pelvic Pain:***

A variety of GU problems may result in CPP. **Urethral syndrome, trigonitis, and interstitial cystitis/painful bladder syndrome, are prime examples. Urinary urgency, frequency, nocturia and midline pelvic pain, may suggest interstitial cystitis/painful bladder syndrome.** A thorough genitourinary evaluation is an important part of the workup for the CPP when the above symptoms are reported.

- ***Gastrointestinal Pain:***

GI sources of CPP include penetrating neoplasms of the GIT, IBS, functional abdominal pain syndrome (FAPS), celiac disease, partial intestinal obstruction, inflammatory bowel disease, diverticulitis, and hernia formation.

Because of the innervation of the lower intestinal tract is the same of that of the uterus and fallopian tubes, pelvic pain may be confused with pain of gynecological origin. IBS is the most common GI cause of pelvic pain. Pain that is present at time of alteration of form or frequency of bowel movements, increased before and improved after a bowel movements, and especially is worse with stress and eating, may be IBS. Red flags for a possible GI malignancy include onset of pain over age of 50, family history of bowel cancer, blood in the stool, nocturnal pain, and alteration of stool caliber.

- ***Neuromuscular Pain:***

  Pain of neuromuscular origin, which is experienced as low back pain or abdominal wall pain, usually increases with activity and stress. Triggered points and myalgia of the abdominal wall and pelvic floor muscles can cause pelvic pain, vulvodynia and dyspareunia. Chronic back pain without lower abdominal pain is seldom of gynecologic origin. Fibromyalgia or generalized myofascial pain syndrome can also cause pelvic pain. Occasionally, neuromuscular symptoms are accompanied by a pelvic mass on examination or diagnostic imaging, or surgical exploration may reveal a neuroma, sarcoma, or bony tumor. Entrapped or compressed nerves in the abdominal wall (iliohypogastric and ilioinguinal nerves most commonly) or pelvic floor (pudendal nerve) are often unrecognized sources of pain. The nerves may become entrapped after surgery, physical trauma, pregnancy and delivery, or occupational injury.

Psychological factors:

A pathologic diagnosis may not be made in approximately 1/3 of patients with CPP, even after laparoscopy. This has led to the postulation that ***psychological factors*** may be the primary. ***When subjected to the*** **Minnesota Multiphasic Inventory (MMPI) these patients have shown a greater degree of anxiety, hypochondriasis, and hysteria than controlled subjects. The profiles are similar, however, in patients who have chronic pain with organic pathology, indicating that chronic pain per se engenders a complex, debilitating, psychological response.** Patients with chronic pain with or without anatomic pathology, tend to feel depressed, anxious, fearful, helpless and passive. They withdraw from social and sexual activity and are overwhelmed by pain and suffering. Many have Post Traumatic Stress Disorder (PTSD) from endometrial. Physical, or sexual trauma. ***Women with chronic pelvic pain are also at risk of developing chronic fatigue syndrome.*** Women with depression, anxiety or PTSD must be treated with psychological or psychopharmacological therapy as part of multidisciplinary management of CPP.

Management:

When treating patient with CPP, a therapeutic, supportive, and sympathetic (but structured) physician-patient relationship should be established. The patient should be given regular

follow-up appointments, and should be not told to call only if the pain persists. This reinforces pain behavior as a means of procuring sympathy and medical attention.

A negative evaluation or pathological findings not amenable to therapy (e.g. dense pelvic adhesions) does not mean that the patient should be discharged from care without therapy directed toward her symptoms.

After initial reassurance that there is no serious underlying pathology and education as to the likely mechanisms of pain production (including CNS factors), symptomatic therapy should be undertaken. The symptoms of pain should be approached with the seriousness and direction afforded to any other condition.

The multidisciplinary team:

The most productive strategy for the management of patients with CPP is a multidisciplinary approach.

- The personal should include ***a gynecologist*** who should has expertise in chronic pain, sexual and marital counselling.
- ***A physical therapist*** with pelvic floor muscle expertise, and for more complex cases requiring diagnostic or therapeutic nerve blocks.
- ***Anesthesiologist is also included***.
- ***An acupuncturist*** may also be a useful referral.it is the role of psychologist to provide cognitive behavioral pain management and stress reduction, assertiveness training, and adaptive coping strategies, as well as marital and sexual counselling.
- ***Psychiatric*** referral for psychopharmacological therapy may be needed. This aspect of therapy is crucial, because many of these patients have become severely depressed and often withdrawn interpersonally, sexually and occupationally. Depression may be secondary to pain, but without treatment of depression, the pain may persist.

Relaxation, cognitive and behavioral therapies are employed to replace the pain behavior and its secondary gain with effective behavioral responses.

Multidisciplinary management has been shown to be more effective than traditional gynecologic management.

Medical and surgical management:

- ***The gynecologist*** consists to assess progress, coordinate care, and provide periodic gynecologic examinations.
- In the initial stages of therapy, ***a trial of ovulation and or menstrual suppression with combined hormonal contraception (pills, patches rings, cyclic or continuous), high-dose or intrauterine progestin or gonadotropins-releasing hormone analogue (GnRH-a) may be helpful***.

- Ovulation and/or menstrual suppression is especially helpful who have midcycle, premenstrual, or menstrual exacerbation of pain, or in those who have ovarian pathology, such as periovarian adhesions or recurrent functional cyst formation.
- ***NSAIDs*** are also useful, pharmacologic approaches to increase inhibitory neuromodulators such as norepinephrine, serotonin (5-HT), and GABA or sodium channel blockers are frequently used in the form of tricyclic antidepressants, selective serotonin reuptake inhibitors (SSRIs), anticonvulsants or other GABA-ergic agents, or topical or injectable local anesthetics.
- ***Surgical procedures that have not proved to be effective for CPP without pathology include unilateral appendectomy for unilateral pain or total abdominal hysterectomy, presacral neurectomy or uterine suspension for generalized pelvic pain.***
- ***Lysis of adhesions is also usually nonproductive***, with the possible exception of the situation where the site of adhesions, as visualized by laparoscope, specifically coincide with the sit of pain. However, pelvic adhesions often recur following surgical lysis.
- Without proof of organic pathology or a reasonable functional explanation of the pelvic pain, a thorough ***psychosomatic evaluation*** should be carried out before any surgical procedures is considered.

Injection therapy:

- ***Acupuncture, nerve blocks, and trigger-point injections of local anesthetics may provide prolonged pain relief.***
- Acupuncture has been used usefully for dysmenorrhea, and trigger-point injections and nerve blocks with LA has been used successfully for neuropathic and musculoskeletal pain.
- Acupuncture probably ***increases spinal cord endorphins***. In women with CPP, trigger-points are typically found either in the lower abdominal wall, lower back, or the vagina.
- A significant percentage of patients with CPP have abdominal wall trigger-points or nerve entrapments that respond to ***weekly or biweekly injections of a LA (usually up to 5 injections is sufficient)*** combined with alterations of activity or modification of behaviors that affect the area of pain.
- Repeated LA nerve blocks of areas of nerve entrapment combined with instructions to patients about alteration in physical activity and or physical therapy can be helpful.
- ***Along with nerve threshold altering medications, these interventions can down regulate neural hypersensitivity and permanently decrease or eliminate pain.***

Dyspareunia:

It is recurrent or permanent genital pain associated with sexual intercourse. This is the only sexual disorder in which physical factors are thought to play a major etiological role. However, the psychological and interpersonal factors are significant. The organic causes for this condition are discussed below:

Main causes of superficial dyspareunia (superficial vulval & vaginal pain at intercourse):

- Vulvitis &vulvovaginitis (infection, hypo-estrogenic).
- Vestibulodynia (provoked vulval pain)
- Topical irritants/dermatitis.
- Urethral disorders and cystitis.
- Vaginismus.
- Lack of vaginal lubrication (arousal problems).
- Obstetric perineal trauma, mainly episiotomy.
- Radiation vaginitis.

Main causes of deep dyspareunia:

- Pelvic inflammatory disease PID.
- Endometriosis.
- Genital or pelvic masses e.g. ovarian cyst.
- Pelvic congestion syndrome.
- UTI.
- Retroverted uterus in some women.
- IBS.
- Psychosexual issues.

In addition to gynecological treatment approaches, women may require an adjunctive course of cognitive-behavioural sex therapy to ensure good outcomes.

Vaginismus:

It is the involuntary spasm of the pubococcygeal and associated muscles causing painful and difficult penetration of the vagina, during sex, tampon insertion or clinical examination.

Primary vaginismus occurs when a woman has never experienced vaginal penetration.

Secondary vaginismus: is diagnosed when the problem occurs after previous successful vaginal penetration.

Usually at the root of vaginismus is a combination of physical or non-physical triggers that cause the body to anticipate pain. The body reacts to this by automatically tightening vaginal muscles, which makes sex more painful and this response becomes the “cycle of pain”.

Causes of vaginismus:

- No cause found.
- Sexual abuse.
- Physical abuse.

- Painful medical procedure in the perineal area.
- Painful first intercourse.
- Relationship problems/anger between couples.
- Fear of pregnancy/labor.
- Poor sexual education.

Treatment:

- There needs to be discussion about the main issues in the relationship and how the woman feels about touching her genitalia.
- Behavioral therapy comprising systemic desensitization, pubococcygeal muscle training and the use of vaginal trainers works well.