"Pudendal neuropathy"

or

"Pudendal nerve entrapment" (PNE)

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“The same nerve that can cause pain in the anus, vagina and clitoris is also responsible for the sensation of an orgasm.”

A. Lee Dellon, MD, PhD

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* What is "Pudendal nerve entrapment" (PNE)?
* Anatomy of the Pudendal nerve
* Symptoms of Pudendal nerve entrapment
* Causes of pudendal nerve entrapment
* Diagnosis of pudendal nerve entrapment
* Treatment Options of pudendal nerve entrapment:

1. Lifestyle changes
2. Medication Management
3. Physical Therapy
4. Botox
5. Pudendal Nerve Blocks and Pudendal Nerve Blocks Australia
6. Pudendal Nerve Decompression Surgery
7. Neuromodulation
8. Intrathecal Pain Pump
What is "Pudendal nerve entrapment" (PNE)?

Compression or stretching of the pudendal nerve induce what so called:

"Pudendal neuropathy"

or

"Pudendal nerve entrapment" (PNE)

Historically, the first approach to decompress the pudendal nerve was described by Professor Ahmed Shafik MD, from the Department of Surgery at Cairo University in Egypt in 1991.

Pudendal nerve entrapment (PNE) or Pudendal neuralgia:

A condition where the pudendal nerve becomes trapped or compressed. The problem can arise due to such things as pregnancy, postsurgical scarring and trauma but may also occur due to a birth malformation.

Bicycle riding (bicycling) can also result in the condition. Heavy and prolonged bicycling, especially if an inappropriately shaped or incorrectly positioned bicycle seat is used, may eventually thicken the sacrotuberous and/or sacrospinous ligaments and trap the nerve between them, resulting in Pudendal nerve entrapment (PNE).

Pudendal nerve entrapment (PNE) or Pudendal neuralgia is a pain condition for no apparent reason which arises from compression of the pudendal nerve, which cause chronic pelvic pain in the lower central pelvic areas, as in the perineum, anal region, genital areas, and including one type of vulvodynia.

Anatomy of the Pudendal nerve

The pudendal nerve is a mixed nerve carrying motor and sensory fibers. Its fibers are derived from the sacral roots S2, S3 and S4. Once the roots traverse the sacral foramen, they divide into :

- Autonomic branches forming the pelvic plexus (parasympathetic supply of the pelvic organs) and

- Somatic branches merging to form the pudendal nerve travelling under the pyriformis muscle.
The pudendal nerve enters the gluteal region through the lower part of the greater sciatic foramen (Figs. 1 and 2A, 2B).

The nerve is accompanied by the internal pudendal artery and is surrounded by a venous complex; together this group of structures is referred to as the neurovascular pudendal bundle.

The pudendal bundle hooks around the sacro-spinous ligament near its attachment to the ischial spine.

Caudally, the pudendal nerve enters a small space ("clamp") between the sacro-spinosus and sacro-tuberous ligaments very near the ischial spine.

The pudendal bundle first enters the perineum through the lesser sciatic foramen (Figs. 2A and 2B) and courses through the ischio-anal fossa and then through the pudendal (Alcock's) canal that is formed by the duplication of the obturator fascia (or formed by a division of the obturator muscle aponeurosis.) on the lateral wall of the ischio-anal fossa.

In the canal the nerve cross the sharp edge of the sacro-tuberous ligament (falciform process).

Either just before entering the pudendal canal or just within it, the pudendal bundle gives rise to the inferior rectal nerve (inferior anal nerve), (usually two branches) which crosses the ischio-anal fossa toward the anal canal and the external anal sphincter muscle.

Inferior rectal nerve (inferior anal nerve) innervate the anal sphincter (and probably the pubo-rectalis) and the skin of the posterior perineum and anterolaterally the transverses perinei branch (for this muscle and for the ischiocavernosus muscle).

Within the pudendal (Alcock's) canal, the pudendal nerve divides into two terminal branches, the perineal nerve and the dorsal nerve of the clitoris or penis. (Figs. 2A and 2B).

Pubic Ramus Canal:

The final branch of the pudendal nerve, the dorsal nerve of the clitoris in women exits Alcock’s canal to enter a fibrous tunnel with the pubic ramus. The dorsal nerve then exits this fibrous canal beneath the fibrous arcade just beneath the pubic symphysis to innervate the clitoris.
When the pudendal nerve exits the pudendal (Alcock's) canal anteriorly, it will then enter **pubic ramus canal** (which is a separate anatomic region) in which the pudendal nerve can be entrapped, and this is termed **PUBIC RAMUS TUNNEL SYNDROME**.

Symptoms related to the pubic ramus canal syndrome relate only to the **dorsal nerve of the clitoris** of the pudendal nerve, whereas those related to entrapment can be due to both the dorsal branch and the perineal branch.

**Fig. 1.** — Schematic anatomy of deep dissection of gluteal region.
Most of gluteus maximus and medius muscles have been removed. Segment of sacrotuberous ligament also has been removed, revealing pudendal nerve. Pudendal nerve emerges from pelvis in inferior relative to piriformis muscle and enters gluteal region medial relative sciatic nerve, superficial relative to sacrospinous ligament, and deep relative to sacrosacrotuberous ligament. After coursing around sacrospinous ligament, pudendal nerve re-enters pelvis.
(Courtesy of the Mayo Foundation)

**Fig. 2A.** — Schematic anatomy of pudendal nerve. (Courtesy of the Mayo Foundation) Drawing illustrates pudendal nerve arising from sacral nerve roots S2–S4, exiting pelvis to enter gluteal region through lower part of greater sciatic foramen and reentering pelvis through lesser sciatic foramen.
Pudendal nerve gives rise to inferior rectal nerve, perineal nerve, and dorsal nerve of clitoris.
Fig. 2B. —Schematic anatomy of pudendal nerve. (Courtesy of the Mayo Foundation) Drawing shows pudendal nerve in pudendal (Alcock’s) canal. Inferior rectal nerve arises from pudendal nerve before entering canal. Note location of falciform process of sacrotuberous ligament, which is possible site for pudendal nerve entrapment.

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2- Entrapment: Anatomy and CT-Guided Perineural Injection Technique
David M. Hough¹, Keith H. Wittenberg¹², Wojciech Pawlina³, Timothy P. Maus¹, Bernard F. King¹, Terri J. Vrtiska¹, Michael A. Farrell¹ and Stanley J. Antolak, Jr.⁴

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Citation: American Journal of Roentgenology. 2003;181:561-567

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3- Dr. A. Lee Dellon, MD, PhD (at the DELLON INSTITUTE FOR PERIPHERAL NERVE SURGERY) in his book, Pain Solutions, Chapter 12, Chronic Pelvic Pain.
**Symptoms of Pudendal nerve entrapment**

The main symptoms is **pain** in one or more of the areas innervated by the pudendal nerve or one of its branches. These areas include the rectum, anus, urethra, perineum, and genital area, in women this includes the clitoris, mons pubis, vulva, lower 1/3 of the vagina, and labia. The symptoms can start suddenly or develop slowly over time.

**Pudendal nerve entrapment (PNE) (Pudendal neuralgia)** is a known cause of **chronic perineal pain**, women is complaining of pain in the **vulva, labia, perineum, or ano-rectal region**.

**Pudendal nerve entrapment (PNE) (Pudendal neuralgia)** is a clinical diagnosis made in patients with the typical history of perineal pain aggravated and increased by sitting, relieved by standing, and absent when recumbent or sitting on a toilet seat. Pain, prickling sensation, stabbing sensation, paresthesia loss of sensation, burning sensation, numbness, increased sensitivity to stimuli and increased sensitivity to pain in **genital and rectal regions**. Buttock paresthesia and buttock pain. Radiating lower back pain.

Urinary **urgency** and urinary **incontinence**. Stress urinary incontinence may associated with vulvar pain.

**Urethral** burning with or after urination. Foreign body sensation in urethra.


Pudendal nerve entrapment may cause leakage of urine or stool, conditions referred to as urinary incontinence and bowel incontinence. Problems with anal sphincter functions may also cause chronic constipation or rectal pain.

Sexual dysfunction, perineodynia (pain), and pain during or after intercourse. Perineal and vulvar hypoesthesia or hypersensibility, foreign body sensation in vagina. Loss of sensation with difficulty achieving orgasm.

“**The same nerve that can cause pain**
In the anus, vagina and clitoris is also responsible
For the sensation of an orgasm.”

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Strange sexual feelings as **persistent genital arousal disorder (genital arousal without desire)** or the opposite problem - loss of sensation.
Idiopathic **vulvodynia** with unknown etiology.

Pudendal nerve block, as a diagnostic and therapeutic test, effected temporary pain relief.

Jacques Beco M.D. Liege University Belgium,( August 23, 2010 ) summarized the symptoms and signs as:

* **Symptoms**: if women complaining of:

  *Pee pee . . . .
  *Poo poo . . . .
  *Sex . . . .

**Think about: Pudendal nerve entrapment (PNE)**

* **signs**
  1 – Perineal hypo or hyperesthesia (pinprick)
  2 – Painful pudendal nerve during rectal examination.
  3 – Painful "skin rolling test" of the perineal skin.

**Causes of pudendal nerve entrapment**

The entrapment of the pudendal nerve is often caused by pressure, compression, pelvic trauma as fall on the buttock (the coccyx) or a car accident.

**Bicycle riding (bicycling)** (the most classical cause), Prolonged sitting at work and frequent long drives and vaginal delivery are a common cause of compression to the nerve.

Some of the possible causes are frequent infections of the nerve or autoimmune illness.

It can be caused by pregnancy, scarring due to surgery, accidents and surgical complications (traction on the pelvis during orthopedic surgery and sacro-spinal fixation) also anatomic abnormalities can result in **Pudendal nerve entrapment (PNE) (Pudendal neuralgia)** due to the pudendal nerve being fused to different parts of the anatomy.
Injury of the pudendal nerve due to stretch for a long period of time during surgery or delivery, often this eventually subsides and some women continue feel the pain.

Stretch of the pudendal nerve due to genital prolapse lead to pain caused by pudendal nerve entrapment.

**Pudendal nerve entrapment (PNE)** being compressed in different parts of its course, it is most commonly compressed at:

- Between the sacro-tuberous andsacro-spinalis ligaments (about 70% cases).
- Within the pudendal canal of Alcock (20% cases)
- While straddling of the falciform process of the sacro-tuberal ligament by the pudendal nerve and its branches.
- In the area of the **pubic ramus canal**.
- Any where along the course of the pudendal nerve or its branches.

**Diagnosis of pudendal nerve entrapment**

Women with **chronic pelvic pain** will often visit many gynecologists, urologists, imaging specialists, gastroenterologists, neurologists and pain specialists before finding the correct diagnoses.

**Pudendal nerve entrapment** is seldom diagnosed correctly in a short period of time. Many are being misdiagnosed over and over, some even having inappropriate and unnecessary surgeries.

Sadly, many are being labeled by doctors who cannot figure out what is wrong with them as **“head cases”** and are sent off to psychiatrists.

The diagnosis is usually made based on:

1. **Patient’s symptoms.**
2. **History.**
   If the women is exercising or cycling heavily, has an accident, pelvic surgery, vaginal delivery, or she sitting long hours?
   Is pain in the distribution area innervated by the pudendal nerve?
3. **Examination.**
   The exam should include a pelvic exam. The most constant sign is an increase of the pain when **touch** the ischial spine area, Alcock’s canal and
piriformis muscle. Is there increased pain or tenderness when press along the course of the nerve during the vaginal examination?

4. **Exclusion of other illnesses** such as infection, as urinary tract infections, vaginal infections, or sexually transmitted diseases, also ruled out multiple sclerosis and colo-rectal cancer.

*While no test is 100% accurate.*

**Some of the more commonly used tests are:**

1. **Electrophysiological testing including:**
   *
   * Electromyogram (EMG) and
   * The pudendal nerve motor latency test (PNMLT).

The pudendal nerve motor latency test (PNMLT) which measures the speed of nerve conduction. During this exam, the pudendal nerve is stimulated electrically inside vagina at the ischial spine with electrodes on the tip of a special glove and the other end is a small needle inserted in the perineum, the speed of the nerve conduction is recorded.

The neurological examination can be completed by the measurement of the **anal reflex latency,**

Pudendal nerve latency is the measurement of the time from stimulation of the pudendal nerve at the ischial spine to the response of the external anal sphincter.

Normal pudendal nerve terminal motor latency is $< 2.2$ milliseconds or less."

Although the PNMLT examines only the **motor** function of the nerve and here is no way to test the sensory fibers of the nerve which transmit pain, but, if the nerve (motor fibers) responds **slower** than normal, this gives an indication that the nerve may be entrapped or damaged.

Results of these tests are not 100% accurate for a diagnosis of pudendal nerve entrapment (PNE) but they can help add to the overall picture as to how well the nerve is functioning.

2. **Magnetic resonance neurography MRI and CT scans:**

Although MRI and CT scans cannot see the nerves, but they are important to exclude any obvious problems such as tumors or spinal abnormalities or other causes of nerve compressions especially at the level of the spine.
3. **Pelvic floor physical therapy**

It is difficult to distinguish between pudendal nerve entrapment (PNE) and pelvic floor dysfunction (PFD), women with PNE are less likely to have good results from a course of pelvic floor physical therapy which aims to relax the contracted pelvic floor muscles.

4. **Pudendal nerve blocks.**

"Blockage of the nerve", is an injection with a local anesthetic to the area of pudendal nerve location (not inside the nerve) near the ischial spine where it is most often entrapped between the sacro-spinous and sacro-tuberous ligaments.

One block for each side affected is necessary. If the pain diminishes immediately or even vanishes completely as long as the effect of the local anesthetic persists, this is an indication that the pudendal nerve may be compromised in some fashion, and that possibly some damage to the nerve has occurred.

The techniques often done under guidance of any kind of imaging, like MRI, CT, X-ray (fluoroscope), or Ultrasound for the accuracy.

Without the accuracy these imaging systems provide, it is difficult or impossible to know if the needle tip is located correctly.

Pudendal nerve blocks can also be guided by stimulation of the nerve to detect the exact area to inject.

The nerve can be stimulated trans vaginally and trans rectally, to avoid some fallacies it should be done by an experienced physiatrist or neurologist is important.

There are two main types of injected liquids:

- A local anesthetic (short term effect – diagnostic procedure) and
- Slow-release steroids (long term effect – therapeutic procedure). Also, Heparin and anti-inflammatory medication may be used, instead of steroids.

Two main locations are used:

- The ischial spine block is done by injecting into the sacrospinous ligament.
• Alcock's canal block is done by injecting into the sacrotuberous ligament.

Pudendal nerve blocks success is evaluated and proved by loss of sensation and numbness of anal, perineum and clitoral areas.

If there is temporary relief of pain this is considered a positive response to the nerve block and the pudendal nerve is likely the culprit.

If there is no temporary relief of pain after the block there are several possibilities:
1. The pain is not caused by the pudendal nerve or
2. The injected medication did not get close enough to the nerve to provide any relief. If this occurs and there is no loss of sensation in the distribution of the pudendal nerve, the physician may order another block to ensure that pudendal neuralgia can be ruled out.

None of the diagnostic tests for PN and PNE are 100% accurate so the more of these tests you have the better your overall picture will be in determining your diagnosis.

The final diagnosis of pudendal neuralgia is based on a person having several or all of these criteria:

- Typical pudendal nerve entrapment (PNE) symptoms.
- An abnormal electro-physiological test.
- A positive response to the nerve block.
- A distinct abnormality on a MRI or an CT.
- Pain elicited upon pressing along the course of the nerve.
- Elimination of other diseases being the cause.

Treatment Options of pudendal nerve entrapment:

1. Lifestyle changes
2. Medication Management
3. Physical Therapy
4. Botox
5. Pudendal Nerve Blocks and Pudendal Nerve Blocks Australia
6. Pudendal Nerve Decompression Surgery
7. Neuromodulation
8. Intrathecal Pain Pump

1. **Lifestyle changes**

Although Lifestyle changes are extremely difficult, but it should be a permanent lifestyle changes and not just temporary lifestyle changes. Once the nerve is inflamed and/or entrapped, women need to take care of it for the rest of life to avoid further damage to the nerve. Lifestyle changes alone could improve the problem.

*Here is a list of things to avoid:*

**A. Certain Exercises**

Walking in straight (not inclining not sloping roads) is a safe exercise. Swimming is also a safe exercise except breaststroke type in which swimmer flex her hip, this flexion leads to more stretch and more trauma to the nerve.

Here is a list of exercises that should be **avoided** by patients who might have PNE. This list was developed by Dr. Stanley Antolak, in Minnesota. Squatting, Piriformis stretches, Gym work outs, Stair Master, Ellipse, Exercise cycle, Lifting, Bowling, Abcrunches, Leg presses, Pilates, Step aerobics, Yoga, Skiing, Sit-ups, Jogging and Spinning.

Bending is also something to avoid. When a person bends, the pudendal nerve may not be able to glide normally if entrapped which may result in a stretch injury to the nerve.

Cycling (riding a bicycle) and sitting for long time daily, also, are should be avoided, because the pressure done by the bicycle saddle or hard chairs lead to hypoxia and pudendal nerve trauma due to compression of the area.

It is important to avoid riding a bicycle or bike excessive sitting to prevent possible irreversible nerve damage.
B. Constipation

Constipation should be avoided. Straining accompanying constipation leads to stretching of pudendal nerve, leads to its injury or its damage.

Eating fiber regularly as in fruits, vegetables, beans and whole-grain cereals and breads. Drinking plenty of liquids. Increasing physical activity. Going to the toilet once feeling of the urge. Usage medications to treat constipation.

2 – Medication Management:

Medication treatment is one of the options for patients with pudendal neuralgia. Medication could be extremely helpful for treating pudendal neuralgia. Medication treatment options for patients with pudendal neuralgia symptoms and signs as sensory dysfunction and motor dysfunction as well, such as urinary or fecal incontinence, also the secondary myofascial pain. Different drug types may be used as oral, topical, suppositories (vaginal or rectal).

- NSAIDs like ibuprofen and others could helpful.
- Muscle relaxers may be helpful in reducing the pelvic floor muscle tension associated with pudendal neuralgia.
- Sometimes diazepam (valium), oral, injection and suppositories reducing the pelvic floor muscle tension. Diazepam (valium), also lorazepam (atiwan) could be used.
- Lidocaine cream/patch forms and Capsaicin cream, which contains an extract of chili peppers, both could be used topically to relieve the pain.
- Belladonna and opioid suppositories and valium suppositories can induce relaxation of the pelvic floor muscles.
- Tricyclic antidepressants (Amitriptyline)
- Serotonin specific reuptake inhibitors (SSRIs).
- Anticonvulsants: The most widely used for pudendal neuralgia are pregbalin (Lyrica) and gabapentin (Neurontin).
- Tramadol for treating pudendal neuralgia, it acts as tricyclic antidepressants by inhibition of norepinephrine reuptake and release of serotonin.
- Baclofen decreases the response of nerves to electrical stimulation and other pain stimuli. Ketamine, seems to relieve continuous pain.

3- Physical Therapy
Physical therapy is important in treating many cases of pudendal neuralgia by highly specialized understanding therapist. Some goals and procedures of physical therapist are:

**Eradicate myofascial trigger points.**

What is "trigger point", this term was invited by Dr. Janet Travell (1942) to describe a clinical finding with the following characteristics:

*Pain related to a discrete, irritable point in skeletal muscle or fascia, not caused by acute local trauma, inflammation, degeneration, neoplasm or infection.*

*The painful point can be felt as a tumor or band in the muscle and a twitch response can be elicited on stimulation of the trigger point.*

*Palpation of the trigger point reproduces the patient's complaint of pain, and the pain radiates in a distribution typical of the specific muscle harboring the trigger point. The pain cannot be explained by findings on neurological examination.*

Common Myofascial trigger point sites include the rectus abdominus, adductors, gluteus minimus, medius, and maximus, obturator internus, piriformis, and quadratus lumborum.

Physical therapists usually use various techniques to treat and manage the painful trigger points as manual therapy, trigger point injections and dry needling (is much like acupuncture).

**Lengthening the Pelvic Floor.** Extremely tight and short pelvic floor is common finding among pudendal nerve entrapment (PNE) patients, the pudendal nerve can be easily compressed in such pelvis.

Physical therapy may use internal manual therapy (vaginal and/or rectal), trigger point injections and myofascial release to help lengthen the pelvic floor.

**Connective tissue manipulation (CTM) is a technique used by physical therapists to manage the connective tissue restrictions for restoring its normality to give more space for the nerve and regain vascular circulation, subcutaneous tissue and muscle integrity.**

**Ultrasound** could be used to decrease formation of tissue scaring and may help in increasing of blood flow to the area sometimes it decreases the pain.
**Kegel exercises** should be avoided because it is usually used to strengthen the pelvic floor muscles. In cases of pudendal neuralgia, the pelvic floor is already tight and Kegel exercises worsen the condition.

**Acupuncture** may be useful for pudendal neuralgia to reduce the pain.

### 4- Botox

Botulinum toxin A is one of the seven toxins (from A through G) of the neurotoxins produced by the bacterium Clostridium botulinum. Botulinum toxin A is manufactured commercially under the name "Botox".

Botulinum toxins (Botox) blocks the signals that would normally cause muscle contraction leading to muscles paralysis, so the spasms or contractions are minimized or vanished. In some cases, Botox is injected into painful contracted pelvic muscles to reduce its contraction and reduces the pain.

Careful attention should be taken to its side effects and expected complications.

### 5- Pudendal Nerve Blocks and Pudendal Nerve Blocks Australia:

Pudendal Nerve Blocks (discussed before). Women's Health & Research Institute of Australia, has new recent injection technique improvement in at least 40% of the patients who undergo pudendal nerve block.

Improvement in injection technique was aimed at making sure the injected medication is actually delivered into Alcock's canal and the infra-piriformis canal by introducing dynamic fluoroscopy, radio-opaque dye is used to localize Alcock's canal, using specific pudendal neuralgia protocol for MRI (neuro-MRI).

Combining the MRI and the neurography (= dynamic fluoroscopy) technology show better, not preceeded, orientation of the anatomy as true dimensions of Alcock's canal and abnormalities such as compression sites of the pudendal nerve along its course.

### 6- Pudendal Nerve Decompression Surgery

Pudendal nerve decompression surgery is considered one of the last options that is usually considered after more conservative therapies such as lifestyle changes, pelvic floor physical therapy, and nerve blocks. These therapies have not proven to
be successful, success rate of decompression surgery varies from 60% to 85%.

One of the best written approaches for Pudendal Nerve Decompression Surgery described by Dr. A. Lee Dellon, MD, PhD (at the DELLON INSTITUTE FOR PERIPHERAL NERVE SURGERY) in his book "Pain Solutions", Chapter 12, Chronic Pelvic Pain.

To approach the treatment of the pudendal nerve, it is critical to base the surgical plan on where along the pathway of this nerve the compression or injury has occurred and plan a surgical approach based upon that location.

Dr. Dellon’s classification shows the pudendal nerve anatomic pathway related to known anatomic sites for compression and locations for injury, with clarification of the confounding problems that must be evaluated and treated if they are present.

**DELLON CLASSIFICATION OF PUENDAL NERVE INJURY ZONES:**

Anatomically determined zones in which the pudendal nerve can be injured. Each requires a different surgical approach to achieve the best results. (Modification of drawing from Wikepedia, originally taken from Grant’s Anatomy [http://en.wikipedia.org/wiki/File:Pudendal_nerve.svg])

*** (Modification of the Modification to show the dorsal nerve of the clitoris)
The main factor to consider in determining the approach to surgical decompression of the pudendal nerve is the symptom grouping of the patient. It must be remembered that while the pudendal nerve can be a single trunk comprising all three of its branches, rectal, perineal, and dorsal, there may be branching of the rectal component proximal to the sacrotuberous ligament. Compression of the pudendal nerve in Zone I or Zone II can therefore give symptoms that involve all three components of the pudendal nerve: rectum, perineum / vagina, vulva, clitoris, although one or more set of symptoms

<table>
<thead>
<tr>
<th>ZONE NAME</th>
<th>LOCATION OF ZONE</th>
<th>ETIOLOGY OF ENTRAPMENT</th>
<th>SURGICAL APPROACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Within pelvis</td>
<td>Tumor</td>
<td>Intra-pelvic or high Lateral trans gluteal</td>
</tr>
<tr>
<td>II</td>
<td>Between the Sacrospinous &amp; Sacrotuberous Ligaments</td>
<td>Trauma</td>
<td>Trans gluteal or I ischio-rectal F fossa</td>
</tr>
<tr>
<td>III</td>
<td><strong>Intrance to Alcock’s canal</strong></td>
<td>Trauma</td>
<td>Ischio-rectal fossa, or Trans ischial</td>
</tr>
<tr>
<td>IV</td>
<td>Within Alcock’s Canal</td>
<td>Pelvic Fracture</td>
<td>Trans ischial, or Ischio rectal fossa</td>
</tr>
<tr>
<td>V</td>
<td>Exit from Alcock’s Canal</td>
<td>Trauma</td>
<td>Anterior, pubic ramus</td>
</tr>
<tr>
<td>VI</td>
<td>Pubic Ramus Canal</td>
<td>Trauma</td>
<td>Anterior, pubic ramus</td>
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may predominate. Conversely, if the symptoms involve only the clitoris, then the compression is not likely to be in Zone I or Zone II.

The second factor to consider in determining the approach to pudendal nerve decompression is the mechanism of injury.

If the injury involves a fall on to the buttocks, the location of the entrapment is likely to be in Zone II or Zone III.
If the injury involves a pelvic fracture along the course of Alcock’s canal, the entrapment is likely to be in Zone IV.
If the injury involves a pelvic fracture at the pubic symphysis, or a frontal blunt trauma, then the entrapment is likely to be in Zone V or VI.
Previous surgery should be considered a form of trauma. Thus a trans-vaginal hysterectomy or urethral sling procedure can injure the pudendal nerve in Zone V.

The third factor to consider in determining the approach to pudendal nerve decompression is the physical examination.

The site of nerve entrapment creates a tenderness of the nerve in that location.
Therefore, if there is tenderness just at the sacrotuberous ligament or at the entrance to Alcock’s canal, then the entrapment is likely to be at Zone II or III, respectively.
If there is tenderness at the clitoris at the transverse perinealligament, or along the pubic ramus at the exit of Alcock’s canal, then the entrapment is likely to be at Zone VI or V, respectively.

Finally, a fourth factor to consider in determining the approach to pudendal nerve decompression is the mechanism of injury.

SUMMARY

Chronic pelvic pain in women due to pudendal nerve entrapment can be treated non-operatively, successfully in most patients with change lifestyle, pelvic floor physiotherapy, medication, and treatment of associated problems, such as interstitial cystitis, endometriosis, bowel problems and depression.

When these approaches fail, and especially with a history of trauma, predisposing factors the symptoms may be exactly related to entrapment of the pudendal nerve somewhere along its course.
To determine the location of the entrapment, the history of the trauma/symptoms, physical findings, and the results of nerve blocks are critical.

The exact role of the newest radiologic imaging techniques, is still undefined in identifying precisely the pudendal nerve branch compression sites, especially in people who have had previous surgery. Based upon many factors, a decision can be made as to the optimum surgical approach for a neurolysis of the pudendal nerve.

In some people, more than one surgical approach may be necessary, one from the front, at the pubic ramus, and one from the back, transgluteal (ischiorectal), requiring two different surgeries. There should be hope for relief in 80% of people.

7. Neuromodulation

Neuro stimulation therapies are used for pain relief or symptom relief from certain types of chronic pain. Spinal cord stimulation (SCS) is actually a subcategory of neuro stimulation, which also includes peripheral nerve stimulation. SCS and peripheral nerve stimulation use an implanted device - a neuro stimulator - to deliver low levels of electrical energy directly to nerve fibers. This direct approach to treating pain at its source can be very effective.

The type of neuro stimulation that might be appropriate for specific condition depends on many factors, including the cause of the pain, its type, and location.

8- Intrathecal pain pump

Intrathecal drug delivery or “pain pump” is a method of giving medication directly to the spinal cord. The system uses a small pump that is surgically placed under the skin of the abdomen and delivers the pain killer or analgesic medication through a catheter directly to the area around the spinal cord. The symptoms can be controlled with a much smaller dose than is needed with oral medication and better control of the symptoms.
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http://www.pudendal.com/
http://www.ajronline.org/cgi/content-nw/full/181/2/561/FIG1

RELEVANT ANATOMY AND ETIOLOGICAL FACTORS
Jacques Beco, MD – Liege, Belgium (jacques.beco@skynet.be).

Entrapment: Anatomy and CT-Guided Perineural Injection Technique
David M. Hough1, Keith H. Wittenberg1 2, Wojciech Pawlina3, Timothy P. Maus1, Bernard F. King1, Terri J. Vrtiska1, Michael A. Farrell1 and Stanley J. Antolak, Jr.4

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Citation: American Journal of Roentgenology. 2003;181:561-567

http://www.ajronline.org/doi/full/10.2214/ajr.181.2.1810561

Dr. A. Lee Dellon, MD, PhD (at the DELLON INSTITUTE FOR PERIPHERAL NERVE SURGERY) in his book Pain Solutions, Chapter 12, Chronic Pelvic Pain

http://www.ajronline.org/cgi/content-nw/full/181/2/561/FIG1
http://www.rightdiagnosis.com/p/pudendal_nerve_entrapment

www.mayfieldclinic.com/PE-PUMP.htm


http://www.dermnetnz.org/site-age-specific/pudendal-entrapment.html
http://www.pudendal.com
http://www.pudendalhope.info/node/2

Health Organization for Pudendal Education

/at http://www.thewatershyswimmer.com/Ch15.html

PN Blocks Australia
Fri, 10/07/2011 - 06:38 — admin
(Nerve block procedure: WHRIA (Women's Health & Research Institute of Australia

Prof. Thierry Vancaillie. Oct. 2011