

Observations on the Transgluteal Decompression of the Pudendal Nerve

Stanley J. Antolak, Jr., MD
Center for Urologic and Pelvic Pain
Lake Elmo, MN, USA

Pudendal neuralgia, the Alcock Canal Syndrome, Pudendal canal syndrome, Pudendal nerve entrapment.

We prefer the term neuralgia rather than pudendal nerve entrapment because so many of our patients have relief following self-care or pudendal nerve blocks (see treatment below). Entrapment can only be observed at surgery.

Definition: Pudendal neuralgia

- perineal and other pelvic pain that is aggravated by sitting and reduced or relieved by sitting on a toilet seat.
- The “pudendal territory” is extensive and may include suprapubic, inguinal, genital and perineal pain, vulvodynia, coccydynia, and proctalgia (proctitis fugax).
- Bladder, bowel, and sexual dysfunction are common

Pathophysiology and variations in symptoms.

Pudendal neuropathy is a functional entrapment where pain occurs during a compression or stretch maneuver. Causes include: cycling, fitness exercises; stretch due to constipation and childbirth; youthful sports, falls onto the buttocks; iatrogenic neuropathy (vaginal surgery, suture entrapment) and pelvic radiation.

Central sensitization plays an important role in aggravation and maintenance of symptoms in many patients. Evidence of central sensitization (spinal cord wind-up) includes aggravation of pelvic pains follows sexual arousal (e.g. reading a sexually explicit novel); foreign body sensation in the rectum, vagina, urethra, or perineum is frequent. Sensations include a golf ball, a red-hot bowling ball, a pine cone, a fist, or even a stovepipe. The size of the object varies with intensity of the pain and disappears following successful treatment of neuropathy. Sacral cord neuroplasticity cause pains in the calf, and the dorsum, arch, and toes of the feet that are aggravated during pain flares and eliminated after treatment.

Evaluation – Physical Examination:

Physical examination: Observe for skin changes at the natal cleft. Pinprick sensation is tested at each branch bilaterally. Pressure on the nerve at the pudendal canal and medial to the ischial spine may reproduce pain, bladder or rectal symptoms; the Valleix phenomenon.

Concurrent neuropathies that affect pudendal neuropathy include the

- Back mouse or episacroiliac lipoma (middle cluneal neuropathy)
- Ilioinguinal and iliohypogastric neuropathies (vide infra)
- Abdominal cutaneous nerve entrapment.

We evaluate all males for inflammatory prostatitis.

Evaluation – Neurophysiologic

1. Quantitative sensory test (QST), the warm detection threshold (WDT) is a highly sensitive test for pudendal neuropathy in our hands. We use the NTE-2A Thermosensory Tester (Physitemp, Inc., Clifton, New Jersey, USA) following a stepping algorithm. The small diameter (0.79 cm²) of the thermal probe probably provides more accurate threshold measurements than the large Medoc thermal probe (4cm²).

Dysesthesias may occur at normal or elevated temperatures.

2. Pudendal nerve terminal motor latency test (PNTMLT) uses the St. Mark's surface electrode. Latency >2.2ms is abnormal. Neuritic pains after electrical stimulus for neurophysiologic testing occur in 22% of males and 37% of females in our clinic. Pain may be referred to different ipsilateral or contralateral branches of the pudendal nerve, or to the abdomen, suprapubic region, or feet. Bladder warmth, spasms, or urge to void may also occur with the test stimuli.

Imaging:

- MRI of the lumbosacral spine and lumbosacral plexus. Abnormalities are rare. (Tarlov cysts, are not the basis of patients' complaints in our practice).
- Magnetic resonance neurography requires further study.

Treatment

A sequential treatment program is used, progressing only as necessary.

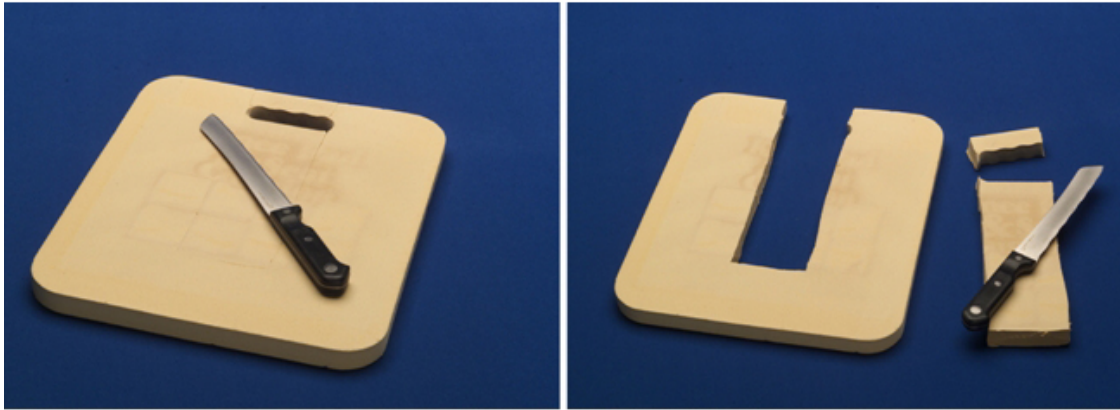
1. Self-care (nerve protection)
2. Pudendal nerve perineural injections (PNPI)
3. Surgical decompression.

Self-Care

Using Robert's observation that sitting on a toilet seat relieves pains of pudendal neuralgia, patients avoid sitting. A "perineal suspension pad" supports the ischial tuberosities and suspends the perineum.

“Perineal suspension pad”

Support by ischial tuberosities.
No pressure on perineum.



Gardener's kneeling pad

approximately \$4.00 USD

They avoid activities that cause and aggravate pudendal neuralgia such as cycling, hip flexion activities including leg presses, Stairmaster®, ab-crunches, jogging, rollerblading, etc. Medications can include amitriptyline 10 mg at h.s., increasing every five days to a maximum of 50 mg, adjusting the dosage for side effects. Almost all patients experience some relief. Cure of pain and interstitial cystitis and dyspareunia for over five years has followed self-care. Some patients return to jogging and cycling, using a hornless saddle.

Hornless saddle



Pudendal Nerve Perineal Injections (PNPI)

Several authors describe the use of pudendal blocks to relieve chronic, non-malignant pelvic pain. We use the technique of Bensignor, giving a series of three, monthly, transgluteal, pudendal nerve perineural injections (PNPI) of bupivacaine 0.25%, 6 ml, and triamcinolone 40 mg, 1 ml. Perineural anesthesia may be diagnostic or therapeutic. Two PNPI are given into the interligamentary space at ischial spine and one is given into the pudendal canal.

Two hours after injection, examination of six sites with pinprick detects analgesia or hypalgesia (clitoris [glans], labia [posterior scrotum], or perianal area, bilaterally).

Injections may be guided by palpation, fluoroscopy, EMG stimulation ultrasound, or CT guidance. Complete pudendal anesthesia correlates with a good therapeutic response. Our patients monitor symptom indices weekly for 14 weeks.

3. Results:

- Symptom relief after PNPI may last hours, days, or weeks. They may completely resolve after one, two, or three PNPI. Bensignor indicated control of neuralgia in 70% of patients at six months. Amarenco reported a 15% response at 12 months. One of our early patients continues to have durable relief for over four years including relief of serious pain, urinary retention, and erectile dysfunction.
- Symptom changes include improved erections, decrease of pain following ejaculation, increased vaginal lubrication, pain free intercourse, improved orgasms, improved defecation, and other subtle improvements. One group with persistent pain is a subset of patients, with previous pelvic surgery complicated by urine leakage.
- Injections into the Alcock may not anesthetize the inferior anal nerve because that branch exits the main trunk proximal to the Alcock canal in 50% of cadavers.
- PNPI can be repeated and we have successful responses two years after the second series.

4. Complications of PNPI are infrequent and include pain ‘flares’ that may last several days, bleeding through the needle requires repositioning of the needle, sciatic nerves anesthesia may cause transient gait disturbance. Penetration of the pudendal nerve by the needle apparently occurred in three of our patients causing significant aggravation of pudendal pain requiring up to three months for pain resolution. Incontinence of urine or flatus may occur for one or two hours after PNPI.

Decompression Surgery with Transposition of the Pudendal Nerve

Over one third of patients with pudendal neuropathy in our practice will require surgical decompression. Robert outlined the surgical anatomy of a transgluteal approach. We feel that the transgluteal approach is advantageous because it permits direct visualization of the entire nerve with access distally into the pudendal canal. We often find anatomical findings that may be inaccessible via other approaches, including multiple variations in the sacrospinous ligaments, “tethering” of the nerve at the supralateral margin of the ischial spine, penetration of the sacrospinous ligament by nerve branches, fascial bands

penetrating and traversing the nerve. The inferior anal branch often leaves main pudendal trunk prior to pudendal canal.

Technique:

- Oblique incision is made between the sacral margin and the ischial tuberosity. Gluteal fascia is opened. Muscle bundles are separated to expose the sacrotuberous ligament.
- The sacrotuberous ligament is opened along its longitudinal axis. An Omni Tract retractor (Minnesota Scientific, Inc., St. Paul, MN) improves access to the pudendal nerve and the sacrospinous ligament. We do not transect the sacrotuberous ligament. This restricts the superior access. Dr. Hibner in Phoenix, USA transects the ligament but repairs it with cadaver Achilles tendon.
- Identify nerve and elevate with a vessel loop. Many nerve variations are observed. Dissection proceeds cranially, identifying and transecting any fascial structures compressing the nerve.
- The sacrospinous ligament is a highly variable structure with varying composition of fibrous bands, sheets of fascia, interspersed muscle bundles, and connections to the sacrotuberous ligament. It is transected. This releases the nerve and permits transposition anteriorly and medially. Fibers of coccygeous muscle are separated from the ischial spine to permit transposition of the nerve.
- Proceeding distally, the Alcock Canal is opened. Any adhesions or perineural fibrosis are released. An adhesion barrier anterior and posterior to the nerve to minimize postoperative perineural scarring. A suction drain is brought through a separate stab wound. The sacrotuberous ligaments and gluteus fascia are approximated.

The patient stands on the evening of surgery and ambulates the following day.

Hospitalization requires two days.

- Postoperative “gliding exercise”. The hip is flexed and rotated laterally and medially, twice, bilaterally. Exercise is repeated twice daily for one to two years.
- Continue to use the perineal suspension pad.

Return to work varies from 10 days to three months. Some patients remain permanently disabled.

Surgical success:

We do not have cumulative data available for this report. Follow up of patients operated at the Center for Urologic and Pelvic Pain in 2004 demonstrates that the average of symptom scores becomes normal at 18 months postoperatively. Complete symptomatic cure of bladder, bowel, and sexual dysfunctions may occur. In a controlled study, Robert showed durable improvement continued for four years in nine of 12 cases. Unoperated controls were unimproved at one year.

Surgical Complications:

Urine retention occurs in approximately 5% of men and women, requiring in-and-out catheterization. Wound complications are infrequent. Pneumonia occurred in one female. Neuropraxia may require several days to several weeks to completely resolve. Pelvic instability is a potential problem if the sacrotuberous ligament is transected.

Failure of Surgical Intervention

Thirty to 40% of patients fail to have significant relief following surgical intervention. We have one patient who became pain free five years after surgery. Prolonged and severe pre-operative symptoms and failure of pain control using PNPI are associated with poor surgical results. Patients in whom the nerve is observed to be atrophied or discolored have poor pain relief. Unilateral surgery may require a later contralateral procedure to control symptoms. Other neuropathies can maintain symptoms, including ilioinguinal and iliohypogastric neuropathies, abdominal cutaneous nerve entrapment, and middle cluneal neuropathy, usually associated with a back mouse or episacroiliac lipoma. Sympathetically maintained pain may be a factor. Premature return to overenthusiastic exercise will hinder pain relief.

Treatment of Postoperative Failures

Bensignor in Nantes used pudendal nerve blocks as soon as two months after surgery. He recommended infusions of ketamine and clonazepam via epidural catheter for five days or hypogastric plexus blocks for sympathetically maintained pain.

We treat failures from several surgical venues using perineural blocks of bupivacaine and heparin 4000 units with 0.8 ml of NaHCO₃. Six weekly injections are given, followed by gradual increase of the interval. Dense scar softens after repeated injections. Pain, sexual, bowel, and bladder symptoms may resolve after one or two blocks.

Some clinicians use Botox injections into the obturator internus muscle, bilateral sacral nerve root stimulation (Popney, Houston, USA), spinal cord stimulation (Cleveland Clinic, USA). Re-operation has been performed by some surgeons.

Monitoring Treatment of Pudendal Neuralgia

We use;

1. National Institute of Health Chronic Prostatitis Symptom Index (NIH-CPSI)
2. A female modification (f-NIH-CPSI).
3. The American Urological Association Symptom Index (AUASI) measures voiding symptoms that are common in patients with pudendal neuropathy.
4. Sexual function: International Index of Erectile Function (IIEF-5) or the Female Sexual Function Index (FSFI)..
5. A seven point Global Impression of Change (Very much worse, much worse, a little worse, NO CHANGE, a little better, much better, very much better).

Appendix:

NIH-Chronic Prostatitis Symptom Index (NIH-CPSI) (for males) Center for Urologic and Pelvic Pain

Name: _____

Date: _____

Pain or Discomfort

1. In the last week, have you experienced any pain or discomfort in the following areas?

	Yes	No
a. Area between rectum and testicles (perineum)	1	0
b. Testicles	1	0
c. Tip of the penis (not related to urination)	1	0
d. Below your waist, in your pubic or bladder area	1	0
e. or rectal area	1	0

2. In the last week, have you experienced:

	Yes	No
a. Pain or burning during urination?	1	0
b. Pain or discomfort during or after sexual climax (ejaculation)?	1	0

3. How often have you had pain or discomfort in any of these areas over the last week?
 - 0 Never
 - 1 Rarely
 - 2 Sometimes
 - 3 Often
 - 4 Usually
 - 5 Always

4. Which number best describes your AVERAGE pain or discomfort on the days that you had it over the last week?

0	1	2	3	4	5	6	7	8	9	10
NO PAIN										
Pain as bad as you can imagine										

Urination

5. How often have you had a sensation of not emptying your bladder completely after you finished urinating over the last week?
 - 0 Not at all
 - 1 Less than 1 time in 5
 - 2 Less than half the time
 - 3 About half the time
 - 4 More than half the time
 - 5 Almost always

6. How often have you had to urinate again less than two hours after you finished urinating, over the last week?
 - 0 Not at all
 - 1 Less than 1 time in 5
 - 2 Less than half the time
 - 3 About half the time
 - 4 More than half the time
 - 5 Almost always

Impact of Symptoms

7. How much have your symptoms kept you from doing the kinds of things you would usually do, over the last week?
 - 0 None
 - 1 Only a little
 - 2 Some
 - 3 A lot

8. How much did you think about your symptoms, over the last week?
 - 0 None
 - 1 Only a little
 - 2 Some
 - 3 A lot

Quality of Life

9. If you were to spend the rest of your life with your symptoms just the way they have been during the last week, how would you feel about that?
 - 0 Delighted
 - 1 Pleased
 - 2 Mostly satisfied
 - 3 Mixed (about equally satisfied and dissatisfied)
 - 4 Mostly dissatisfied
 - 5 Unhappy
 - 6 Terrible

Scoring the NIH-Chronic Prostatitis Symptom Index Domains

Pain: Total of items 1a, 1b, 1c, 1d, 2a, 2b, 3, and 4 = ____

Urinary Symptoms: Total of items 5 and 6 = ____

Quality of Life & Impact: Total of items 7, 8, and 9 = ____

Adapted from Litwin et al. J Urol. 1999;162:369-375.

Bibliography:

Robert R, Prat-pradat D, Labat JJ, et al: Anatomic basis of chronic perineal pain: role of the pudendal nerve. *Surg-Radiol Anat* 1998;20:93-98.

Peterson N. Genitoperineal injury induces by orthopedic fracture table. *J Urol* 1985 ;134:760-761.

Benson JT, Griffis K. Pudendal neuralgia, a severe pain syndrome. *Am J Obstet Gynecol.* 2005;192(5):1663-8.

Amarenco G, Lanoe Y, Perrigot M, and Goudal H. Un nouveau syndrome canalaire: la compression du nerf honteux interne dans le canal d'Alcock ou paralysie pe'rine'ale du cycliste. *La Presse Medicale* 1987;160:399..

Shafik A. Pudendal canal syndrome: A new etiological factor in prostatic pain and its treatment by pudendal canal [de]compression. *Pain Digest* 1998;8:32-36.

Roberts RO, Lieber MM, Bostwick DG, et al: A review of clinical and pathological prostatitis syndromes. *Urology* 1997;49: 809-821.

Nickel JC Downey J Hunter D Clark J. Prevalence of prostatitis-like symptoms in a population based study using the National Institutes of Health chronic prostatitis symptom index. *J Urol.* 2001;163:842-5.

Mahakanukrauh P Anatomical study of the pudendal nerve adjacent to the sacrospinous ligament. *Clin Anat* 2005;18:200-5.

Nakanishi T. Studies on the pudendal nerve. I. A macroscopical observation of the pudendal nerve in man. *Kaibogaku Zasshi (Acta Anat Jap)* 1967;42:223-239. (Original in Japanese).

Gruber H, Kovacs P, Peigger J, Brenner E. New, simple ultrasound-guided infiltration of the pudendal nerve: Topographic basics. *Dis. Colon Rectum* 2001;44:1376-80.

Woolf CJ, Mannion RJ. Neuropathic pain: aetiology, symptoms, mechanisms, and management. *Lancet* 1999;353:1959-1964.

Amarenco G, Kerdraon J, Bouju P, Budet C, LeCocquen A, Bosc S, Goldet R. Efficacy and safety of different treatments of perineal neuralgia due to compression of the pudendal nerve within the ischio-rectal fossa or by ischiatic spine. *Revue Neurologique* 1997 ;153:331-334.

Silbert PL, Dunne JW, Edis RH, Stewart-Wynne EG. Bicycling induced pudendal nerve pressure neuropathy. *Clin Exp Neurol.* 1991;28: 191.

- Weiss BD. Clinical syndromes associated with bicycle seats. *Clin Sports Medicine* 1994;13: 175-186.
- Anderson KV and Bovim G. Impotence and nerve entrapment in long distance amateur cyclists. *Acta Neurol. Scand* 1997;95:233-240.
- Peterson NE. Genitoperineal injury induced by orthopaedic fracture table. *Journal of Urology* 1985;134:760-761.
- Brumback RJ, Ellison TS, et. al. Pudendal nerve palsy complicating intramedullary nailing of the femur. *J Bone and Joint Surgery* 1992;74-A No. 10 December.
- Mallet R, Tricoire J-L, Rischman P, Sarramon JP, Pugel J, Malavaud B: High prevalence of erectile dysfunction in young male patients after intramedullary femoral nailing. *Urology* 2005;65:559-63
- Allen RE, Hosker GL, Smith ARB, Warrell DW. Pelvic floor damage and childbirth: a neuropsychological study. *Brit J Obstet gynaecol* 1990; 97: 770-779.
- Snooks SJ, Swash M. Abnormalities of the innervation of the urethral striated sphincter musculature in incontinence. *Brit J Urol* 1984; 56:410-5.
- Tetzschner T, Sorensen M, Lose G, Christiansen J: Pudendal nerve function during pregnancy and after delivery. *Int Urogynecol J Pelvic Floor Dysfunct* 1997;8: 66-68.
- Shafik A. Levator ani muscle: new physioanatomical aspects and role in the micturition mechanism. *World J Urol* 1997;17: 266.
- Sultan AH, Kamm MA Hudson CN. Pudendal nerve damage during labour: prospective study before and after childbirth. *Br. J Obstet Gynaecol* 1994;101:22-28.
- Antolak S, Hough D, Pawlina W, Spinner R. Anatomical basis of chronic pelvic pain syndrome: the ischial spine and pudendal nerve entrapment. *Medical Hypotheses*. 2002;59:349.
- Rabon LD. Chronic Pelvic Pain Syndrome...an Occupational and/or recreational hazard. Presentation. International Prostatitis Collaborative Network, sponsored by the National Institutes of Health. Washington DC. October 23-25, 2000.
- Bautrant E, de Bisschop E, Vaini-Elies V, Massonnat J, Aleman I, et al. Modern algorithms for treating pudendal neuralgia; 2122 cases and 104 decompressions *J Gynecol Ostet Biol Reprod (Paris)* 2003;32:705-712.
- Alevizon SJ, Finan MA. Sacrospinous colpopexy: Management of pudendal nerve entrapment. *Obstet Gynecol* 1996;88:713-715.

Benson JT, McClellan E. The effect of vaginal dissection on the pudendal nerve. *Obstet Gynecol* 1993;82:387-389.

Shembalkar P, Anand P, Junaid I, Fowler C, Williams NS. Neuropathic pain with vesical and rectal hyperreflexia and cocontraction after pelvic surgery. *J. Neurol. Neurosurg. Psychiatry*. 2001;70:410-411.

Antolak SJ, Hough DM, Pawlina W. The chronic pelvic pain syndrome after brachytherapy for carcinoma of the prostate. *J Urol* 2002;167:2525.

Shafik A. Chronic scrotalgia: report of four cases with successful treatment. *Pain Digest* 1993;3:252-256.

Ali-el-dein B, Ghoneim MA. Effects of selective autonomic and pudendal denervation on the urethral function and development of retention in female dogs. *J Urol*.2001;166:1549-1554.

Diokono AC, Homma, Y et al.: Interstitial cystitis, gynecologic pelvic pain, prostatitis, and their epidemiology. *Int J Urol* 2003;10:S3.

Byrne PJ, Quill R, Keeling PWN. Pudendal nerve neuropathies are extremely common in chronic constipation and faecal incontinence. *Gastroenterology* 1998; 114 Suppl. S.

Kiff ES, Swash M. Normal proximal and delayed distal conduction in the pudendal nerves of patients with idiopathic (neurogenic) faecal incontinence. *J Neurology, Neurosurgery and Psychiatry* 1984; 47:820-32.

Shafik A. Stress urinary incontinence: an alternative concept of pathogenesis. *Int Urogynecol J Pelvic Floor Dysfunct* 1994;5:3.

Wright ET, Chmiel JS, Grayhack JT and Schaeffer AJ. Prostatic fluid inflammation in prostatitis. *J Urol* 1994;152:2300-3.

Ludwig M, Schroeder-Printzen I, Ludecke G, Weidner W. Comparison of Expressed Prostatic Secretions with urine after prostatic massage—a means to diagnose chronic prostatitis/inflammatory chronic pelvic pain syndrome. *Urology* 2000;55:175-177.

Amarenco G, Ismael SS, Bayle B, Denys P, and Kerdraon J: Electrophysiological analysis of pudendal neuropathy following traction. *Muscle Nerve* 2001;24: 116-119.

Vodusek DB Light JK and Libby JM.: Detrusor inhibition induced by stimulation of pudendal nerve afferents. *Neurourol Urodyn*, 1986;5:381.

Ricchiutu VS, Haas CA, Seftel AD et al: Pudendal nerve injury associated with avid bicycling. *J. Urol* 2000;162:2099-2100.

Benson JT. Electrodiagnosis in pelvic floor neuropathy. In: Benson JT, ed. Investigation and management of female pelvic floor disorder. New York: Norton Medical Books. 1992: 157-165.

Welgoss JA, Vogt VY, McClellan EJ, Benson JT. Relations between surgically induced neuropathy and outcome of pelvic organ prolapse surgery. *Journal of Int. Urogynecol.* 1999;10:11-14.

Olsen AL, Ross M, Stansfield RB, Kreiter, C. Pelvic floor nerve conduction studies: establishing clinically relevant normative data. *Am J Obstet Gynecol* 2003;189:1114-1119.

Bleustein CB, Eckholdt E, Arezzo JC. Quantitative somatosensory testing of the penis: optimizing the clinical neurological examination. *J Urol.* 2003;169:2266-2269.

Lee JC, Yang CC, Kromm BG, and Berger RE. Neurophysiologic testing in chronic pelvic pain syndrome: a pilot study. *Urology* 58(2), 2001.

Dyck PJ, O'Brien PC, Kosanke JL, Gillen DA, Karnes JL. A 4, 2, and 1 stepping algorithm for quick and accurate estimation of cutaneous sensation threshold. *Neurology.* 1993;43:1508-1512.

Filler AG, Maravilla KR, Tsuruda JS. MR neurography and muscle imaging for image diagnosis of disorders affecting the peripheral nerves and musculature. *Neurol Clin* 2004;22:643-82

Bensignor MF, Labat JJ, Robert R, and Ducrot P. Diagnostic and therapeutic nerve blocks for patients with perineal non-malignant pain. Abstract, 8th World Congress on Pain. p. 56, 1996.

Shafik A, El-sherif M, Youseff A and Olfat E: Surgical anatomy of the pudendal nerve and its clinical implications. *Clin Anat* 1998;8:110-115.

Klink EW. Perineal nerve block. *Obstet Gynec* 1953;1:137-146.

Thoumas D, Leroi AM, Mauillon J et al: Pudendal neuralgia: CT-guided pudendal nerve block technique. *Abdominal Imaging* 1999;24:309-312.

McDonald, J. and D. Spigos, Computed Tomography - Guided Pudendal Block for Treatment of Pelvic Pain due to Pudendal Neuropathy. *Obstet Gynecol*, 2000;2:306-309.

Benson JT, Griffis K. Pudendal neuralgia, a severe pain syndrome. *Am J Obstet Gynecol.* 2005 May;192(5):1663-8.

Pecina MM, Krmpotic-Nemanic J, Markiewitz AD. Pudendal nerve syndrome (syndrome of Alcock's tunnel). In: *Tunnel syndromes: peripheral nerve compression*

syndromes. 3rd edition. Boca Raton: CRC Press. 2001: 191-194.

Ellis W. Heparin alleviates pain in nerve entrapments. *Am J Pain Med* 2003;13: 54-59.

Hough, DM, Wittenberg KH, Pawlina W, Maus TP, King, BF, Vrtiska TJ, Farrell MA, Antolak SJ. Chronic perineal pain due to pudendal nerve entrapment: Anatomy, pathophysiology, and techniques for CT-guided perineural injection. *AJR* 2003;186:561-567.

Thind P, Lose G. The effect of bilateral pudendal blockade on the static urethral closure function in healthy females. *Obstet Gynecol* 1992;80:906-911.

Shafik A. Endoscopic pudendal canal decompression for the treatment of faecal incontinence due to pudendal canal syndrome. *J Laparoendoscopic Advan Surg Techniques* 1997;7:227-234.

Mauillon J, Thoumas D, Leroi AM et al: Results of pudendal nerve neurolysis-transposition in twelve patients suffering from pudendal neuralgia. *Dis. Colon Rectum* 1999;42:186-192.

Beco J, Climov D, Bex M. Pudendal nerve decompression in perineology; a case series. *BMC Surg* 2004; 4:15

Robert R, Labat JJ, Bensignor M, Glemain P, Deschamps C, Raoul S, Hamel O. Decompression and transposition of the pudendal nerve in pudendal neuralgia: a controlled trial and long-term evaluation. *Eur Urol.* 2005;47:403-8.

Ramsden CE, McDaniel MC, Harmon RL, Renney KM, Faure A: Pudendal nerve entrapment as source of intractable perineal pain. *Am J Phys Med Rehabil* 2003;82:479-484

Gajraj NM. Botulinum toxin a injection of the obturator internus muscle for chronic pelvic pain. *J Pain* 2000;6:333-337.

Litwin MS, Mcnaughton-Collins M, Fowler FJ Jr, Nickel JC, et al: The National Institutes of Health chronic prostatitis symptom index: development and validation of a new outcomes measure. *J Urol* 1999;369-375.

Barry MJ, Fowler FJ Jr., O'Leary MP et al. The American Urological Association symptom index for benign prostatic hyperplasia. *J Urol* 1992;148:1549.

Rosen RC, Cappelleri JC, Smith MD et al. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *Int J Impot Res* 1999;11:319-326.

Rosen RC, Brown C, Helman J, Leiblum S, Meston C, Shabsigh R et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *J Sex Mar Ther* 2000;26:191-208.

Krieger JN, Egan KJ, Ross SO, Jacobs R, and Berger RE. Chronic pelvic pains represent the most prominent urogenital symptoms of "chronic prostatitis". *Urology* 1996;48: 715-722.

Schaeffer AJ, Landis JR, Snauss JS, et al. Demographic and Clinical Characteristics of Men With Chronic Prostatitis: The National Institutes of Health Chronic Prostatitis Cohort Study. *J Urol* 2002;168, 593-59874.

Baskin LS and Tanagho EA. Pelvic pain without pelvic organs. *J Urol* 1992;147:683-86.

Rab M, Ebmer J, Dellon AL. Anatomic variability of the ilioinguinal and genitofemoral nerve: implications for the treatment of groin pain. *J Plast Reconstruct Surg* 2001; 108: 1618-1623.82. Ries E. Episacroiliac lipoma. *Am J Obstet Gynec* 1937;34:492-498.

Copeman WSC, Ackerman WL. Edema or herniations of fat lobules as a cause of lumbar and gluteal "fibrositis". *Arch Int Med* 1947;79:22-35.

Curtis P. In Search of the 'Back Mouse'. *The Journal of Family Practice* 36(6):657-659, June 1993.

Ries E. Episacroiliac Lipoma. *American Journal of Obstetrics and Gynecology*. 34:492-4982, 1937.

Applegate WV. Abdominal cutaneous nerve entrapment syndrome. *Surgery*. 1972; 71: 118-124.