Pudendal Neuralgia Treatment By Injections And Surgery: Did We Help Patients?

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ABSTRACT

Objectives: In this study, we aim to show our eligible experience in the treatment of patients with chronic pelvic pain attributed to pudendal neuralgia and not responding to conventional drugs or rehabilitation by methods of serial injections and surgery.

Methods: This study was conducted in a private medical centre (Humanitas San Pio X) in Milan/Italy. Data collected from records of 169 patients treated for pudendal neuralgia from June 2006 till May 2018. Patients were diagnosed to have pudendal neuralgia by means of clinical diagnosis, pudendal nerve blocks, and neurophysiologic studies. Treatment by perineural pudendal injections (PNPI) was offered to all patients. Surgery was considered for patients who met the Nantes criteria with a positive pudendal block but persistent pain after injections. Type and approach of surgery were trans-gluteal or trans-ischiorectal pudendal neurolysis.

Results: The total number of patients is 169; 118 females and 51 males. The mean age of patients was 53.2 years. 66.3% of patients responded well to PNPI; 20.5% had a complete recovery, 79.5% had a positive temporary response. 33.7% of patients did not benefit from PNPI. A total number of 43 patients were considered for surgery. 72% of patients after surgery responded well; 13 had a complete recovery and 18 showed improvements> 80% in a VAS scale. Twelve patients did not improve after surgery.

Conclusion: Pudendal neuralgia is an infrequent cause of chronic pelvic pain affecting the quality of patient's life. PNPI and pudendal neurolysis can give hope to most of the patients with good results.

Keywords: Pudendal nerve, Neuralgia, Pudendal injections, Neurolysis.

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Introduction

The pelvis is innervated to a large extent by the pudendal nerve (PN) which is a mixed sensory, motor, and autonomic nerve. The pudendal nerve arises from the sacral plexus and is formed by the second, third, and fourth sacral nerve roots.

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The nerve exits the pelvis through the greater sciatic foramen, crossing the ischial spine, between the sacrospinous ligament (SS), and the sacrotuberous ligament (ST).[1] PN entrapment is a painful condition causing Pudendal neuralgia (PNa) (also called Alcock's syndrome) that is frequently difficult to diagnose and is fundamentally a clinical finding. Most of the patients who suffer from PNa are females with nearly one out of seven women affected by chronic pelvic pain, and it's most likely due to etiological factors such as the long list of gynecological causes.[2,3] These patients have sought medical attention by visiting multiple doctors regularly complaining of chronic pelvic pain, and are frequently offered multiple diagnoses and treatments without resolution of symptoms.[4] The diagnosis is often obscure leading to several modalities of treatment. The International Pudendal Neuropathy Association evaluates the incidence of PNa to be 1:100,000, but, because it is often overlooked as a diagnosis, the incidence may be much higher.[5]

There are multiple sites of pudendal nerve entrapment (PNE), and the presentation may be different with different entrapments. A group of clinicians (the Nantes group) set up in 2008 the diagnostic criteria for PNE in which the five essential criteria including pain in the distribution of the PN, pain predominately with sitting, that does not wake the patient at night, no objective sensory deficit on clinical exam, and pain relieved by diagnostic pudendal nerve block.[6] Initially PNa was called "cycling syndrome" because the first identified etiology for its occurrence was cycling attributed to mechanical compression of PN.[7]

Other causes of PNa are direct injuries to the nerve during pelvic prolapse surgery using mesh and gynecological surgeries like hysterectomy and anterior colporrhaphy which could be explained theoretically by bleeding from the procedures into the Alcock's canal leading to scarring.[8] Traumatic falls on the buttock or back or vaginal delivery with or without instrumentation also are considered as part of etiology of PNa from a mechanical point of view. Non-mechanical or biochemical causes of PNa are usually uncommon; including viral infection (herpes zoster, HIV), diabetes, multiple sclerosis, and others.[9,10] Regarding entrapment of the PN, the nerve could be trapped or compressed at greater sciatic foramen, between SS and ST ligaments, and in the Alcock's canal; with the interligamentous space being the most common site of entrapment (>90%).[11] Various tests are used to aid in the diagnosis of PNa including diagnostic blocks of the pudendal nerve, pudendal nerve motor terminal latency (PNMTL), sensory threshold testing, Doppler ultrasound, and functional MRI. The diagnostic pudendal nerve block is part of the Nantes criteria and can be performed both unguided or with the use of electrical or image-guided techniques.[12, 13] PNa can often be treated conservatively or by medical treatment, or by injections, considering surgery in the case of failure of previous managements. In this study the main concern will be the outcome of PNPI and surgical decompression in the treatment of PNa.

Methods

This is a retrospective study of prospectively collected data from records of 169 patients who received treatment for pudendal neuralgia in the period from June 2006 till May 2018 in a private medical centre (Humanitas San Pio X) in Milan/Italy.

Nantes criteria for PNa were applied on patients to aid in the diagnosis including pudendal nerve blocks and also, neurophysiologic studies. Diagnostic pudendal blocks were performed using electrical stimulation through a needle with infiltration of Bupivacaine 0.25% 5 cc around the pudendal nerve. The diagnosis was confirmed when patients documented disappearance of pain after nerve block (positive block). For neurophysiologic investigation we used PN somatosensory evoked potential (SSEP), sacral reflex and PN motor terminal latency (PNMTL) to objectively assess integrity of pudendal nerve and degree of affection. Abnormal values were considered for latencies more than 3.5 milliseconds in PNMTL, P40, N50 and P40-N50 were evaluated with SSEP.

Perineural pudendal injections (PNPI) were offered to all patients with persistent pain after conservative treatments. PNPIs were usually achieved in a similar way to the diagnostic block injecting Bupivacaine 0.25% 5 cc and Methylprednisolone 40 ml around the pudendal nerves with two blocks, between the SS and ST ligaments and one into Alcock's canal between the obturator muscle and its fascia. When patient documented an improvement of symptoms PNPI was continued for a series of three PNPI at 4 weeks interval 0, 4, and 8. Surgery was considered for patients who met the Nantes criteria with a positive

pudendal block but persistent pain after PNPI. Type and approach of surgery were selected by our surgeons according to experience. Trans-gluteal and trans-ischiorectal pudendal neurolysis were the two surgical approaches.

Trans-gluteal approach with a buttock incision at the level of ischial spine explores the ST, SS ligaments and Alcock's canal through which relieving compression on PN. Trans-ischiorectal approach was performed on a female patient through a small incision which was made in the back of the vagina and the surgeon cut the SS ligament to release the compression between the ST and SS ligaments. Also, the surgeon explored the Alcock's canal by finger dissection and released the nerve from any tethering fascia. Visual Analogue Scale (VAS) was used to subjectively measure the responses of patients to our diagnostic and therapeutic procedures. Patients were instructed to point to the position on a line between two faces to indicate how much pain they are currently feeling. The far left face indicates "no pain" and the far right one indicates "worst pain ever." The mean time for follow up of patients was for 32.3 months (2-101) in the form of regular visits to out-patient clinic and/or contacting them by phone call. Patients with anal fissure, abscess, inflammatory bowel disease, solitary rectal ulcer, prostatitis, pelvic endometriosis, neurologic diseases, and psychiatric disorders were excluded. Approval for the conduction of the study was given by both the ethical committee of the hospital and patients. Appropriate tests were applied for statistics.

Results

The total number of patients was 169; 118 were females and 51 males. The mean age of patients was 53.2 years (28-78). All patients were diagnosed to have PNa according to Nantes criteria; 80% had also an abnormal value at neurophysiologic investigation (SSEP and PNMTL). Fifty seven patients (33.7%) had no improvement after a series of three PNPI. Eight patients (4.7%) showed no response to the first injection of PNPI series and management had been abandoned. Six percent of patients underwent repeated courses of the three PNPI series but showed no improvement. Approximately 66.3% of patients (112) responded well to PNPI series; 20.5% (23) had a complete recovery, while 79.5% (89) had a positive temporary response. The total number of patients considered for surgery was 43 (25.4%); 17.7% (30) who showed no improvement after PNPI series but with positive block, and 7.7% (13) among the patients who showed a PNPI positive temporary response.

Forty-two patients underwent trans-gluteal pudendalneurolysis, while one patient underwent trans-ischiorectal pudendal nerve decompression surgery. After surgery 72% of patients did respond well; 13 (30%) complete recovery and 18 (42%) showed improvements (> 80% in a VAS scale). Twelve (28%) patients did not improve after surgery.

Discussion

Conservative therapy is considered as the core treatment for PNa. Prevention of certain exercises like cycling and adduction at hip joint is important along with modification of lifestyle behavior and work environment that lead to minimize sitting and so decrease pressure on pudendal nerve.

Usually the pain of PNa produces spasm in pelvic floor muscles which in turn adds more pressure on the pudendal nerve causing an increase in levels of pain. This vicious circle seems difficult to break, leading to peripheral and central sensitization of pain. Nevertheless 20%-30% of patients following lifestyle modification are predicted to improve.[14]once patients did not respond well to lifestyle modifications; medications can play a role in treatment such as muscle relaxants, anticonvulsants, antidepressants, and analgesics.[15, 16]

In this study 66.3% of patients who did not respond to conservative treatments showed improvements after PNPI in accordance with the results of a study conducted by Vancaillie in 2012.[17]

PNPI is an imperative treatment for PNa through which local anesthetics (to block the nerve) and steroids (to minimize inflammation) are injected around the nerve and this is performed both image guided by fluoroscopy, ultrasound, or CT scan or using electrical stimulation through a needle or unguided and transvaginal in women. PNPI aims to relieve pain initially with Bupivacaine which is of rapid onset; lasting hours to a few days. But for longer term effect corticosteroids are used with onset after 3 days; lasting 0-5 weeks.Symptoms relief after PNPI may last hours, days , weeks and they may completely resolve after

one, two, or three PNPI. Failure of PNPI to relieve pain may occur in case of severe nerve compression, presence of concurrent Pain Generators like Maigne syndrome or posterior ramus syndrome, and injections into ischio-anal fat rather than Alcock's canal.[12, 18, 19]

Pudendal neurolysis surgery is usually considered after failure of conservative therapies. The length, degree, and etiology of nerve injury usually affect the outcomes from PN decompression surgery. The four approaches are the trans-gluteal, the trans-ischiorectal fossa, the perineal, and the laparoscopic. One of the most commonly used approaches is the trans-gluteal one which was described by Roger Robert in which a good visualization of the nerve is achieved. The sacrotuberous and sacrospinous ligaments are divided to relieve compression on the nerve at the ischial spine. Alcock's canal is also explored to free the nerve from any tethered fascia.[19]

In the trans-ischiorectal fossa approach described by Bautrant, a small incision is made in the back of the vagina and the surgeon divides the sacrospinous ligament to release the compression between the ST and SS ligaments. Again Alcock's canal is explored by finger dissection and the nerve is released from any fascia that might be tethering it. Bautrant showed the response to 104 decompression surgeries; with 62% (38 out of 62 patients) of totally asymptomatic patients after 1 year.[20]

The perineal approach was described by Shafik. In this technique (Anterior approach); the patient is in the lithotomic position, a vertical para-anal incision 2 cm from anal orifice is made and the ischio-rectal fossa is entered across which the inferior rectal nerve is identified and hooked by finger and traced to PN in the pudendal canal where fasciotomy can be performed. This approach is totally blind using surgeon's finger and Shafik reported disappearance of pain in 9 women out of 11.[21, 22]

During the laparoscopic surgery, the SS ligament is divided allowing visual access of the nerve at the ischial spine and Alcock's canal. The nerve is released from scarring, fibrotic tissue, and swollen varicose veins. A solution of heparin may be infused into the area to prevent scar tissue formation.[5, 23]

The outcome of surgical decompression of PN through the previously mentioned approaches is reviewed in literature and summarized in (Table I).

Table I: Comparison of the surgical outcome of PN decompression.

Authors	Year	Approaches	Number of patients	Follow-up	Percentage of improvement
de Bisschop [24]	2011	Trans-perineal	43	3 months	89%
Possover M [25]	2009	Laparoscopic	18	17 months	83%
Lee Ansell[26]	2008	Trans-gluteal	170	12 months	67%
Popeney C [27]	2007	Trans-gluteal	58	12 months	60%
Robert R[28]	2005	Trans-gluteal	400	12 months	71.4%
Bautrant E[20]	2004	Trans-ischio-rectal	104	12 months	86%
Shafik[21]	1995	Trans-perineal	11	7 months	82%

In the literature almost 40 % of patients who underwent decompression surgery have significant improvement in pain and 30 % have some improvement while the remaining 30 % have no change in pain. However it is considered a successful surgery if there is at least a 50% reduction in pain and symptoms.[2]
Our results showed 72% improvement in patients with PNa treated by surgical decompressions which were comparable to what is evident in literature. According to our study, 30% had a complete recovery and 42% showed an improvement> 80% in a VAS scale after nerve decompression.

Conclusion

Pudendal neuralgia is an infrequent cause of chronic pelvic pain affecting the quality of patient's life. PNPI and surgical decompression of pudendal nerve can give hope to most of the patients with good results.

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Nothing to declare

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