

Case Report

Pulsed Radiofrequency Ablation of Pudendal Nerve for Treatment of a Case of Refractory Pelvic Pain

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Pudendal neuralgia (PN) is a result of pudendal nerve entrapment or injury, also called “Alcock syndrome.” Pain that develops is often chronic, and at times debilitating. If conservative measures fail, invasive treatment modalities can be considered. The goal of this case report is to add to a small body of literature that a pulsed radiofrequency (PRF) ablation can be effectively used to treat PN and to show that high resolution MR neurography imaging can be used to detect pudendal neuropathy.

Case Presentation: We present a case of a 51-year-old woman with 5 years of worsening right groin and vulva pain. Various medication trials only lead to limited improvement in pain. The first diagnostic right pudendal nerve block was done using 3 mL of 0.25% bupivacaine with 6mg of betamethasone using a transgluteal technique and a target of the right ischial spine; this procedure resulted in ~8 hours of > 50% pain relief. The patient was then referred for MR neurography of the lumbosacral plexus. This study revealed increased signal of the right pudendal nerve at the ischial spine and in the pudendal canal, findings consistent with the clinical picture of PN. Six weeks after the initial block, the patient underwent a second right transgluteal pudendal nerve block, utilizing 3 mL of 0.25% bupivacaine with 40 mg of triamcinolone acetonide; this procedure resulted in ~8 hours of 100% pain relief. Satisfied with these results the patient decided to undergo pudendal nerve PRF ablation for possible long-term relief. For this therapeutic procedure, a right transgluteal approach was again utilized. PRF ablation was performed for 240 seconds at 42° Celsius. Following this ablation the patient reported at least 6 weeks of significant (> 50%) pain relief.

Discussion and Conclusion: In this paper we presented a case of successful treatment of PN with PRF ablation and detection of pudendal neuropathy on MR neurography. We believe that transgluteal PRF ablation for PN might be an effective, minimally invasive option for those patients that have failed conservative management. MR neurography employed in this case is not only helpful in confirming the diagnosis of PN but could also be useful in ruling out other causes of pelvic pain, such as genitofemoral neuropathy, endometriosis, adenomyosis, or pelvic mass lesion. To conclude, transgluteal PRF ablation can serve as a viable treatment option for mitigating symptoms of pudendal neuropathy and MR neurography is useful in confirming a clinically suspected diagnosis of PN.

Key words: Pelvic pain, pudendal neuralgia, MR neurography, pulsed radiofrequency ablation, transgluteal technique, Alcock canal syndrome

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Pudendal neuralgia (PN) is a result of pudendal nerve entrapment or injury, also called “Alcock canal syndrome.” The common areas of nerve compression include the interspace between the sacrotuberous and sacrospinous ligaments and often

within the pudendal canal of Alcock (1-3). Etiologies of pudendal neuropathy are multiple, the most common being mechanical injury (e.g., repeated injury from bicycle rides (4,5) and prolonged compression from excessive sitting), trauma during childbirth, and

iatrogenic damage during surgical procedures. Pain that develops as a result of injury to the pudendal nerve is often chronic and at times debilitating. Areas of the perineum, anus, scrotum, penis, or vulva can be affected in various combinations. Initial management is usually conservative; it involves a combination of lifestyle changes to reduce further injury to the nerve in conjunction with pharmacologic options. Antidepressants and antiepileptics, and more recently palmitoylethanolamide, have all been used with success (6,7). If conservative measures do not provide the patient an acceptable level of pain relief, invasive treatment modalities such as local steroid injections and surgical decompression can be considered. The goals of this case report are to show that high resolution magnetic resonance (MR) neurography imaging can be used to detect pudendal neuropathy and to add to the growing body of evidence (8-10) that a pulsed radiofrequency (PRF) ablation can be effectively used to treat PN.

Case Presentation

We present a case of a 51-year-old woman with a past medical history significant for endometriosis, presenting with a complaint of 5 years of progressively worsening right groin and vulva pain. Pain was "pulling and stretching" in quality, aggravated by constipation and relieved by lying flat in bed. Though she endorsed greater than 20 years of right groin and pelvic discomfort likely associated with her endometriosis, her pain was notably worse over the preceding 5 years. The patient had a pertinent surgical history of episiotomy with vaginal delivery in 1978 but did not attribute her

persistent pain to this procedure. She did pursue a total abdominal hysterectomy and bilateral salpingo-oophorectomy (TAH/BSO) in 1993, but this procedure did not resolve her pain complaints.

The patient tried gabapentin, amitriptyline, and baclofen with no significant improvement in the pain; hence, she was not interested in any further medication trials. The patient did have substantial improvement in her pain following pelvic floor physical therapy; however, her relief was short lived.

Following our assessment, the patient was offered a diagnostic and potentially prognostic fluoroscopically guided right pudendal nerve block. The decision was made to utilize the posterior transgluteal approach, with the target at the ischial spine, as described by Abdi et al (11). This approach is the authors' preferred method for anesthetizing the pudendal nerve, as it reduces the risk of accidental needle puncture, which can occur when performing the block utilizing the traditional blind, intravaginal approach. Furthermore, fluoroscopic guidance may reduce the risk of inadvertent intravascular injection when compared to the blind approach. The block was performed using 3mL of 0.25% bupivacaine with 6 mg of betamethasone. At follow-up, she reported approximately 8 hours of > 50% pain relief.

To further evaluate the possibility of PN contributing to the patient's pain complex, the patient was referred for MR neurography of the lumbosacral plexus and pelvic nerve branches. This study was performed on a 3 Tesla scanner (Achieva, Philips, Best, Netherlands). It revealed normal appearance of the major plexus nerves (Fig. 1a, b). However, there was increased signal of the

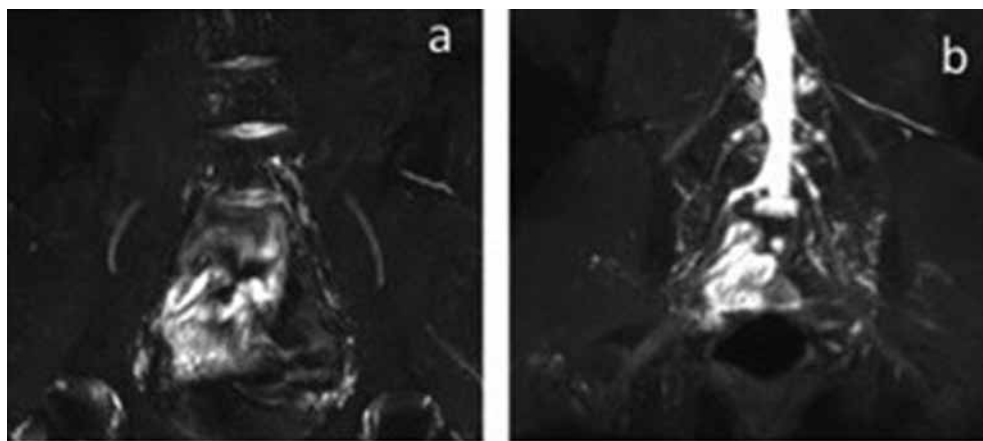


Fig. 1. MR neurography. Normal appearance of the major plexus nerves.

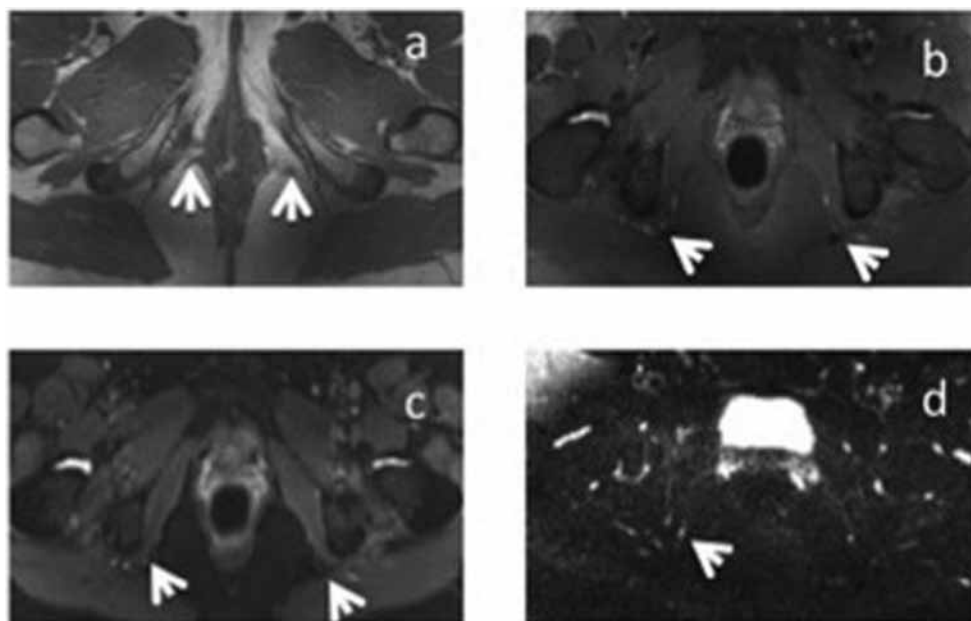


Fig. 2. MR. neurography. Axial anatomic T1W (a) image shows bilateral perineal scarring (right to left). Axial fat-suppressed T2W (b), inversion recovery (c) and diffusion weighted (d) images show the asymmetrically hyperintense right pudendal nerve.

right pudendal nerve at the ischial spine and in the pudendal canal with distal perineal fibrosis (right > left) in keeping with pudendal neuropathy and thereby correlating with the patient's clinical findings of pudendal neuralgia (Fig. 2a – d).

Six weeks after the initial block, the patient underwent a second right transgluteal pudendal nerve block utilizing the same technique as the first block. This time, 3 mL of 0.25% bupivacaine with 40 mg of triamcinolone acetate was injected. The decision was made to utilize triamcinolone in place of betamethasone due to its larger particulate size and possibly longer-lasting results. At follow-up, the patient again endorsed approximately 8 hours of relief but stated that the pain relief was 100% in the affected area. The patient was satisfied with the degree of the pain relief provided by both of the diagnostic injections and expressed interest in proceeding with a right transgluteal pudendal nerve pulsed radiofrequency ablation for potentially long-term relief.

For this therapeutic procedure, a right transgluteal approach with a target of the ischial spine was again utilized, and proper placement of the ablation needle was confirmed by eliciting paresthesias into the right vaginal area with 50 Hz stimulation at 0.8 V (Fig. 3). Pulsed radiofrequency ablation was performed for 240

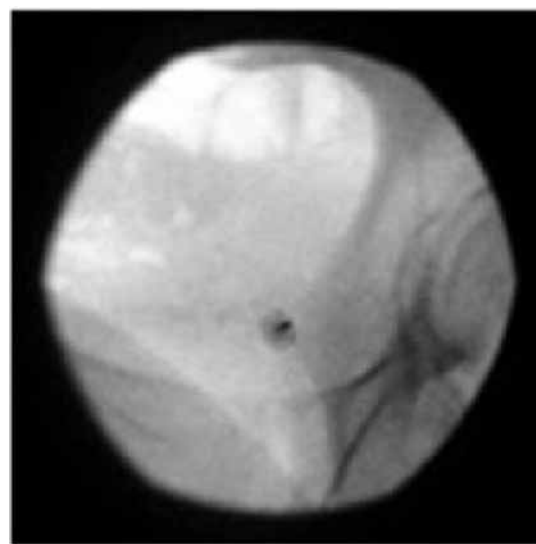


Fig. 3. Neurotherm needle placement at the ischial spine.

seconds at 42 degrees Celsius. At the conclusion of the procedure, 2mL of 0.25% bupivacaine with 6 mg of betamethasone was injected in an effort to afford some immediate relief.

The patient did not return for a regularly scheduled post-procedure visit that was scheduled one month following her therapeutic ablation. Three months following the procedure, a follow-up telephone interview was conducted, during which time the patient indicated that she had had at least 6 weeks of significant (> 50%) pain relief in the affected area, was pleased with the result, and thus had not scheduled a follow-up. At that time, she stated she would be interested in potentially repeating the procedure in the future.

Discussion

In this paper, we presented a case of PN confirmed with MR neurography imaging and treated with pulsed radiofrequency ablation of the right pudendal nerve using a transgluteal technique targeting the nerve at the posterior ischial spine. This is not a well-described technique for treatment of pelvic pain related to PN.

When the patient did not return for her scheduled post-procedure follow-up, the authors were not able to evaluate the efficacy of the intervention. The decision was made to contact the patient via telephone because this was a rather novel procedure, and the authors wanted to confirm that the patient had not experienced any untoward effects from it. It was discovered that the reason the patient did not return for her one-month post-procedure follow-up was that she had experienced pain relief and did not feel the need to return at that time. Although the patient only endorsed 6 weeks of significant pain relief, she never returned for further evaluation to discuss other treatment modalities. We believe that even with only 6 weeks of pain

relief, the procedure was very low risk, and a repeat procedure could potentially afford her even longer-term relief with minimal adverse effects.

Based on this case report, transgluteal pulsed radiofrequency ablation for pudendal neuralgia might be an effective, minimally invasive option for those patients for whom conservative management has been ineffective. To properly assess the safety and efficacy of this novel technique, future randomized controlled trials are needed. However, due to its minimally invasive approach, this procedure could be offered to individuals hoping to avoid an invasive surgical treatment or to those for whom surgical intervention may be a high risk based on other comorbidities.

Detection of neuropathy findings through MR neurography serves as an objective tool to evaluate the complex problem of chronic pelvic pain. The technology also allows providers to potentially exclude other causes of pelvic pain, such as genitofemoral neuropathy, endometriosis, adenomyosis, or pelvic masses (12). We were able to utilize this imaging technique to further support the diagnosis of pudendal neuralgia based on the patient's presentation and short-lived response to diagnostic pudendal nerve blocks.

Conclusion

To conclude, we believe this case report illustrates that MR neurography can be a useful tool in confirming a clinically suspected diagnosis of pudendal neuralgia, and transgluteal pulsed radiofrequency ablation can serve as a viable treatment option for mitigating symptoms of chronic pudendal neuropathy.

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