

# Computed Tomography–Guided Pudendal Nerve Block. A New Diagnostic Approach to Long-term Anoperineal Pain: A Report of Two Cases

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**Objective:** To show the value of computed tomography (CT) in selectively blocking the pudendal nerve in patients with long-term anogenital pain of uncertain etiology. We report a technique to selectively block the pudendal nerve using CT guidance in 2 patients with long-term anogenital pain.

**Case Report:** In 1 patient, a competitive cyclist, the diagnosis of pudendal neuralgia was substantiated by blocking the nerve under CT. The procedure relieved the pain for approximately 24 hours. In the other patient, pudendal nerve block produced perineal analgesia but no pain relief. Superior hypogastric plexus block relieved the pain significantly for about 4 weeks on 2 separate occasions, suggesting sympathetically maintained pain.

**Conclusion:** The use of CT to guide the procedure allowed precision in performing the procedure and in making a differential diagnosis. *Reg Anesth Pain Med* 2000;25:420-423.

**Key Words:** Anogenital pain, Perineal pain, Pudendal neuralgia, Computed tomography, Pelvic pain.

Long-term anoperineal pain is a frequent complaint in patients of either sex. The source of this pain can be difficult to ascertain.<sup>1,2</sup> The ideal treatment for this condition is probably interdisciplinary, involving biofeedback<sup>3</sup> and other behavioral techniques. Perineal pain can be associated with pathology of the urogenital tract.<sup>3-5</sup> Pudendal neuralgia should be considered in the differential diagnosis of long-term anoperineal pain in patients of both sexes.

The pudendal nerve is a somato-sensory nerve derived from the S2-S4 roots. It provides sensory innervation to the anal, perineal, and genital area. It also provides motor supply to the pelvic floor muscles.<sup>6</sup> The pudendal nerve can become entrapped and compressed at the attachment of the sacrospinous ligament to the ischial spine<sup>7</sup> or where it crosses the falciform ligament.<sup>8,9</sup>

In this report, we describe the technical aspects of pudendal nerve block using computed tomographic (CT) guidance in 2 patients with perineal pain.

## Case One

A 39-year-old man complained of burning pain in the scrotum and anus. The pain was constant at a level of 7-8/10 on a visual analogue scale (VAS). The pain was aggravated with sitting, during penile erection, and ejaculation. The pain was alleviated in part by a supine or standing position. The pain had been managed with sustained-release oxycodone (40 mg twice a day) and gabapentin (300 mg three times a day) without success. Physical examination revealed bilateral testicular tenderness and mild mechanical allodynia in the scrotum and perineum. Sacroiliac joint examination did not demonstrate pathology.

The patient underwent superior hypogastric plexus blocks under fluoroscopic guidance on 2 separate occasions. Pain relief was reported for about 28 days each time (VAS 3-4). The patient continued to report persistent discomfort in the scrotum and perineum (VAS 3). Oxycodone was reportedly more efficacious in providing analgesia and was continued at 40 mg twice a day. The patient was unable to appreciate any difference in his analgesia with the gabapentin and it was discontinued.

When the pain returned to control values (VAS 8-9/10), we elected to perform a diagnostic block of the pudendal nerve under CT guidance (vide infra for pudendal block technique). This was designed to

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assess underlying pudendal neuralgia caused by compression of the pudendal nerve at the ischial tuberosity. The injectate consisted of 4 mL of 1% lidocaine plus 1 mL of triamcinolone (40 mg). This produced scrotal, penile, and perineal analgesia to touch and pinprick. The pain, however, remained at the same level; thus, limiting pudendal neuralgia as etiologic.

## Case Two

A 52-year-old man, a competitive cyclist with a history of perineal and scrotal pain of 2 years' duration, had a constant pain level of 2-3/10, and it was consistently and significantly aggravated (8/10 VAS) by sitting for 10 minutes. During the painful episodes, scrotal mechanical allodynia was reported. Standing or lying down relieved the pain. The pain was treated with gabapentin 300 mg daily for 6 months without any success. The patient was referred by the treating physician for evaluation. After examination, we decided to perform a diagnostic bilateral pudendal nerve block under CT guidance. Each nerve was blocked by injecting 4 mL of lidocaine with 1 mL of triamcinolone (40 mg). The procedure resulted in penile, scrotal, and perineal analgesia to pinprick and touch in about 10 minutes. The patient experienced almost complete pain relief for 24 hours after the procedure even after prolonged sitting.

## CT-Guided Pudendal Nerve Block Technique

In the prone position, sedation was achieved with 2 to 4 mg of intravenous midazolam. Blood pressure, electrocardiogram, and SpO<sub>2</sub> were continuously monitored.

Five-millimeter collimating images were sequentially obtained from the head of the femur to the ischium. The ischial spine, the sacrospinous and sacrotuberous ligaments, and the falciform process were identified.

The tip of the falciform process constitutes the main anatomical target in performing the procedure. This is commonly found immediately medial to the midportion of the femoral head (Fig 1).

Using aseptic technique, 22-gauge spinal needles were advanced transgluteally toward the pudendal nerve near the ischium, medial to the falciform process between the sacrotuberal and sacrospinous ligament. The sciatic nerve is located lateral to the falciform process; therefore, needle advancement needs to be monitored to avoid unintentional sciatic nerve contact.



**Fig 1.** CT scan through pelvis. The dotted line corresponds to the area where the pudendal nerve was blocked (Fig 2). This corresponds to the ischium, and is usually found medial the midportion of the femoral head. Multiple images were obtained through this area to visualize the most prominent aspect of the falciform process. This is the most likely site of pudendal compression.

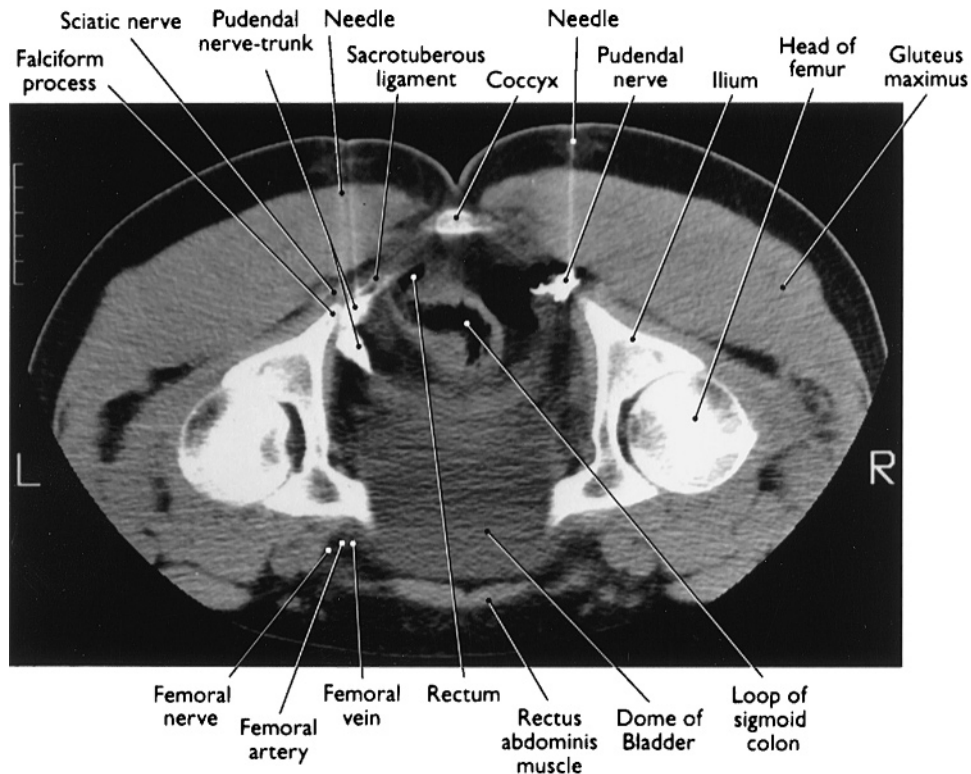
The final location of the needle position was ascertained by injecting 0.3 mL of iohexol 300, and the dye distributes itself in the territory of the pudendal nerve (Fig 2).

## Discussion

The etiology of perineal pain can be difficult to ascertain. In males, it can be associated with long-term prostatic disease that often follows a recurrent pattern.<sup>1,2</sup> In females, it can be further complicated by pelvic pathology.<sup>3</sup> Some patients have perineal pain caused by pudendal neuralgia secondary to compression.<sup>10</sup> Cyclists are particularly prone to this syndrome, presumably because of repeated trauma to the perineum.<sup>11</sup>

The pudendal nerve is susceptible to compression at the attachment of the sacrospinous ligament to the ischial spine. At this level, the nerve may become entrapped ventrally by the sacrospinous ligament and the sacrotuberous ligament dorsally.

Another potential site of compression is in the pudendal canal where the nerve courses rostral to the falciform process. Repeated trauma to this area presumably leads to long-term perineural inflammation and soft-tissue hypertrophy, giving rise to neuralgia. Even though our patients did not have any evidence of perineural inflammation, a steroid was added empirically to the injectate. Males may



**Fig 2.** Collimating images were obtained through the pelvis from S3 to the caudal end of the femoral head. The ischium, located medial to the femoral head, was used as the reference to block the pudendal nerve. The apex of the falciform process can be clearly identified in this axial section of the pelvis. The needle was directed medial to the apex of the falciform process where the pudendal nerve is located. When the needle tip was on target, contrast material (iohexol 300) was injected; it can be seen just medial to the falciform process in the vicinity of the pudendal nerve. The local anesthetic-steroid mix was injected at this anatomical location. The sciatic nerve is on the lateral aspect of the falciform process; the use of CT to guide the procedure allowed precise block of the pudendal trunk, thus avoiding the adjacent sciatic nerve.

have long-term prostatitis or orchialgia expressed as perineal pain.<sup>5</sup> This type of pain may be sympathetically maintained and may or may not be related to pudendal neuralgia.<sup>4</sup>

In the differential diagnosis of perineal pain, consideration should be given to pudendal neuralgia. In the cases reported here, it is evident that patient 2, with a long-standing history of cycling, did, in all probability, suffer from pudendal neuralgia. This diagnosis was confirmed by the observation that analgesia was obtained, lasting nearly 24 hours after the pudendal nerve block.

In patient 1, the pudendal block failed to relieve the pain despite perineal analgesia lasting about 18 hours. This observation minimized pudendal neuralgia as a primary diagnosis and presented the possibility of orchialgia of uncertain etiology.

Block of the superior hypogastric plexus did not significantly alleviate patient 1's pain for 28 days in a reproducible manner on 2 separate occasions, thus suggesting sympathetically maintained pain.

The use of CT images to guide the nerve block

added a level of precision to the procedure, thus helping us make a differential diagnosis. Even though we did not encounter any complications or side effects, there are some potential pitfalls in performing this procedure.

The position of the needle tips should be monitored periodically during needle advancement. When the tip is in the vicinity of the falciform process, further needle advance should be done slowly to avoid mechanical trauma to the nerve. Another possible problem could be injecting or damaging the sciatic nerve as it courses lateral to the falciform process, thus potentially complicating the interpretation of the results.

The pudendal block technique under CT guidance has been described in a cadaveric model.<sup>12</sup>

The ideal management of pelvic pain, in general, and pudendal neuralgia, in particular, has not been defined. Antidepressants and anticonvulsants are used (though with poor results).

Pudendal neurolysis, with transposition, has been reported as a treatment of pudendal neuralgia caused

by nerve compression. Some pain relief was reported in the short- and mid-term course.<sup>13</sup> The same investigators used CT guidance to block the pudendal nerve at the possible sites of compression as a diagnostic tool. They emphasized predominantly the surgical aspect of the procedure, and not the technique, to block the pudendal nerve.

In conclusion, we believe that CT guidance is an effective imaging alternative to fluoroscopy when blocking the pudendal nerve. Furthermore, we believe CT guidance adds more precision to the procedure, especially when attempting to determine if pudendal neuralgia is the result of nerve compression.

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