

Peripheral Nerve Stimulation Placement for Pudendal Neuralgia: A Case Series

Introduction

- Pudendal neuralgia (PN) is a chronic pelvic pain condition that is usually related to pudendal nerve pathology, commonly presenting with sharp and burning pain in the perineal region, specifically worsening with either bowel movements, intercourse, and prolonged sitting as well as sexual dysfunction. ^[1]
- PN is diagnosed when the following criteria is met: ^[2]
 - Pain in pudendal nerve anatomical territory
 - Pain worsens with sitting
 - Patient does not have sleep disturbances due to pain
 - No other sensory loss on physical exam
 - Pain relief with pudendal nerve block.
- PN can be caused by nerve entrapment, damage to the pudendal root or one of its branches. Common causes are horse riding, excessive cycling, chronic constipation, stretching of pelvic floor muscles during childbirth, or compression injury during various surgical procedures (pelvic floor surgery, hip surgery, etc); however, in some cases, a specific cause is unknown.

Methods

- A SPRINT® Peripheral Nerves Stimulator (PNS) system was utilized, which offers a minimally invasive 60-day implant with indication for low back pain, shoulder pain, head and neck pain, post-amputation pain, and chronic and acute post-operative pain. SPRINT® PNS offers both single lead and dual lead systems using a “microlead” delivered though a percutaneous introducer with the proximal end connected to a wearable controller device, with a flexible coil that reduces lead migration and allows patient free movement with minimal discomfort. ^[3]
- The PNS was placed with an introducer needle under ultrasound or fluoroscopy guidance, targeting the pudendal nerve inferior to ischial spine.
- Patients were followed for a total of 6 months with numeric pain score and functional assessment reports taken at 14 days, 60 days, 3 months, and 6 months.

Case Series

	Indications	Technique	Complications
Case 1	Chronic pelvic, right sided medial groin, and right thigh pain exacerbated by bowel movements, touch, prolonged sitting and standing. Relieved by stretching, topical anesthetics, and sitting with a donut pillow.	Ultrasound	None
Case 2	Left buttock and perineal pain lasting > 10 years with no precipitating injury or trigger. exacerbated by sitting for extended periods of time. Relieved by lying down.	Fluoroscopy and Ultrasound	Bleeding and small hematoma formation requiring 3 attempts
Case 3	Low back pain, bilateral leg pain, and pelvic pain after childbirth and episiotomy. Rectal pain worsened with defecation, pelvic pain worsened with prolonged sitting or standing, and vaginal pain worsening with intercourse.	Ultrasound	Required 2 attempts
Case 4	Pelvic, lower abdominal, perineal, and vaginal pain worsens during and after intercourse, with bowel movements and urination, and with exercise. No alleviating factors.	Ultrasound	Day 1 post-op tenderness and swelling over site. Week 1 pain in sciatic distribution. Right lead removed at day 14. Lead removed after pain and swelling in right foot.

Pain scores and functional assessment

	Pre-Procedure	14d post-op	60d post-op	90d post-op	Functional Changes
Case 1	7/10	5/10	4/10	3/10	Subjective improvement with sitting
Case 2	8/10	6/10	3/10	5/10	None
Case 3	7/10	6/10	5/10	6/10	Subjective improvement in ADLs, particularly with lifting, sitting and standing for long periods of time
Case 4	7/10	10/10	7/10	7/10	None

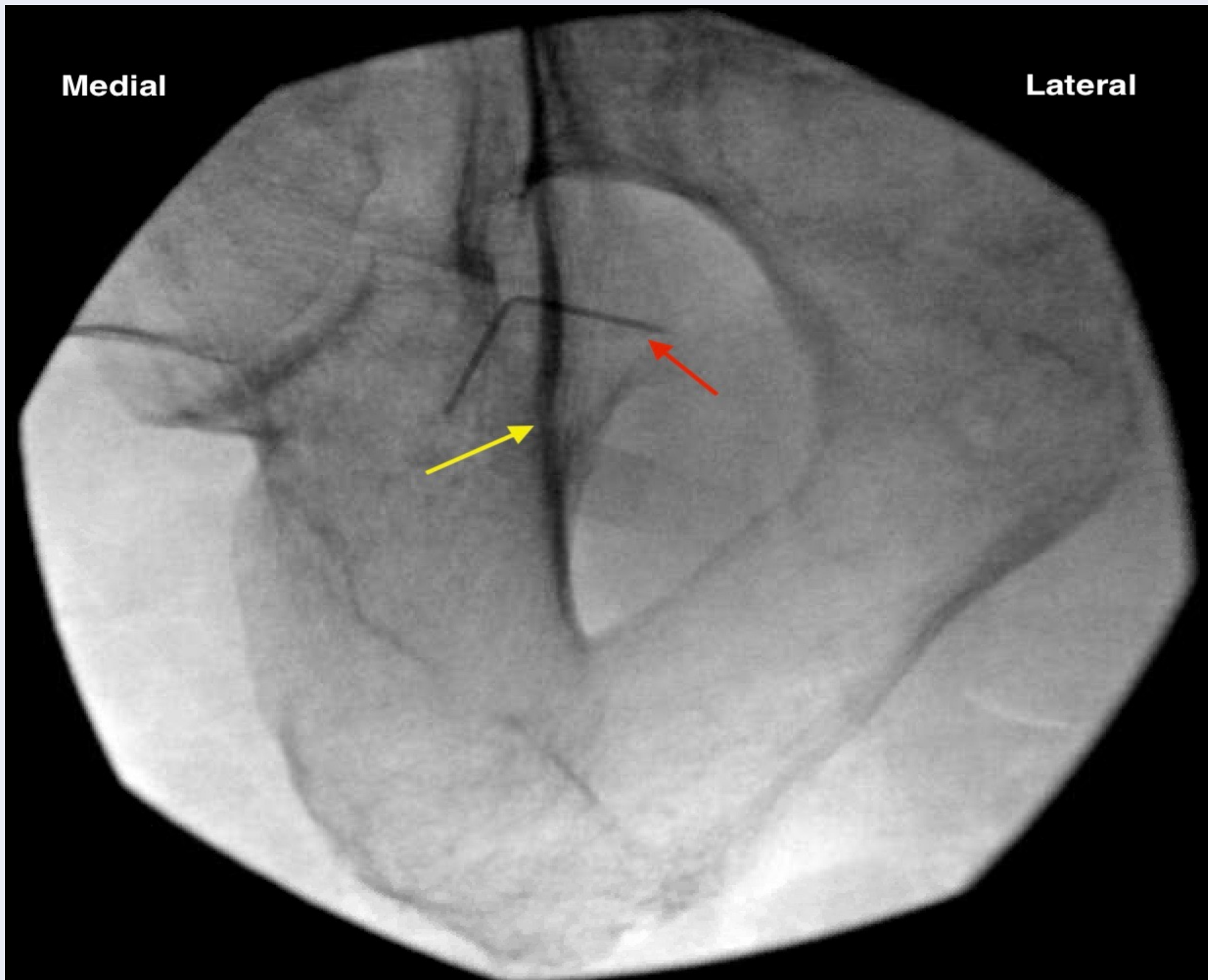


Figure 2: Posterior approach of fluoroscopy-guided PNB with the **introducer needle** advanced towards the **ischial spine** with **contrast injection** along the ischial spine, where the pudendal nerve lies.

Conclusions

- This 4-patient case series showed one patient with >50% pain reduction and functional improvement at 3 months after lead removal, one patient with mild improvement at 3, one patient with mild improvement at 6 months, and one patient with an incomplete stimulation (early removal due to painful sciatic stimulation, and no improvement in pelvic pain).
- Based on our experience with case 2, the ultrasound approach is more favorable than the fluoroscopic approach in avoiding small blood vessels, such as branches of the inferior gluteal artery.
- If utilizing the ultrasound approach, a curvilinear probe must be used due to the deep nature of the nerve, having a deep course requiring 5 – 6 cm of depth.
- The most common documented complication is lead migration, varying between studies but ranging between 60-100% [4-6]. Sciatic nerve stimulation due to lead migration is a possible reason for the sciatic nerve pain that occurred one week after lead placement with case 4.
- Further studies of pudendal peripheral nerve stimulation with the 60-day system with larger patient cohorts need to be pursued to amass more meaningful clinical outcomes.

References

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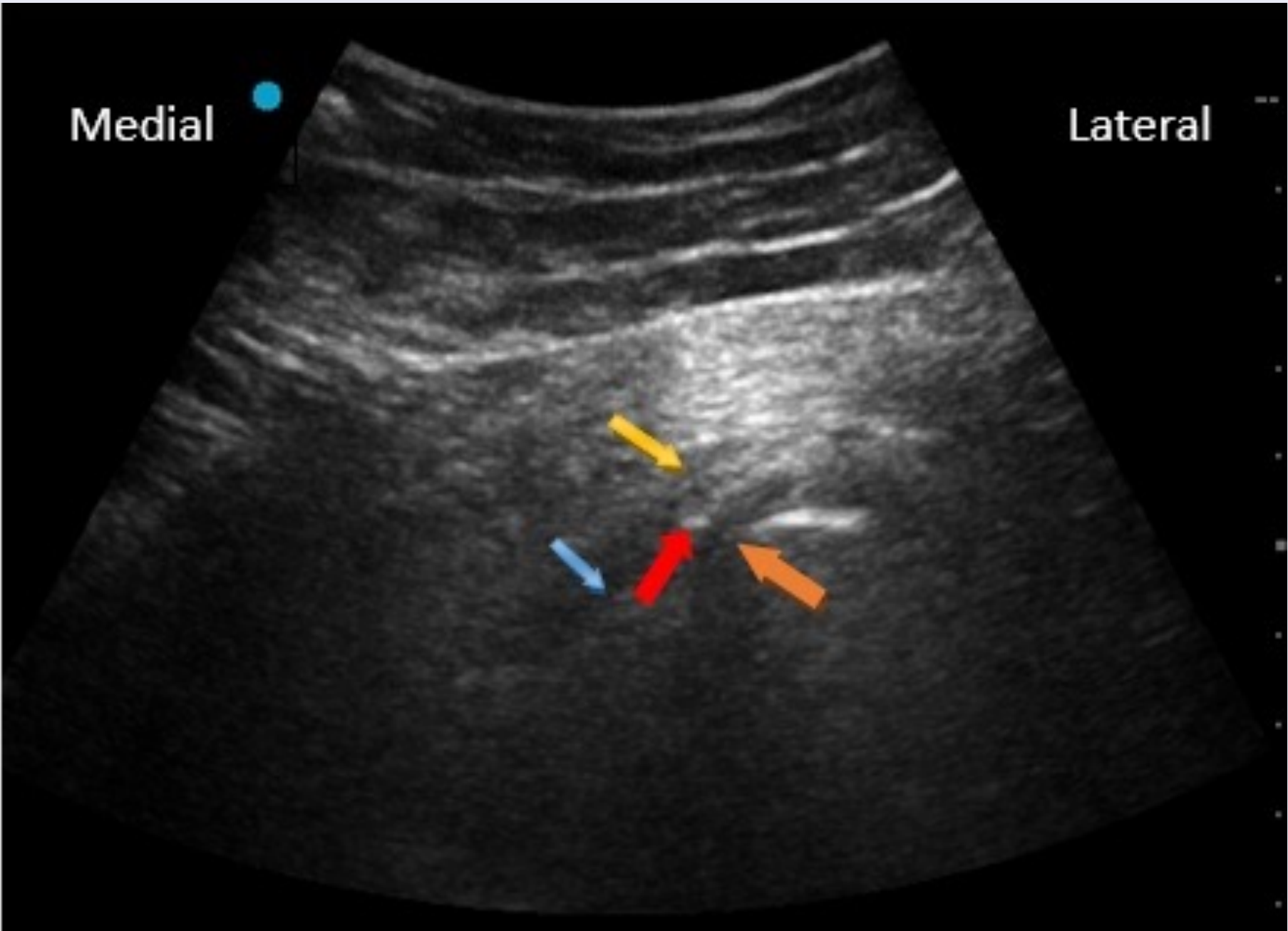


Figure 1: Ultrasound-guided PNB is performed with a curvilinear probe and an introducer needle where patient is placed in the lateral decubitus position with affected side up. Our target is the **pudendal nerve**, just inferior to the **ischial spine**, at the intersection of the internal obturator muscle, **sacro-tuberous ligament**, and **iliococcygeus muscle**.