Pulsed radiofrequency for chronic post-herniorrhaphy inguinal pain: A road less traveled

Dear Editor,

The development of chronic post-herniorrhaphy inguinal pain (CPIP) is a growing concern which impacts patient satisfaction, health care utilization and quality of life. Different treatment strategies have been proposed for chronic pain following inguinal hernia repair, though marred by the absence of a definitive appropriate management strategy in all patients.[1] Pulsed radiofrequency ablation (PRFA) is a novel therapeutic modality and we report two cases demonstrating its use in pain management.

A 68-year-old male patient, postoperative case of mesh hernioplasty was referred to a pain clinic after 4 months for persistent non-radiating groin pain (verbal categorical pain score 8/10), which increased on getting up from his bed, walking up the stairs, and starting his scooter. It was shooting in character and associated with altered sleep and appetite. He had no history of urinary retention. On examination, there was no local redness or edema. A well-healed fine scar mark was present with tenderness on deep palpation. The pain became refractory to oral diclofenac with serratiopeptidase combination after the initial response.

His pain score dropped to 4/10 with oral medications (pregabalin 150 mg bd, amitriptyline 50 mg hs, and tramadol-paracetamol combination tds). Although, the pain persisted on getting up from bed or while brisk walking. His pain scores further reduced to 2/10 with six injections of a combination of 4 mL of 0.25% bupivacaine with 20 mg of methylprednisolone in the groin area at 2-day intervals. The patient was pain-free for 6 months with marked improvement in sleep and appetite but following this period he had a recurrence of severe pain (6/10).

With his informed consent, PRFA of the ilioinguinal nerve (IIN) using the Cosman PRF machine (Cosman, MA, USA) was performed. The local point of tenderness was ascertained, and under complete asepsis, a 22-gauge 3.5-inch insulated radiofrequency needle was advanced under ultrasound guidance. The PRF probes were then inserted and sensory testing achieved at 0.5 mA. With the pulse setting, the probes were heated to 42°C for a total of 120 s, with current bursts of 20 ms.

The patient reported a marked decline in pain score to 2/10 after 2 weeks, with concomitant improvement in sleep, appetite, and daily functioning. He remained pain-free for a year, after which the procedure was repeated. Currently, he leads a gainful life.

The second case was of a 40-year-old male patient, factory worker dealing with heavy-weight equipment, referred to pain clinic 3 months after undergoing mesh hernioplasty, with persistent severe pain (verbal categorical pain score 9/10) with similar characteristics and adverse consequences as in case 1. The pain was refractory to conservative approaches including oral medications continued for 6 weeks followed by local injections of bupivacaine and methylprednisolone. He still was unable to ride his bike or continue work involving lifting heavy machines with a pain score of 5/10.

After discussion and obtaining informed consent, he was then subjected to PRFA of IIN using the same equipment and technique as mentioned above. His pain score came down significantly after a month and oral medications were tapered gradually over 2 months. He remained pain-free for 6 months, after which the second PRFA at pain score of 6/10 was repeated. His pain score dropped significantly after 2 weeks. Currently, he leads a gainful life but does feel a sensation of heaviness while lifting heavy machine parts.

PRF delivers high-intensity currents in pulses, allowing for heat (typically 42°C) to dissipate during the latent phase. Since the neurodestructive temperatures are not obtained, the risk of neuroma formation, neuritis-type reaction, and deafferentation pain are lowered. This mild heating of the nerve tissue is thought to temporarily block nerve conduction; however, the exact mechanism of analgesia is unclear. It may involve a temperature-independent pathway involving alterations in neural functioning mediated by a rapidly changing electrical field.[2] In addition, Wijayasinghe *et al.* demonstrated the role of peripheral afferents input in maintaining persistent pain in patients with CPIP.[3] Lee *et al.* also demonstrated that reduction of neuropathic pain after PRF stimulation applied proximal to the injured peripheral nerve may be associated with inhibition of the expression or anterograde transportation of TNF-α causing neuromodulation effects in an animal model study.[4]

PRFA has been reported rarely in CPIP [Table 1].

Further studies are required to firmly establish the efficacy and safety of PRFA for CPIP, especially for peripheral application, but our case reports emphasize the need for pursuing this line of approach for CPIP cases resistant to conventional treatment as a "road less traveled."

Table 1: Case reports or series illustrating use of PRFA in chronic ilioinguinal neuralgia including CPIP

Case reports or series	Subjects (number)	PRFA	Results
Rozen D, Parvez U[2]	Chronic ilioinguinal neuralgia (5)	At vertebral T12, L1, and L2 nerve roots	All patients reported 75-100% pain relief for 6-9 months
Rozen D, Ahn J[5]	Chronic ilioinguinal neuralgia (5)	At vertebral T12, L1, and L2 nerve roots	4 out of 5 patients were pain-free for 4-9 months
Makharita and Amr[6]	Chronic ilioinguinal neuralgia (21) randomized in two groups	At nerve roots	PRF for dorsal root ganglion is a promising modality
Cohen and Foster[7]	Chronic groin pain (3) [CPIP (2)]	Peripherally based on anatomic location of these nerves in the groin, and correct needle placement was confirmed using sensory stimulation	100% pain relief for 6 months
Mitra *et al.*[8]	Non-CPIP ilioinguinal neuralgia (1)		Pain-free for 3 months
Present cases	CPIP (2)	Directly on the ilioinguinal nerve under ultrasound guidance	Both patients were pain-free for 6-12 months

CPIP: Chronic post-herniorrhaphy inguinal pain

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patients understand that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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