

# Management of Meralgia Paresthetica with Pulsed Radio Frequency Ablation of the Lateral Femoral Cutaneous Nerve and Dorsal Root Ganglion at L2 & L3 Level

Dr. K. V. D. Praveen<sup>1</sup>, Dr. Paladugula Prasanna<sup>2</sup>, Dr. Anitha Sanapala<sup>3</sup>, Dr. A. Shirisha<sup>4</sup>, Dr. Srijia P.<sup>5</sup>

<sup>1, 2, 3, 4, 5</sup>Mahatma Gandhi Cancer Hospital and Research Institute, Visakhapatnam

**Abstract:** *Meralgia Paresthetica is a neurological condition characterized by burning pain, numbness and tingling sensation along the distribution of the lateral femoral cutaneous nerve caused by either entrapment or compression. We report a case in 36 years old female patient presented with a history of pain and paresthesias in the right anterolateral aspect of thigh consistent with Meralgia paresthetica. We performed diagnostic block for lateral femoral cutaneous nerve (LFCN) which resulted in 90% pain relief. So based on the diagnostic block results we performed pulsed Radiofrequency ablation (PRF) of LFCN and DRG at L2 & L3 spinal segment level at 42°C for 120 seconds for 2 cycles followed by 40mg depomedrol injection at each site. The patient reported long term pain relief after procedure.*

**Keywords:** Meralgia paresthetica, pulsed radiofrequency ablation (PRF), lateral femoral cutaneous nerve (LFCN), dorsal root ganglion (DRG)

## 1. Introduction

Meralgia paresthetica is characterized by pain, paresthesia and sensory impairment along the distribution of the lateral femoral cutaneous nerve (LFCN) caused by either compression or entrapment of the nerve, as it crosses the anterior superior iliac spine and runs beneath the inguinal ligament to enter the thigh. Lateral femoral cutaneous nerve originates from (posterior) dorsal division of L2&L3 Spinal segments.

Most of the patients with Meralgia paresthetica achieve satisfactory pain relief from non interventional treatment such as lifestyle changes, weight loss, analgesics and neuropathic medications or from anesthetic nerve blocks. However a small group of patients demonstrate intractable pain that relapses after these treatments. In such cases more aggressive interventions have been considered, including surgical decompression (neurolysis) or transaction of the LFCN (1) that are associated with Deafferentation pain and other complications.

Radiofrequency ablation has also been used for many years to block pain transmission (2) that involves a constant application of high temperature which may be associated with Wallerian degeneration (3, 4), severe neuro destruction and deafferentation effect. Whereas pulsed radiofrequency ablation is an alternative to conventional radiofrequency ablation and appears to be relatively free of tissue damaging effects (5).

## 2. Case Details

A 36 years old female patient presented with history of pain, tingling sensation and numbness in right anterio lateral aspect of thigh since 6 months, her pain score was 6/10 on numerical rating scale, pain exaggerated during long sitting,

lying down on same side and relieve with rest and standing for 5 - 10 minutes. She was investigated thoroughly elsewhere and major causes of pain were ruled out, and so patient was advised conservative management. On examination patient is moderately built, strait leg raising test and neurological examination were normal. On palpation the patient had hyperalgesia in the distribution of right lateral femoral cutaneous nerve of thigh. So we suspected Meralgia paresthetica based on the history and clinical findings. To confirm the diagnosis, we performed a diagnostic nerve block of the LFCN which resulted in 90% pain relief. So based on the diagnostic block results we have planned to perform pulsed Radiofrequency ablation (PRF) of right LFCN and right DRG at L2 & L3 level.

In the operating room after positioning the patient in supine and securing intravenous access, the procedure was done under continuous ASA monitoring. Under strict aseptic precautions and ultrasound guidance using linear probe (high frequency), right LFCN was located above the sartorius muscle (SaM) in the area under tensor fascia lata muscle (TFLM). A 22gauge 10cm length RF needle with 5mm active tip was inserted in plane in a lateral - to - medial direction through the subcutaneous tissue. A fascial "pop" was felt as the needle tip enters the plane between the TFLM and SaM. Sensory stimulation was conducted with 50 Hz (0.6v) which caused paresthesia in the anterior lateral side of the thigh. Following sensory stimulation, PRF current at 42°C for 120 seconds for 2 cycles then needle was rotated 180° and an additional cycle of pulsed PRF was performed followed by injection of depomedrol 40 mg along with a local anesthetic agent. (fig1)



Figure 1: LFCN on USG



Figure 2: Lateral View



Figure 3: AP VIEW

For PRF on DRG at L2 & L3 the patient was made to lie in prone position. After identifying L2&L3 pedicles under c - arm guidance with appropriate views, skin and subcutaneous tissue was infiltrated with 1% lignocaine. Under fluoroscopy guidance, 22 gauge 10cm RF needle with 10 - mm active tip was inserted in oblique view. After confirming the position of the needle tip (dorso - cranial quadrant of the intervertebral foramen) (FIG 2, 3), Sensory stimulation was made (50 Hz, 0.4 - 0.6 voltage) which resulted in paresthesia in the lateral aspect of thigh. A pulsed radiofrequency ablation was conducted at 42 °C for 120 seconds for 2 cycles at dorsal root ganglion (DRG) followed by injection of depomedrol 40mg along with local anesthetic agent each at

L2 & L3 level. Post procedure Patient was monitored for 2 hours, no complications were observed. During further follow - up, patient reported no relapse of symptoms. The patient rated her pain as 0 on 0 to 10 numerical rating scale of pain.

### 3. Discussion

In the above case we described the application of pulsed radiofrequency ablation for the treatment of longstanding Meralgia paresthetica pain. We recommended pulsed radiofrequency ablation (LFCN and DRG at L2&L3) to the patient for several reasons. Firstly the temporary relief of pain with diagnostic block gave us confidence that the LFCN was the source of pain and required neuromodulation for LFCN, which is supported by studies done by **Dr. AnshulAgrawal et al. Journal of Case Reports and Scientific Images 2021 (6)**, **Alaa Abd - Elsayed et al. American Academy of Pain Medicine 2020, (7)** **Jae Jun Lee et al. pain physician journal 2016 (8)**.

Secondly our previous experience using pulsed radiofrequency at DRG for lumbar radicular pain and published reports of its application, which is supported by studies done by **Harsha Shanthanna et al. Journal of Pain Research 2014 (9)**, **Farnadimani et al. anesthesiology and pain medicine 2012 (10)**. So we suggested that similar therapeutic success might be achievable in meralgia Paresthetica.

Thirdly, reports of anatomical variations in the course and localization of the LFCN and the proximity of the LFCN to the femoral and obturator nerves (11, 12) suggested an increased risk of collateral damage if neuroablation was performed using conventional radiofrequency ablation or chemical neurolysis. The use of pulsed radiofrequency would not cause nerve destruction or impair nerve function.

Management with pulsed radiofrequency ablation of LFCN and DRG at L2 & L3 level resulted in near complete long term relief of thigh pain in our patient with meralgiaparthetica, without any side effects. The patient showed an improvement in sensory function in the treated leg. This outcome improved the quality of life of the patient.

### 4. Conclusion

The case reported here provides evidence that pulsed radiofrequency of the LFCN and DRG PRF at L2&L3 level provides an effective, low risk treatment in patients with Meralgia paresthetica who are having relapse after conservative management.

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