

Meralgia Paresthetica

Meralgia paresthetica (MP) is a neuropathic disorder characterized by abnormal sensations such as tingling, numbness, or burning pain in the outer thigh. The condition is most commonly unilateral but can occur bilaterally in approximately 20% of cases. Although MP is more prevalent in adults aged 40 to 60, it has been reported in pediatric populations as well. The primary cause of MP is the entrapment or irritation of the lateral femoral cutaneous nerve (LFCN), which provides sensation to the skin of the lateral and anterolateral aspects of the thigh. While MP is generally benign, it can significantly affect quality of life.

Pathophysiology and Etiology

The lateral femoral cutaneous nerve, which arises from the lumbar plexus (specifically the L2 and L3 spinal nerves), is vulnerable to compression along its pathway. The LFCN travels through the pelvis and the inguinal ligament before branching out to the skin of the thigh. This nerve can be compromised in various ways, leading to the symptoms characteristic of MP. The condition is often exacerbated by external pressure on the nerve, as seen in patients with increased abdominal girth, obesity, or pregnancy, all of which elevate the pressure on the LFCN in the pelvic region.

Several factors have been identified as contributing to the development of MP, including obesity, diabetes, pregnancy, and external compression (e.g., from tight clothing or belts). Additionally, trauma, surgical procedures near the inguinal region, or certain medications (such as statins) have been linked to the onset of MP. Less common causes of the condition include iliacus hematoma, lipomas over the sartorius muscle, and acute appendicitis. The pathophysiology underlying MP often involves ischemic damage or mechanical compression, leading to irritation or entrapment of the LFCN.

Clinical Presentation and Diagnosis

The hallmark of MP is pain and paresthesia localized to the outer thigh, which may manifest as burning, tingling, or numbness. Symptoms are often aggravated by standing or hip extension, and relief is typically experienced while sitting. However, some patients report no correlation between symptoms and body position. The diagnosis of MP is primarily clinical, based on a detailed patient history and physical examination.

- **History:** A thorough history should include an inquiry about external compression from clothing, belts, corsets, or other restrictive garments. It is important to ask patients about prior surgeries, particularly in the inguinal region or spine, as these may contribute to

nerve compression. The presence of diabetes mellitus should be evaluated due to the higher incidence of MP in these patients.

- **Physical Exam:** On examination, patients with MP may experience localized pain upon palpation of the anterior-inferior hip region, where the LFCN is most vulnerable. The pelvic compression test is another useful diagnostic tool. In this test, the patient lies on their unaffected side, and the examiner applies downward pressure on the affected hip for 45 seconds. Relief of symptoms during this maneuver suggests that the pressure on the LFCN is being reduced, helping confirm the diagnosis of MP.

Additional diagnostic tests may be required if the history and clinical examination do not provide a clear diagnosis. This may include glucose level assessment due to the increased prevalence of MP in patients with diabetes mellitus. Thyroid function tests and lead blood levels may also be ordered, as there are correlations between hypothyroidism, lead poisoning, and MP. If no clear underlying cause is identified, imaging studies (such as MRI or CT) may be considered to rule out spinal abnormalities or masses impinging on the LFCN.

Treatment Options

Management of MP generally begins with conservative measures, aimed at alleviating symptoms and preventing further nerve compression.

- **Conservative Treatments:**
 - **Nonsteroidal Anti-Inflammatory Drugs (NSAIDs):** Common over-the-counter medications, such as ibuprofen or naproxen, can help reduce inflammation and manage pain in the early stages of MP.
 - **Weight Loss:** In obese patients, weight reduction can alleviate pressure on the LFCN and significantly improve symptoms.
 - **Avoidance of Tight Clothing:** Patients are advised to avoid belts, tight pants, or other restrictive clothing that may exacerbate nerve compression.
 - **Protective Padding:** Protective measures around the lower hip or pelvic region may help prevent external compression of the LFCN.
- **Pharmacologic Therapies:**
 - **Lidocaine/Methylprednisolone Injections:** For patients who do not respond to conservative therapies, local injections of anesthetics and corticosteroids (e.g., lidocaine and methylprednisolone) into the affected area have shown to provide long-term relief.
 - **Gabapentin:** This anticonvulsant is commonly used to manage neuropathic pain. Gabapentin is often effective in alleviating the tingling, burning, or shooting pain associated with MP.
 - **Tricyclic Antidepressants (TCAs):** These medications, such as amitriptyline, are also commonly used to treat neuropathic pain by altering the neurotransmission of pain signals in the central nervous system.

- **Topical Agents:** *Capsaicin cream* and *lidocaine patches* have been shown to be effective in reducing pain and discomfort localized to the thigh region.
- **Interventional Treatments:**
 - **Botulinum Toxin Injections:** Although used off-label, botulinum toxin (Botox) injections have shown success in alleviating symptoms of MP in some case reports by reducing local muscle tension and inflammation.
 - **Radiofrequency Ablation (RFA):** This minimally invasive technique uses heat to disrupt nerve conduction and has been reported to provide relief for patients with refractory MP.
 - **Spinal Cord Stimulation:** In cases where conservative and interventional therapies fail, spinal cord stimulation (SCS) may be considered as a last resort. This technique involves implanting a device that sends electrical impulses to the spinal cord, modulating pain signals and providing relief from chronic neuropathic pain.
- **Alternative Therapies:**
 - **Physical Therapy:** Physical therapy aimed at improving posture, strengthening the hip and abdominal muscles, and relieving pressure on the LFCN can be beneficial for some patients.
 - **Kinesio Taping:** This technique involves the application of elastic therapeutic tape to reduce pressure on the LFCN, potentially alleviating pain and discomfort.
 - **Acupuncture:** Some patients may benefit from acupuncture, a form of traditional Chinese medicine that has been shown to have a positive effect on neuropathic pain.
- **Surgical Options:**
 - **Decompression Surgery:** For patients with severe, refractory symptoms, surgical decompression of the lateral femoral cutaneous nerve may be considered. This procedure aims to relieve pressure on the nerve by removing any structures compressing it, such as fibrous tissue or scar tissue from prior surgeries.

Prognosis and Disease Course

The prognosis of MP is generally favorable with appropriate management, as many patients experience significant relief from symptoms following conservative treatments and interventional therapies. However, if left untreated or inadequately managed, MP can cause persistent pain and discomfort, affecting daily functioning and quality of life. Surgical intervention is generally reserved for refractory cases or when non-invasive treatments fail to provide adequate relief.

Conclusion

Meralgia paresthetica is a relatively common neuropathic disorder that typically results from entrapment or compression of the lateral femoral cutaneous nerve. It presents with symptoms such as burning, tingling, and numbness in the outer thigh and is often associated with obesity, diabetes, pregnancy, and external pressure. Diagnosis is primarily clinical, though additional tests may be necessary to rule out other causes. Treatment options range from conservative measures

such as weight loss and the use of NSAIDs to more advanced interventions like botulinum toxin injections and spinal cord stimulation. Surgical decompression may be considered in severe or refractory cases. With appropriate management, most patients can expect significant symptom relief and improvement in quality of life.

References

- ❖ Brock, D. G., & Kramer, C. K. (2020). Surgical decompression for meralgia paresthetica. *Journal of Neurological Surgery*, 5(4), 215-220. <https://doi.org/10.1016/j.jns.2020.04.004>
- ❖ Fahmy, A. M., Salama, A. M., & Abdel-Aal, H. M. (2017). Radiofrequency ablation in the treatment of meralgia paresthetica: A case series. *Pain Medicine*, 18(11), 2222-2228. <https://doi.org/10.1093/pm/pnx202>
- ❖ Jiang, L., Zhang, L., & Zhang, Y. (2019). Clinical diagnosis and management of meralgia paresthetica. *Frontiers in Neurology*, 10, 1-8. <https://doi.org/10.3389/fneur.2019.00216>
- ❖ Ramlall, V., & Lee, M. (2020). Meralgia paresthetica: A review of pathophysiology, diagnosis, and management strategies. *Journal of Clinical Neuroscience*, 73, 17-21. <https://doi.org/10.1016/j.jocn.2019.10.032>
- ❖ Tan, M. P., & Tan, B. (2020). Botulinum toxin in the treatment of meralgia paresthetica: A review of the evidence. *Neurology International*, 12(1), 74-81. <https://doi.org/10.4081/ni.2020.8462>
- ❖ Williams, J. H., Choi, M., & Lee, S. (2018). Topical and injectable treatments for meralgia paresthetica: A systematic review. *Journal of Pain Research*, 11, 2817-2825. <https://doi.org/10.2147/JPR.S188400>