

RESOLUTION OF MEDIAL FEMORAL CUTANEOUS NERVE ENTRAPMENT UTILIZING MANUAL THERAPY AND END-RANGE LOADING; A CASE REPORT

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ABSTRACT

Objective: To describe the resolution of medial femoral cutaneous nerve palsy utilizing chiropractic interventions and instrument-assisted soft-tissue manipulation (IASTM).

Clinical Features: A 64-year-old man sought care for low back pain and pain extending into his right medial thigh that had been present for 1 month.

Intervention and Outcome: Chiropractic management, including spinal manipulation, McKenzie procedures, and IASTM was used to resolve medial femoral cutaneous nerve palsy.

Conclusion: Our case identifies a patient presentation that suggested discogenic pain combined with peripheral nerve entrapment. The combination of spinal manipulation with end-range loading should be studied in more detail. (*J Contemporary Chiropr* 2018;1:36-39)

Key Indexing Terms: Chiropractic; Spinal Manipulation; Physical Therapy

INTRODUCTION

Primary spine care practitioners are charged with evaluation and treatment of many musculoskeletal conditions, including patients with lumbar radiculopathy. Radicular symptoms are often attributed to compression of a nerve root and occur in approximately 3-5% of the population, and of those who have this condition 10-25% develop symptoms that persist for more than 6 weeks. (1) Peripheral nerve entrapment and compression syndrome (PNECS) can mimic radiculopathies with only subtle differences in distribution. This syndrome is a set of neurological symptoms caused by mechanical or dynamic compression of a segment of a single nerve at a specific site

as it passes through a narrow fibro-osseous tunnel or an opening in a fibrous or muscular structure. (2)

A common PNECS of the thigh is meralgia paresthetica, also known as Bernhardt-Roth Syndrome. This is an entrapment of the lateral femoral cutaneous nerve; however, PNECS of the medial thigh nerves has not been well documented. The medial femoral cutaneous nerve originates from the femoral nerve approximately 4 cm below the inguinal ligament (2) and crosses over the femoral artery to the apex of the femoral triangle. The anterior branch innervates the medial thigh (3). A search of PubMed found few papers discussing the medial femoral cutaneous nerve. Of those, none discussed entrapment of the nerve as a possible pain generator. One article reported medial femoral cutaneous neuropathy but this was due to traumatic event where a foreign object pierced the nerve. (4) In this paper we present a novel case of non-traumatic medial femoral cutaneous nerve compression with an entrapment along its path in the anteromedial thigh.

CASE REPORT

A 64-year-old male patient with low back pain and radiation down his right medial thigh sought care at the Veteran Affairs Chiropractic Clinic. His pain began 1 month prior after he had done a lot of heavy lifting. Following this, he saw a chiropractor and received treatment consisting of spinal manipulation on 2 separate days. This actually increased his back and leg pain. Provocative positions included laying flat, being upright and walking. Pain medications had a mild effect; however, steroids, gabapentin, and muscle relaxants were not helpful. The patient went through a trial of physical therapy but did not respond. Past health history revealed a history of basal cell carcinoma, PTSD, depression, suicidal ideations, sleep apnea, rotator cuff tear, hearing loss and umbilical hernia. Lumbar radiographs showed an L5 Grade II - III spondylolysis which was unchanged from one taken 2 years earlier.

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Examination

Upper and lower extremity reflex and motor exams were unremarkable; however, the right lower extremity sensory evaluation revealed hypoesthesia throughout the distribution of the medial femoral cutaneous nerve, which overlaps the right L1, 2, and 3 dermatomes. Orthopedic testing revealed findings for increased low back pain with Kemp's test, right straight leg raise (SLR), right femoral nerve tension test, right thigh thrust, right SI distraction, right Ely's test, and bilateral FABRE. The patient also had trigger points in the Psoas Major muscle bilaterally. An end-range loading exam was performed to find a directional preference for his back pain. He responded to extension in lying (no effect, better) and to extension in standing with arms on the wall (increase, centralized), and after performance of 30 repetitions, the back pain remitted; however, he still had 50% of the medial thigh pain. He was given extension in standing against a wall as a home exercise to complete 15-20 times per hour.

Table 1: Treatment plan.

Visit	Subjective	Intervention	PROMIS PI 6B outcome
Initial Treatment		<ul style="list-style-type: none"> • Extension in lying (EIL) 10 repetitions • Extension in standing (EIS) on the wall (20 repetitions) 	26
Visit 2: +7 days	Back pain remitted and leg pain 50% improvement	<ul style="list-style-type: none"> • EIS 	
Visit 3: +7 days	Continued to improve; pain most notable in the morning; thigh numbness persisted	<ul style="list-style-type: none"> • EIL with clinician overpressure • EIS 	
Visit 4: +6 days	Continued lbp that is mild; continued numbness and pain in the medial groin to the knee	<ul style="list-style-type: none"> • EIS • EIL with clinician overpressure • Graston Technique (IASTM) to the medial thigh 	
Visit 5: +14 days	Graston Technique completely alleviated the medial thigh pain; no LBP	<ul style="list-style-type: none"> • EIS • Graston Technique (IASTM) to the medial thigh 	
Visit 6: +44 days	The results lasted and were maintained and this resulted in great relief	<ul style="list-style-type: none"> • Graston Technique; • EIS 	8

Results

The patient was treated a total of 6 times prior to complete resolution. Visits 1-4 concentrated on the working diagnosis of lumbar radiculopathy treated using various progressing forces within the MDT protocol. (Table 1) Lumbar extension repetitions with and without overpressure abolished the low back pain; however, after a 50% reduction in medial thigh pain, he ceased to make progress with the thigh pain. At this time, the working diagnosis shifted to concentrate on a potential peripheral nerve entrapment. Instrument-assisted soft-tissue manipulation (IASTM) (here, Graston Technique) was performed over the medial thigh. Due to its simplicity, practicality and ability to improve soft tissue function (5), IASTM was chosen as a first-line method of treatment. This treatment eliminated the medial thigh paresthesia and pain in 1 visit. The patient followed up 2 months later with sustained results and was released from care.

DISCUSSION

Lumbar radiculopathy is a common cause of low back and lower limb pain. Radiculopathies affecting the L4/5 and L5/S1 nerve roots represent the vast majority of symptomatic disc herniations. L1/L2, L2/3, and L3/4 disc herniations account for less than 5% of all disc herniations. (5) While the frequency of L3 radiculopathy managed conservatively or surgically has not been reported, it does not exclude this as a potential diagnosis. (6) In a retrospective review, Hiroki et al reported the clinical characteristics of 17 patients with L3 radiculopathy. This included a median age of 76, presenting symptoms including sensory disturbances (9/17) in the L3 dermatome, quadriceps weakness (2/17), and responsive to conservative treatment (11/17). Contributing factors included lumbar central canal stenosis (6/17), disc herniation (5/17), extraforaminal stenosis (5/17), and degenerative scoliosis (1/17). (7) Many authors conclude that symptomatic descriptions of upper lumbar disc herniations are useless in an accurate diagnosis. (5,8,9) The patient here did have hypoesthesia in the L3 dermatome area, and did not possess any weakness. His femoral nerve tension test, was positive, which suggested nerve entrapment. He also lacked any degenerative changes in the L2/L3 and L3/4 areas of the spine. Imaging did illustrate an L5/S1 Grade 2-3 spondylolisthesis. While it is not our deduction that the latter was the diagnosis, it would be neglectful to exclude the information as potential confounding factors.

The phenomenon of centralization of symptoms has been illustrated as a positive prognostic factor in non-specific low back and in patients with referred symptoms and sciatica. Patients that centralize demonstrate better improvements in leg pain, disability, Nottingham Health Profile scores, and require less surgical intervention. (10)

In addition, centralization correlates with discogenic pain. (11) *“Therapist directed exercise can lead to improved outcomes in patients who have been classified according to patient response methods.”* (12) The end-range loading evaluation related to our patient was positive for centralization, and directional preference served as the initial therapy and progression of forces did occur throughout the next 3 visits. The maintained presence of medial thigh pain resulted in further evaluation as femoral nerve tension was still positive.

After the third visit, a decision was made to shift the working diagnosis to that of a peripheral nerve entrapment. The patient had progressed through the MDT protocol progression of forces with the exception of spinal manipulation and mobilization of the lumbar spine due to previous poor outcomes with this treatment. As he still presented with pain in the medial thigh, we could not rule out that a peripheral nerve entrapment was causing the symptoms. The location of symptoms was cross-referenced with nerve distribution charts and the medial femoral cutaneous nerve distribution matched his presentation.

An EMG was not ordered since the patient did not have pain in the leg or sciatica-like symptoms, as per the Choosing Wisely guidelines. (1) While an EMG or peripheral nerve block would have confirmed our diagnosis of a peripheral nerve entrapment, a trial of conservative care was indicated first.

Further studies should investigate the use of IASTM as an initial conservative treatment for peripheral nerve entrapments before more expensive and invasive treatment methods or diagnostic studies are ordered. While no high-quality evidence exists evaluating IASTM and nerve entrapment syndromes, there are some case studies illustrating successful treatment of pudendal and obturator internus neuralgia with IASTM. (13,14) Other forms of physical medicine that are also utilized to treat peripheral nerve entrapments include Active Release Technique® (ART) and massage therapy. Durante and Macintyre published a case describing the resolution of a pudendal nerve entrapment utilizing ART. (15). Elliot and Burkett demonstrated improvement of carpal tunnel syndrome using massage therapy (16) whereas traditionally it is thought most patients need a carpal tunnel release to resolve carpal tunnel syndrome.

Another potential differential diagnosis to include in our patient’s presentation is double crush syndrome (DCS). While the existence of DCS is controversial, examples suggesting its existence are present in the upper and lower extremities. DCS is described as multiple sites of compression along a peripheral nerve. Lower extremity DCS has been introduced following acetabular fracture, and in a case series following trauma. The case presented here could provide an example of DCS. Resolution of

low back pain and 50% reduction in the anterior medial thigh with end-range loading may suggest resolution of proximal nerve root irritation. Further resolution of the medial thigh paresthesia from distal IASTM could be related to the distal nerve entrapment.

CONCLUSION

This case demonstrates the application of manual therapy consisting of McKenzie Method of Diagnosis and Therapy (MDT) and Instrument Assisted Soft Tissue Mobilization (IASTM) in the treatment of low back pain and medial thigh pain with hypoesthesia. A definitive diagnosis could not be determined; however, the presentation provided an opportunity for review of potential differentials. Ultimately, the treatment provided in the order that it was resulted in complete resolution and self-management.

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