Nerve Transposition to Treat Meralgia Parethetica Caused by Tight-fitting Low-rise Jeans

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Meralgia paresthetica (MP) is an entrapment neuropathy of the lateral femoral cutaneous nerve (LFCN) due to prolonged compression at the site of the anterior superior iliac spine (ASIS) where the nerve exits the pelvis. This condition is frequently associated with tight clothing, being overweight, pregnancy, prolonged lying in the lateral position, diabetes mellitus, specific occupations, and surgery. The majority of MP cases can be attenuated by change in clothing and living habits, administration of anti-inflammatory drugs, and local injection of corticosteroid. However, a few patients may need surgical intervention. According to the literature, the primary options for MP include nerve decompression surgery and neurolysis. The present case report describes a patient with MP due to long-term wearing of tight-fitting, low-rise jeans. Her symptoms were successfully alleviated by decompression surgery with transposition of the LFCN after failure of conservative therapies. **(Mid Taiwan J Med 2006;11:271-5)**

Key words

meralgia paresthetica, nerve transposition, tight-fitting low-rise jeans

INTRODUCTION

Meralgia paresthetica was first reported by Bernhardt in 1895, and the term "Meralgia paresthetica" (MP), derived from the Greek "meros" for thigh and "algia" for unpleasant pain with slight burning sensation, was coined by Roth later in the same year. It is an entrapment neuropathy of the lateral femoral cutaneous nerve (LFCN) due to prolonged compression at the site of the anterior superior iliac spine (ASIS) where the nerve exits the pelvis. Most patients with MP respond well to conservative treatments. However, the following case report describes a patient with MP which recurred after initial conservative treatment, but was successfully alleviated by decompression surgery and transposition of the nerve.

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CASE REPORT

A 23-year-old woman measuring 170 cm and weighing 50 kg, suffered from numbness, pain, and abnormal sensation at the anterolateral aspect of the right thigh (Fig. 1) for more than 1 year. The patient had no history of trauma. Physical examination revealed no abnormalities on the right thigh. However, a numb, tingling, burning and uncomfortable sensation on anterolateral thigh was noted. Tapping on the site over the right ASIS produced an electric shock-like sensation. The patient's symptoms were relieved by pain relieving medications and local injection of corticosteroid about one year ago. However, her condition recurred and progressed about one month ago. Her symptoms were especially severe when she put on tight-fitting pants or low-rise jeans. At the peak of her suffering, even the wearing of underpants caused discomfort. Surgical treatment was suggested.

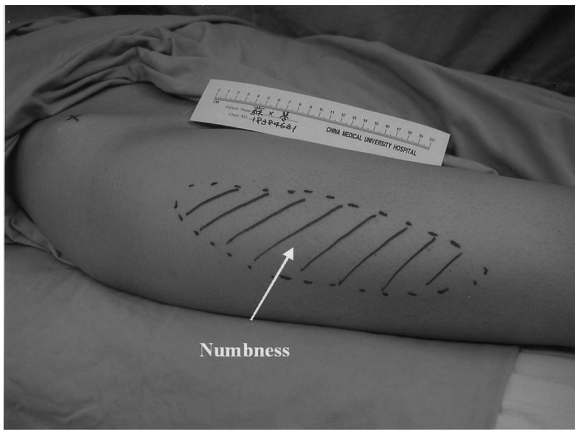

Fig. 1. Photograph of patient's right thigh demonstrates the numb area.

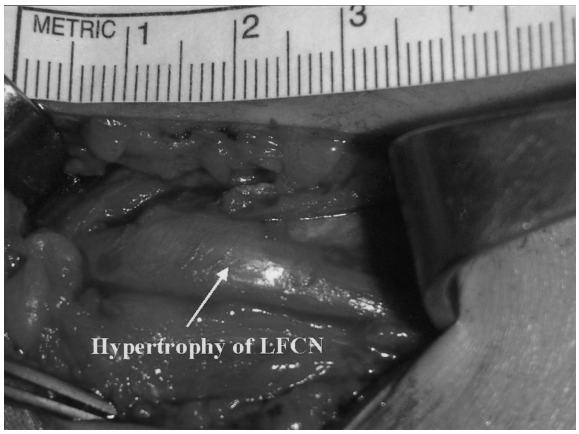

Fig. 2. Intraoperative photograph shows hypertrophy of LFCN. LFCN = lateral femoral cutaneous nerve.

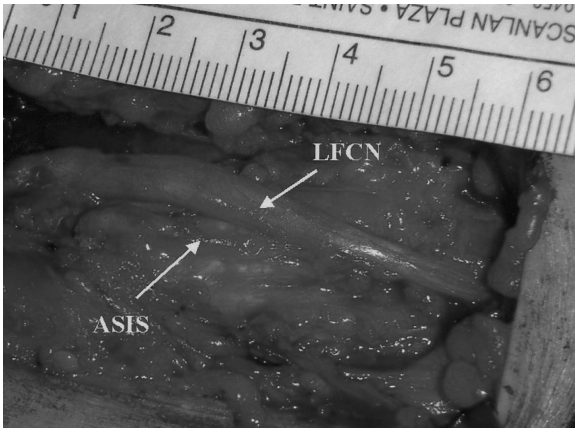

Fig. 3. LFCN is elevated by protruding ASIS. LFCN = lateral femoral cutaneous nerve; ASIS = anterior superior iliac spine.

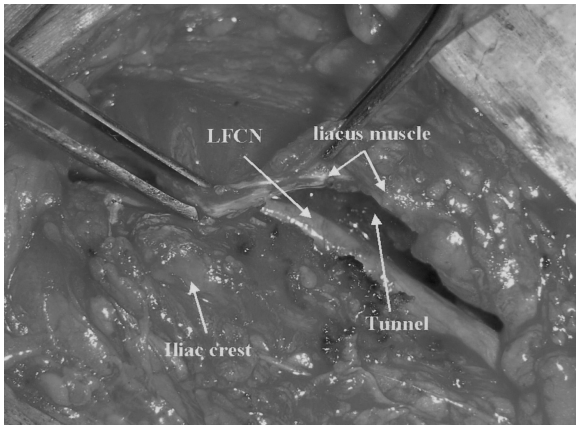

Fig. 4. LFCN was transposed toward the internal side of the iliac crest to the tunnel formed beneath the displaced iliacus muscle where the split was made. LFCN = lateral femoral cutaneous nerve.

Surgical procedure

The patient was placed in a supine position with the right pelvis slightly lifted. After administration of general anasthesia, a straight incision was made at the site over the right ASIS where an electric shock-like sensation was readily provoked by gently tapping. Beneath the subcutaneous tissue, a piece of hypertrophic LFCN was exposed (Fig. 2). The nerve ran astride the ASIS at this very site. Because of the patient's slender stature, the iliac crest was more prominent then normal, a condition which elevated the LFCN (Fig. 3). The affected part of LFCN (about 7 cm) was freed. After the iliacus muscle had been split from the iliac crest, the insertion junction of the LFCN was transposed toward the inner side of iliac crest to the tunnel formed beneath the displaced iliacus muscle where the split was made (Fig. 4). The nerve was kept free from compression and was fixed in the tunnel. The incision was stitched closed.

After surgery, the patient was encouraged to exercise the hip joints to prevent adhesion. The numbness of the external thigh was immediately relieved on the day after surgery. The sutures were removed one week later, and the patient could again put on her tight-fitting pants. There were no MP-related symptoms at 1-year follow-up.

DISCUSSION

The LFCN originates from the dorsal divisions of the second and third lumbar nerves. It

emerges from the lateral border of the Psoas major and runs obliquely across the iliac towards the ASIS, from which the nerve exits the pelvis and distributes to the anterolateral part of the thigh. Entrapment of the LFCN most commonly takes place when the nerve passes through the tunnel formed by the lateral attachment of the inguinal ligament and the ASIS.

However, there are some variations in the course of the LFCN [1]. de Ridder VA conducted anatomical studies on 200 cadavers and found five variations of LFCN's course in the inguinal region: 1) through the tunnel formed by the lateral attachment of the inguinal ligament and the ASIS, 2) through the lateral-end inguinal ligament, 3) over the superior iliac spine, 4) through the satoruis muscle, and 5) superior to the anterior iliac spine.

MP occurs more commonly in men than women, and has been reported in all age groups. From 1990 to 1998 van Slobbe et al, carried out a comprehensive investigation on a cohort of 173,375 primary care patients in the Rotterdaim area [2]. They determined that MP has an incidence rate of 4.3 per 10,000 people, occurs most commonly in the age range from 41 to 60 years, and may be accompanied by other nerve compression such as carpal tunnel syndrome [2,3]. Some other situations, such as police officers carrying pistols against the thigh [4], tight clothing, prolonged lying in the lateral position, and diabetes mellitus [2] are also contributing factors to this condition. Compression to the inguinal ligament caused by retroperitoneal tumors has also been reported. Injury to the LFCN is a complication of a variety of surgical procedures such as bone graft surgery, appendectomy, nephrectomy, and herniorrhaphy [2-7].

The diagnosis of MP is mainly based on clinical history and physiological examination. During palpation, numbness of the lateral thigh with an unpleasant burning sensation is usually noticed. In addition, Tinel's sign may positively appear over the ASIS. Imaging examination contributes little beneficial value to the diagnosis. Electromyography is usually normal in suspected cases [8,9], although it helps to rule out the possibility of other lumbar spine disorders [10,11].

The present case provides an example of MP associated with the habitual wearing of fashionable low-rise jeans. When they are worn, the belt is placed over the ASIS which in turn can entrap the LFCN. Pressing against such an area for a long period of time can result in nerve inflammation. Treatments including change in clothing and living habits, anti-inflammatory medication, and local injection of corticosteroid can significantly attenuate the symptoms [12]. Only a small number of patients eventually resort to surgical intervention.

Since the initial report of MP in 1885, a variety of surgical options to resolve this condition have been described in the literature, including nerve decompression, neuronectomy, and nerve decompression in combination with nerve transposition [13-15]. The average success rate reported in the literature ranges from 60% to 95.7%. Siu and Chandran demonstrated a 93% success rate of symptom relief in 45 patients subjected to never decompression [13]. In their large-scale investigation, the LFCN course in all the patients was normal , except in one patient with anatomical variation (inferomedical to the ASIS). In the present report, the patient's LFCN was found during surgery to run astride the ASIS protruding to an extreme extent, belonging to type III in De Ridder's classification (i.e., the LFCN over the ASIS). Since the nerve was persistently strained forward by the protruding iliac crest, neurolysis or decompression procedure alone would not have sufficiently resolved the problem.

Therefore, the patient underwent decompression surgery combined with transposition of the nerve. This not only effectively reduced nerve compression, resulting in immediate elimination of symptoms, but also aided in locking the LFCN amid the muscle. Protection of the nerve by the iliac crest can also prevent the recurrence of MP due to tight clothing.

In 1962, Keegan and Holyoke reported

remarkable prognosis of two patients who underwent nerve decompression in combination with nerve transposition surgery. Aldrich and Van der Heever (1989) also described promising results in a similar case report. Ferdinand has proposed osteoplasty neurolysis for MP [16], by which the LFCN is relocated to a slot in the ilium. However, this approach may require a longer recovery process. Neuronectomy was once the primary surgical option for MP. However, it has frequently been reported that it fails to improve the symptoms. Furthermore, it is somewhat frustrating that this approach leaves permanent loss of sensation on the lateral thigh, although alleviating pain in some patients [16].

MP is a nerve compression syndrome. The determination of external factors causing nerve compression is critical to the therapy. Oral anti-inflammatory medication and local injection of corticosteroid are generally effective in alleviating its symptoms. Cases requiring surgical intervention are rare. Differential diagnoses include lumbar disc herniation, sciatica, and dermaditis. If surgery is indicated, the surgical method should be based on the course of the LFCN. As described in the present case report, nerve decompression combined with transposition is an effective approach for LFCN with a type III course.

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以神經轉位手術治療因穿著緊身低腰牛仔褲引起的感覺錯亂性股痛

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Meragial parathetica是股外側皮神經於腸股前上脊處受到長時間壓迫所造成的神經發炎反應。常發生於時常穿緊身衣物，其他如肥胖懷孕婦女，長期側躺及糖尿病患者，特殊職業或手術造成。治療方法只要改變穿衣及生活習慣，給予抗發炎藥物，或局部注射類固醇，大多可以改善。只有少數病人需要手術治療。文獻記載手術採神經減壓手術，或神經切斷手術爲主。我們報告一病例因長期穿著緊身低腰牛仔褲引發病痛，因保守治療無效，後來採減壓及神經轉位治療術後，症狀完全緩解。（中台灣醫誌 2006;11:271-5）

關鍵詞

感覺錯亂性股痛，神經轉位手術，緊身低腰牛仔褲

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