

# Foot drop following lumbar disc herniation

## Pié caído luego de Hernia del Núcleo Pulposo Lumbar

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### Resumo

**Introdução:** Foot drop é uma fraqueza do músculo tibial anterior e pode ser sinal de hérnia discal lombar, lesão do nervo peroneal, distrofia muscular ou lesão cerebral parasagital. Lesão da raiz do quinto nervo lombar ou lesão do nervo peroneal são as causas mais freqüentes. Os autores apresentam um caso de "foot drop" em um paciente portador de hérnia discal no segmento L3-L4. Discutem sua fisiopatologia, diagnóstico, tratamento e prognóstico. **Relato do caso:** PTS. Masculino, 38 anos de idade, pedreiro. História de fraqueza no pé direito há três meses. Exame neurológico: Marcha claudicante à direita, diminuição da força muscular à direita (++)/++++) e hipoestesia no trajeto radicular de L3 do membro inferior direito. TC e RM de coluna lombar demonstraram hérnia discal extrusa no espaço L3-L4. **Resultado:** Submetido à hemilaminectomia lombar e excisão da hérnia discal extrusa. Submetido à fisioterapia motora e ortese, com recuperação do pé caído. **Conclusão:** O foot drop pode ser decorrente lesão periférica (nervo peroneal), neurônio motor inferior, lesão cortical e distrofia muscular. Seu diagnóstico é através de eletroneuromiografia, TC, mieloTC e RM. Seu prognóstico tem sido considerado bom quando operado precocemente. Em nosso paciente houve demora na recuperação do quadro devido ao tempo de evolução do caso.

**Palavras chave:** Foot drop. Hérnia discal lombar. Prognóstico.

### Abstract

**Introduction:** Foot dropt is a tibialis anterior muscle weakness and may be caused by lumbar discopathy, fibular nerve injury, muscular dystrophy or cerebral parasagittal lesion. Lesion on the 5<sup>th</sup> lumbar nerve root or fibular nerve injury are the most common causes. The authors present a case of foot drop associated with a herniated L3-L4 lumbar disc. Physiopathology, diagnosis, treatment and prognosis are discussed. **Case Report:** 38-year-old man with a 3-month history of right foot weakness. Neurological examination: right-sided claudication during gait, right-sided muscular weakness (++)/++++) and L3-dermal territory hypoesthesia on his right leg. Lumbar CT and MRI revealed an extruded L3-L4 herniated disc. **Results:** Patient was submitted to lumbar hemilaminectomy and extruded herniated disc excision. Motor physiotherapy and orthosis were also performed, with foot drop recovery. **Conclusions:** Foot drop may be caused by peripheral lesion (fibular nerve), lower motor neuron, cortical lesion or muscular dystrophy. Diagnosis is performed with EMG, CT, mieloCT and MRI. Early surgery is associated with good prognosis. Our patient showed slow recovery due to a long case evolution.

**Key words:** Foot drop. Lumbar discal hernia. Prognosis.

## Introduction

Foot drop is a tibialis anterior muscle weakness, frequently caused by lower motor neuron disease<sup>1</sup>. It's usually unilateral and associated with fibular nerve palsy due to fibular head mechanical compression<sup>2</sup>.

The authors present a foot drop case associated with lumbar discopathy.

## Case report

A 38-year-old man showed with a 3-month history of right foot weakness. Neurological examination findings: right inferior extremity claudication during gait, right-sided muscle strength impairment (++/++++) and a L3-dermal territory hypoesthesia on his right leg. Lumbar CT and MRI revealed a L3-L4 central extruded herniated disc (Figure 1). The patient was submitted to lumbar L3-L4 hemilaminectomy and extruded herniated disc excision. Motor physiotherapy and orthosis on the right foot were also performed, with recovery after 3 months of therapy.



Figure 1. Lumbar disc herniation between L3-L4.

## Discussion

Foot drop or tibialis anterior muscle weakness is caused by multiple neurological conditions such as brain lesion<sup>3,4</sup>, spinal cord disease<sup>5</sup>, multiple sclerosis<sup>6</sup>, common fibular nerve mononeuropathy<sup>2</sup> and degenerative lumbar vertebral diseases<sup>7,8,9,10,11</sup>. Foot drop related to lumbar disc herniation or spinal canal stenosis has been considered rare<sup>8,9,10,12,13</sup>. Common causes include L5 radiculopathy caused by disc herniation or spinal

canal stenosis and fibular nerve neuropathy<sup>3</sup>. Other causes include peripheral nervous system axonal demyelination: conus medularis, cauda equina, nervous plexus and peripheral nerves. Foot drop has been reported in 52 - 67% of the patients with upper motor neuron disease, with the following topographies: interhemispheric motor cortex (expansive or anterior cerebral artery lesions), corona radiata, internal capsule and spinal cord (mielopathy).

Lesions situated in the interhemispheric fissure may be clinically manifested by paracentral lobule uni or bilateral signs, such as lower limb paresis, usually beginning in one extremity and progressively spreading to the opposite limb<sup>3</sup>. Occasionally, there's also association with focal motor or sensory seizures beginning in the foot, urinary or fecal incontinence and mental changes of the frontal lobe syndrom. Parasagittal Meningeom is the brain tumor which mostly presents with foot drop. A central lesion can be suspected in patients with upper motor neuron signs such as positive Babinski's sign, hyperreflexia or clonus. These types have been called spastic foot drop<sup>4</sup>. Radiologically the herniated disc is big, central and rarely paramedian located. L4-L5 and L5-S1 localized herniated discs can commonly cause cauda equina compression<sup>14,15,16</sup>. In our case the disc herniation was compressing the L3 root. Foot drop may present as acute, subacute or chronic<sup>14,15,16,17,18</sup>. Our patient had a chronic evolution due to a poor access to specialized medical care. Foot drop is considered a neurosurgical emergency<sup>14,15,16,17</sup>. Our patient was submitted to a lumbar hemilaminectomy and had a slow evolution. Motor physiotherapy and orthosis where both necessary. EMG, CT, mieloCT and MRI should be performed in order to investigate foot drop as a result of lower motor neuron lesion. Early surgical procedure is associated with good prognosis. Due to poor access to specialized medical care, our patient showed slow recovery, however with good case resolution.

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