

# Focus on Foot Drop



Often an indication of a neurological, muscular or anatomical problem, foot drop is characterized by the inability to lift the front part of the foot. Patients diagnosed with foot drop possess an abnormal gait and may drag the front of the foot on the ground while walking. Though foot drop may be permanent in some cases where the fundamental cause can't be treated, certain treatment options, including physical therapy, can help patients regain mobility and independence.

## CHARACTERISTICS

Foot drop (sometimes called drop foot) can affect either one (unilateral) or both (bilateral) feet. Patients with foot drop are not able to raise the front of their foot because of weakness or paralysis of the muscles involved in lifting the foot. When walking, their toes scuff along the ground and they may raise their thigh to lift their foot higher than usual to avoid the scuffing. This results in a form of gait abnormality, called "steppage gait," which is associated with the loss of dorsiflexion.

A wide, outward leg swing often adapted to prevent extreme lifting of the thigh can also denote foot drop. However, patients who have

dysesthesia of the feet—a disagreeable sense of touch that is caused by lesions of the nervous system and often considered painful—may possess a similar gait pattern without having foot drop.

## CAUSES

Foot drop is triggered when the muscles below the knee that help lift the front of the foot are weakened or paralyzed. Neurological, muscular and anatomical problems are often underlying causes. Specific causes of foot drop may include multiple sclerosis, stroke and other neurodegenerative disorders of the brain that cause muscular problems; polio, spinal muscular atrophy and other motor neuron disorders; injury to the nerve roots; peripheral nerve disorders or acquired peripheral neuropathy; local compression or damage to the peroneal nerve as it passes across the fibular bone below the knee; and muscle disorders.

Injuries to muscles that move the ankle and toes can cause foot drop, as can nerve damage in the lower spine or leg.

Temporary foot drop can occur as a result of pressure to the peroneal or fibular nerve just below the knee. Muscle disorders, such as the inherited disease muscular dystrophy; and nerve disorders such as compartment syndrome may also contribute to foot drop. Amyotrophic lateral sclerosis (ALS), multiple sclerosis and other central nervous system disorders that affect the spinal cord or brain may cause this problem as well.

## DIAGNOSIS

A diagnosis of foot drop typically occurs during a routine examination. Patients will find it difficult to walk on their heels as the peroneal nerve is required to perform this action.

During the exam, patients should be equipped to describe the problem they are experiencing, how it started and any other symptoms occurring at the time. Sometimes further testing may be recommended, such as magnetic resonance imaging (MRI), and electromyography (EMG) and nerve conduction studies.

## TREATMENT

The type of treatment a patient receives depends on the cause of foot drop. If the underlying cause is effectively treated, foot drop can improve or disappear. However, it can prove to be permanent if the underlying cause cannot be successfully treated. Treatment options specific to foot drop can include lightweight leg braces and shoe inserts; exercise therapy to improve muscle strength, preserve joint motion and enhance gait; electrical stimulation of the peroneal nerve and surgery in cases of permanent movement loss.

Ankle-foot orthoses (AFO), such as braces or splints, are often the first line of treatment for patients with foot drop. To help hold the foot at 90 degrees (and keep it from dropping to the ground), patients may benefit from a brace or splint that fits into the shoe.

A pair of shoes can also be fitted with spring-loaded braces to prevent foot drop during gait. A foot-up ankle support, where a cuff is placed around the patient's ankle and a hook is installed under the shoelaces, would help to lift the shoe as the patient walks.

Physical therapy is necessary in circumstances where foot drop has caused considerable gait disturbance. In these situations, patients are taught how to walk all over again following a specialized physical therapy treatment plan. In less-extreme circumstances, certain exercises are recommended to assist affected muscles.

Nerve stimulation may be beneficial, especially to patients who have experienced foot drop as a result of stroke. Occasionally, stimulating the peroneal nerve will improve foot drop. The stimulator can either be implanted in the leg or strapped to the leg below the knee.

Surgery may be the only way to improve walking difficulties when foot drop is permanent. The operation can fuse ankle or foot bones, or transfer tendons to stronger leg muscles.

No matter which type of foot drop treatment patients require, they can expect to reclaim some mobility and regain some self-sufficiency. ■

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