The colloquial & medical term ‘Foot Drop’ describes weakness of foot dorsiflexors, usually toe extensors & often everters resulting in steppe gait & destabilizing ankle control → risk for falls & injury. Different is ‘Flat Foot’ which involves planatar flexors as well. The most likely etiology is common peroneal neuropathy at the fibular head (fig. 1), but the differential diagnosis is varied (fig. 2 & 3). While peripheral & lower motor neuron lesions are most common, upper motor neuron lesions must also be considered due to spinal cord or motor strip involvement. **Determine:** Where, Why, How severe & What to do?

**EDX (EMG/NCS) - Critical to determine the severity, acuity, location & to prognosticate.**

### Differential Diagnosis - Foot Drop

<table>
<thead>
<tr>
<th>Lower Motor Neuron (LMN)</th>
<th>Peroneal Neuropathy (Fibular Head)</th>
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</thead>
<tbody>
<tr>
<td>Sciatic Neuropathy</td>
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<tr>
<td>LS Plexopathy</td>
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<tr>
<td>LS Radiculopathy</td>
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<tr>
<td>Peripheral Neuropathy</td>
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<tr>
<td>Poliomyelitis</td>
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<tr>
<td>Cauda Equina Lesions</td>
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</tbody>
</table>

### Upper Motor Neuron (UMN)

- ALS/Motor Neuron Disease
- Spinal Cord Lesions
- Spinal Stenosis/Myelopathy
- Cortical/Peripheral Lesions

### Nonorganic

- Conversion Disorders, Psychogenic

### Differential Presentation

#### Unilateral

- Most Peripheral & Central Lesions

#### Bilateral

- Hereditary Factors, GPN †, MND, CES

- *Peroneal - Extrinsic*
  - Intrinsic
  - Nerve sheath tumors, vascular predisposition, GPN (Diabetes, Pericnial Anemia, Leprosy)

### Muscle Grading:

- 0 = complete paralysis
- 1 = flicker contraction
- 2 = contraction with gravity eliminated
- 3 = contraction against gravity
- 4 = contraction against gravity + resistance
- 5 = contraction against powerful resistance (normal strength)

Foot drop ≠ Foot slap - the later an audible foot slap on heel strike, although often concurrent.

### Evaluation - EDX (EMG/NCS):

- Determines presence, severity, acuity & location LMN lesion & prognosticates
- X-Ray: Post-trauma tibia/fibula & ankle to uncover bony injury; when concern for a Charcot joint
- US: Helpful if bleeding is suspected S/P THR or TKR
- MRN/MRI: If tumor concern, MRN to define specific neuronal pathology (can show fascicular organization)
- Labs: FBS, HbA1C, ESR, CRP, SPE/IEP, BUN/Creatinine, B12 levels

### Treatment - Conservative/Medical vs. Surgical = (etiologic): 1. Define cause & location 2. Severity 3. Prognosis

**If painful:** Meds - Tricyclics, Pregabalin, Gabapentin; Topicals - Diclofenac and/or Capsaicin; Minimize opioids if possible; Experimental Erythropoietin/EPO (neuroprotective - anti-apoptic & anti-inflammatory) (5000 IU/kg over 1 week); Sympathetic blocks. **Vitamin deficiency:** Replace (B1, B6, B12); **Labile Diabetes:** Control, A1C < 7.0. **AFO:** (Dorsiflexion assist swing phase, medial/lateral stability stance, push-off simulation late stance. If trimmed posterior to malleolus, posterol leaf-spring type → allows plantarflexion heel strike (for flaccid foot drop or mild spasticity). Shoe clasp orthosis only for flaccid conditions (provides no ankle stability). **Nerve stimulation:** External (fig. 4), or Internal ‘neuro-prosthesis’ using radio-frequency (swing phase stimulated for DF & eversion → balanced control (good for mild stroke & TBI). May enhance gait quality & speed.

**Surgery: Direct Trauma:** - Usually requires surgical repair (decompression with nerve grafting) = transfer of functional fascicles to deep peroneal innervated muscles (superficial peroneal or tibial as donor, < 1 year out).

**Focal Nerve Inset:** (compression, distortion, invasion). Exploration, microdissection & release. **Lumbar Herniation**

**Stenosis** (3-4% of cases) → consider discectomy &/or laminectomy (to prevent ischemia of arteriolar supply, the earlier the better). **Sciatic Neuropathy**, i.e. S/P THR, if bleeding or hematoma; or shorten prosthetic stem if leg lengthened.

**Chronic Foot Drop:** Lenden transfers + Achilles lengthening if contracture. When both neurologic & anatomic factors (e.g. Polio or Charcot joint), consider arthrodesis for stability, e.g. Lisfranc & triple or pan-talar arthrodesis.