DROP FOOT AND TREATMENTS

YOUNGMEE PARK
WHAT IS FOOT DROP

- Foot drop / Drop foot
- the inability to lift the front part of the foot
- not a disease
- a symptom of some other medical problems
- a sign of an underlying neurological, muscular or anatomical problem
- can happen to one foot or both feet at the same time
- The ability to foot-lift is an essential part of the swing phase of the gait cycle
The Gait Cycle
Causes

- Nerve injury
  most common
  compression of the nerve
  nerve can be injured during THR or TKR

- Brain or spinal cord disorders
  Neurological conditions
  stroke, multiple sclerosis (MS)
  cerebral palsy, Charcot-Marie-Tooth disease

- Muscle disorders
  muscular dystrophy, polio
  amyotrophic lateral sclerosis (Lou Gehrig's disease)
MUSCLES & NERVE

- Dorsiflexor
  - anterior tibialis
  - extensor hallucis longus
  - extensor digitorum longus

- Peroneal Nerve
SYMPTOMS

- High steppage gait
- An exaggerated, swinging hip motion
- Tingling, numbness & slight pain in the foot
- Difficulty performing certain activities that require the use of the front of the foot
- Muscle atrophy in the leg
- Limp foot
TREATMENT

depends on the specific cause of foot drop

- **Exercises**
  strengthen the muscles, maintain joint motion and help to improve gait

- **Ankle Foot Orthotics (AFO)**
  support the foot with light-weight leg braces and shoe inserts

- **Electrical Functional Stimulations**
  electrically stimulate the peroneal nerve during footfall

- **Surgery**
  repairs or decompresses a damaged nerve
  fuses the foot and ankle joint or transfers tendons from stronger leg muscles

The goal of treating foot drop is to get patients back to a regular gait cycle.
PHYSICAL THERAPY- EXERCISE

- usually when the problem stems from weak muscles
- proper physical therapy exercises can strengthen ankle muscles and improve symptoms

Toe Curls  

toe-to-heel rock
Physical Therapy - Exercise

Foot Stretch

Isometric Dorsiflexion
Physical Therapy - Exercise

Foot Band

Cycling
**Ankle Foot Orthotics**

- The most common treatment
- An insert in the shoe that holds the foot at 90 degrees
- Stabilizes the ankle in stance and helps clear toes in swing
ANKLE FOOT ORTHOTICS

- A variety of materials
  - Plastic AFO: light weight
    - off the shelf - short term use
    - custom molded from a cast – long term use
    - or complicated case
  - risk of skin irritation

- Metal and leather AFO: heavy
  - skin contact must be kept a minimum
  - good for fluctuating edema patients
**FUNCTIONAL ELECTRICAL STIMULATION (FES)**

- Electrical stimulation to the nerves controls the dorsiflexor muscles.
  - it was first proposed as a treatment for foot drop in 1961
  - they send electronic pulses to fire the nerve response for the front of your foot to lift.
  - it's programmed to each individual separately
  - it provides normal range of motion to the foot and ankle during walking
  - stroke and multiple sclerosis patients with foot drop have had success with it

- Contraindication:
  - pacemaker, uncontrolled epilepsy, pregnancy, broken skin
WalkAide

utilizes patented tilt sensor technology
Initiating stimulation when the leg is tilted back
Terminating stimulation when the leg is tilted forward.

creates a more natural and efficient walking pattern.
## FES vs. AFO

<table>
<thead>
<tr>
<th>Functional electrical stimulation</th>
<th>Ankle-foot-orthotics</th>
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<tbody>
<tr>
<td>small</td>
<td>big and heavy</td>
</tr>
<tr>
<td>wear almost any type of shoe</td>
<td>needs special shoes to fit</td>
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<tr>
<td>active muscle contraction</td>
<td>passive to correct the gait</td>
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<tr>
<td>reconstruction neural pathway</td>
<td>can’t help reconstruct neural pathway</td>
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<td>doesn’t work for people who have problems with nerves in the feet</td>
<td>Cosmetically unappealing</td>
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<td>more normal walking pattern</td>
<td>hold the foot at 90 degrees</td>
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<td>$$$$$</td>
<td>$$ - $$$</td>
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There are many causes and treatments for foot drop, and each individual patient requires different procedures depending on their specific cause and conditions. Clinicians must work to find optimum treatments for each patient to ensure the best outcomes.
Quick Quiz

- Name the nerve that controls the muscles that lift the foot.

- Name of the abnormal gait when the foot is raised high to avoid catching a drooping foot.

- Name two of the exercises for a foot drop injury.

- Contraindication for FES.
QUESTIONS?
FASCINATING FOOT AND ANKLE FACTS

1. 25% of the bones in your body are in your feet.
2. The average person takes 8,000 to 10,000 steps per day.
3. The average person will walk over 100,000 miles in their life, or more than 4 trips around world.
4. Women have four times as many foot and ankle problems as men - ill fitting high-heeled footwear is commonly the problem.
5. More than 75% of people will experience foot and ankle problem in their lifetime.
REFERENCES


