Orthotics Awareness Newsletter

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CONSERVATIVE MANAGEMENT OF THE OSTEOARTHRITIC ANKLE: AN ALTERNATIVE TO ARTHRODESIS

- Ankle-Foot-Orthoses (AFOs) have a wide variety of use beyond the treatment of drop-foot.
- OA ankle treatment is conservatively managed with a rigid ground-reaction-force AFO and motion control shoe
- Results are often dramatic and liberating for the patient.

Osteoarthritis of the **ankle joint** (talocrural) is a common debilitating condition that often presents with painful weight-bearing, particularly during tibial advancement beyond mid-stance. Consequently, patients with ankle OA have **significant problems with ambulation**. The cause of OA itself is often secondary to previous trauma to the area such as a fracture or severe soft tissue injury.

The use of a **custom AFO** in combination with a **motion control shoe** has proven to be a very effective method of symptomatic treatment and, with regular use, will likely prevent further degradation. AFOs are commonly used to treat symptomatic drop-foot yet are overlooked as treatment options for conditions like ankle OA or any condition that requires limitations to ankle or sub-talar joint motion.

Other common pathologies to consider in this realm of use are anterior/lateral compartment syndrome, painful arthrodesis of the ankle or subtalar joint and manipulation of knee position, (i.e. weak quadriceps or prevention of genu- recurvatum).

In the case of ankle OA, the biomechanical goal is to limit and/or **eliminate the range of motion that causes pain**. In **severe cases**, the most successful design points to a rigid (dorsiflexion stop) **custom-made AFO that blocks necessary motion and transfers ankle dorsiflexion moments to the knee rather than to the ankle joint itself**.

In some cases, the use of a patellar tendon bearing (PTB) AFO is indicated so that the ankle complex is partially or fully unloaded and removed from ground forces. The patient effectively bears weight proximally toward the knee, utilizing the gastrocnemius muscle and the anterior topography around the knee and proximal tibia. This type of brace demands the utmost attention to detail; the absence of such attention will greatly reduce the level of compliance.

The caveat to AFO use is the 'choppy' gait result – much like walking in a ski boot. To eliminate this problem, a carefully crafted **rocker bottom sole** will maintain the ground reaction force alignment through the ankle and knee centres at all phases of stance, thereby eliminating the flexion and extension moments that would otherwise act on the ankle and knee. Instantly, the patient can take longer, smoother steps that are less energy-taxing. This treatment, however, creates a leg length discrepancy that must be accommodated on the contralateral side.

Patients regularly report an **elimination of pain with this treatment combination**, and observable gait improvements include longer stride length and increased velocity. Holistically, the OA patient is able to regain a lifestyle that is more active and subsequently healthier.

While the use of AFOs in this manner is not new, it tends to get overlooked as a treatment for many conditions such as ankle OA. Crucial to a successful outcome is the understanding and skilled application of the biomechanics that deal with the manipulation of moments of force and ground reaction forces. Certified orthotists are highly trained in this regard.

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