Use of the Lower Extremity Functional Scale (LEFS) in a Patient After a First Metatarsophalangeal Joint Implant: A Case Report.

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Unique

First metatarsophalangeal (MTP) total joint implants are uncommon; however, hemi implants have increased in popularity. The HemiCAP® (Franklin, MA) implant resurfaces the metatarsal head while leaving the distal phalanx intact. Early results of the HemiCAP® implant surgery have been promising, physical therapy outcome measures such as the LEFS have not been extensively studied in this population.

The Lower Extremity Functional Scale (LEFS) is a sensitive and reliable outcome measure that has commonly been used in patients with hip and knee dysfunction. While the LEFS has been used for a broad spectrum of lower-extremity pathologies, there is a paucity of research that investigates the use of LEFS in patients who have had a first MTP joint implant.

Purpose

The purpose of this case report was to investigate the use of LEFS in a patient with first MTP HemiCAP® joint implant.

Foundation

• Arthritis is most frequently cited chronic disease in the United States and hallux rigidus is the most common form of arthritis in the foot.
• First MTP joint replacements have a tendency to fail over time due to the significant amount of force through the 1st MTP with each step.
• HemiCAP DF® incorporates an anatomic, extended dorsal curve on the first metatarsal to improve dorsal roll-off while preventing osteophyte regrowth.
• In a study of 27 great toes in 25 patients, Aslan et al (2012) found that the HemiCAP® resurfacing implant was successful in improving range of motion (ROM), function, and pain scores 37 weeks after surgery.
• The LEFS has strong reliability and validity and is easy to administer and score in patients with a wide range of conditions and disability levels.

Description

• The patient was a 56 year-old male with bilateral pes planus.
• The patient reported a 9 year history of hallux rigidus in the right 1st MTP.
• Conservative treatment did not decrease symptoms and the patient underwent surgery for a 1st MTP HemiCAP® arthroplasty implant.
• A systems review 9 weeks after surgery revealed impairments of right great toe range of motion, strength and balance.
• Tests and measures included gait assessment, goniometric range of motion, manual muscle testing (MMT), and the LEFS.
• The patient was seen for 45-60 minutes/session, 2x/week for 4 weeks.
• Physical therapy intervention included balance exercises, toe and ankle stretching and strengthening, and joint mobilizations of the first MTP.
• Gait training prioritized weight shift, equal step length and push off over level surfaces with the use of a mirror for visual feedback.
• A written home exercise plan was included that reinforced the above interventions. The patient’s goals were to walk normally and return to golf.

Observation

• Right 1st MTP flexion improved from 5° to 10° both actively and passively.
• Right first MTP extension improved from 20° actively and 30° passively to 10° both actively and passively.
• This compared to left 1st MTP active range of motion of 10° flexion and 10° extension.
• MMT of the right flexor hallucis longus and brevis improved from 4/5 to 5/5.
• MMT of right extensor hallucis longus and brevis improved from 4/5 to 4/5.
• Plantarflexor strength improvement of 4/5 to 5/5.
• Pr improved from 0 to 45 seconds in single limb stance from initial evaluation to discharge.
• LEFS score improved from 60/80 to 73/80, showing a clinically important difference.

Conclusions

This case report suggested that the use of the LEFS outcome measure was beneficial when assessing a patient who had a 1st MTP HemiCAP® arthroplasty implant. Future research should investigate the use of the LEFS in larger populations of patients with foot and ankle pathologies.

References and Acknowledgements

3. Weeks after surgery.
5. Degree
7. Phys Ther Proced 2004;221
11. Franklin, MA
12. Right 1st MTP Active ROM
13. R Great Toe Strength
14. Top: Medial aspect of right foot
15. Bottom: Post-surgical x-ray of right foot
16. Above: Dorsal surface of right foot
17. [Image 64x2657 to 652x2960]