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 metatarsolphalangeal (MTP) total joint implants are uncommon; however, hemi implants have increased in popularity.[1] The. HemiCAP® (Franklin, MA) implant resurfaces the metatarsal head while leaving the distal phalanx intact.[1] While 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.[2]

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.[3] 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

Figure 1: Resurfacing of the first MTP with the HemiCAP DorsiFlexion Implant System.[9]

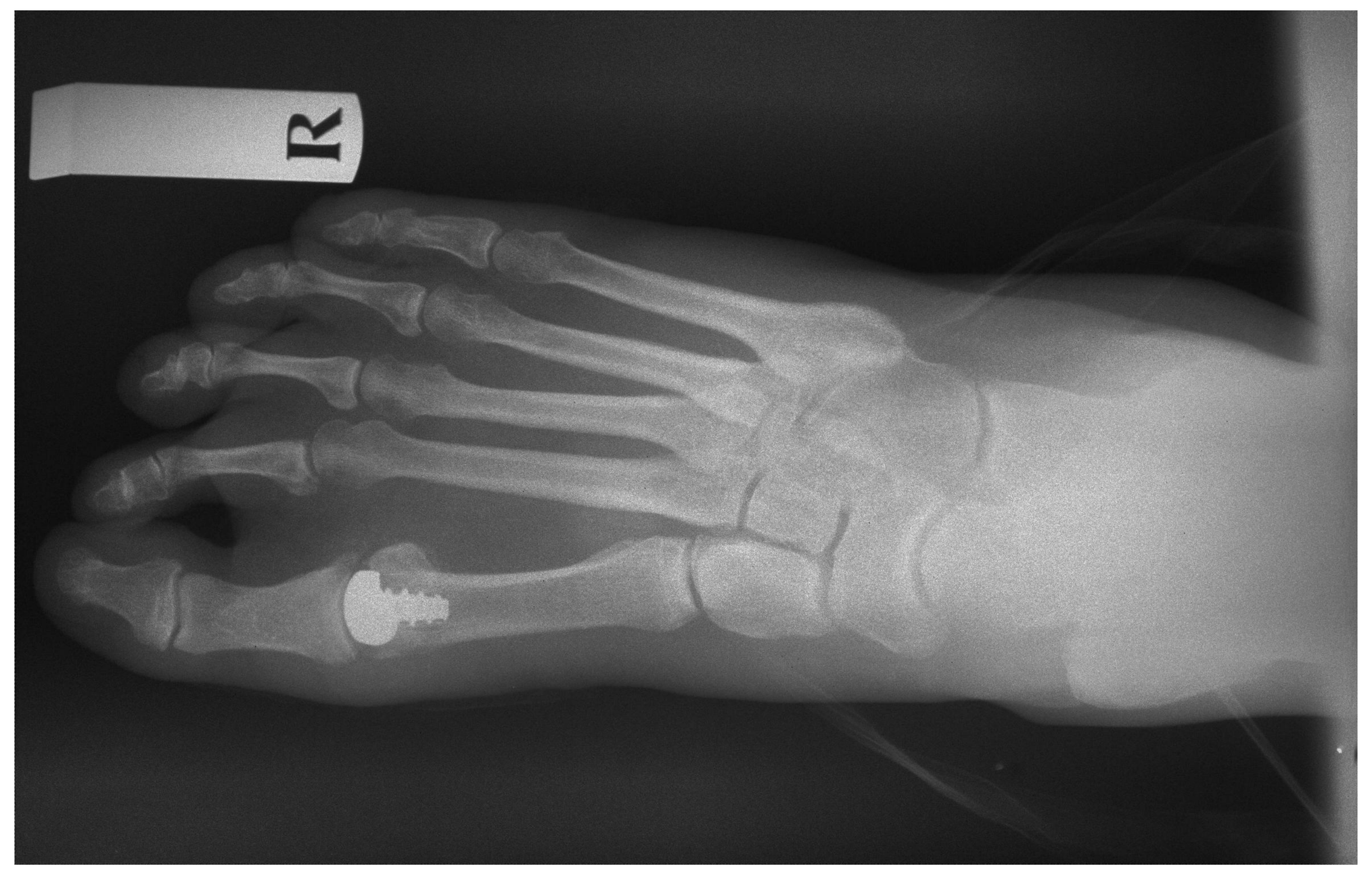
- Arthritis is most frequently cited chronic disease in the United States[4,5] and hallux rigidus is the most common form of arthritis in the foot.[6]
- First MTP joint replacements have a tendency to fail over time due to the significant amount of force through the 1st MTP with each step.[7]
- HemiCAP DF® incorporates an anatomic, extended dorsal curve on the first metatarsal to improve dorsal roll-off while preventing osteophyte regrowth.[8]
- 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.[2]
- 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.[3]

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® arthrosurface implant.[1]

- 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.



Top: Medial aspect of right foot
Bottom: Post-surgical x-ray of right foot

Above: Dorsal surface of right foot

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 40° both actively and passively.
- This compared to left 1st MTP active range of motion of 10° flexion and 40° 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.
- Pt 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.[1]

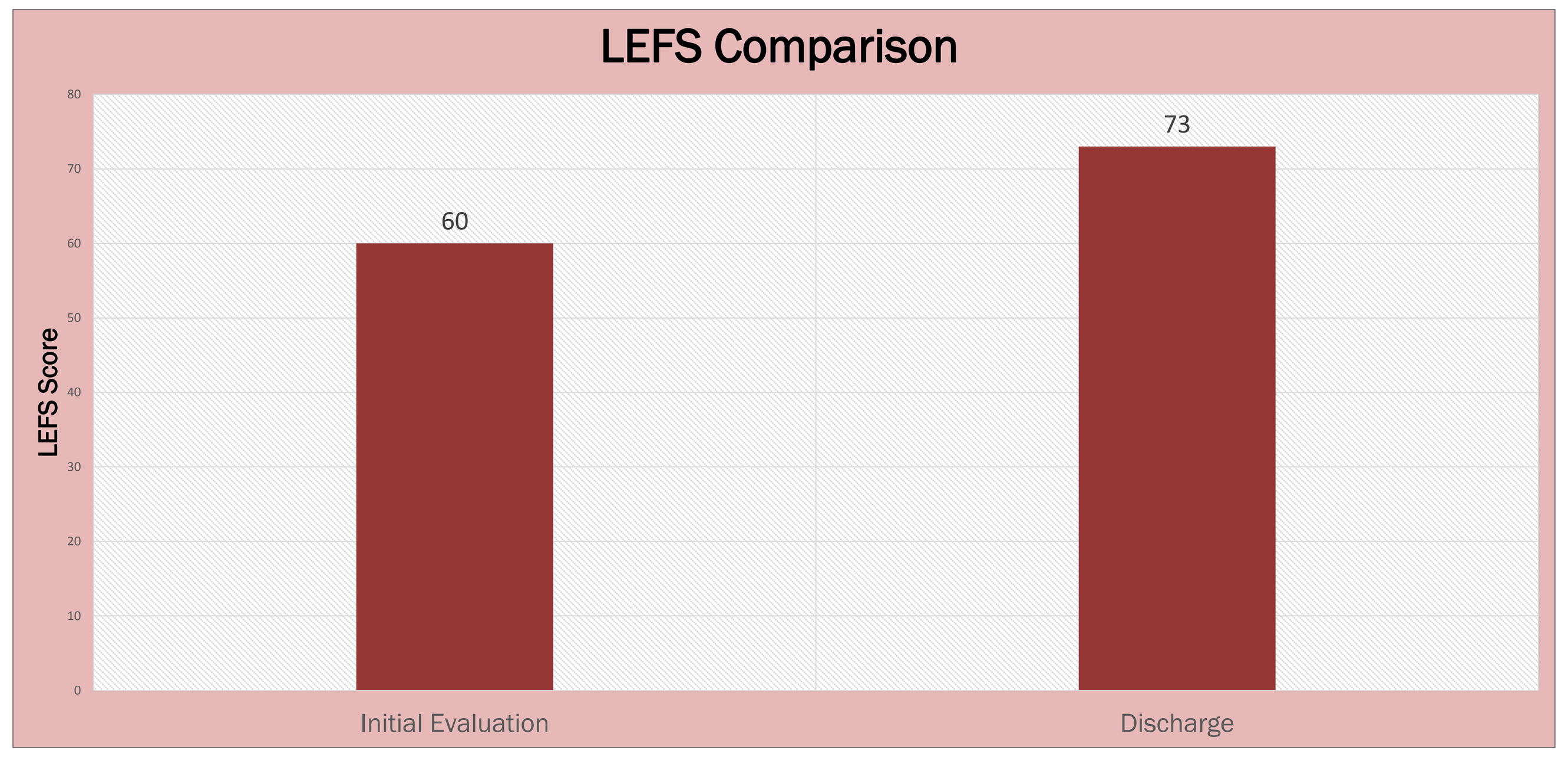


Figure 2: Comparison of LEFS Scores

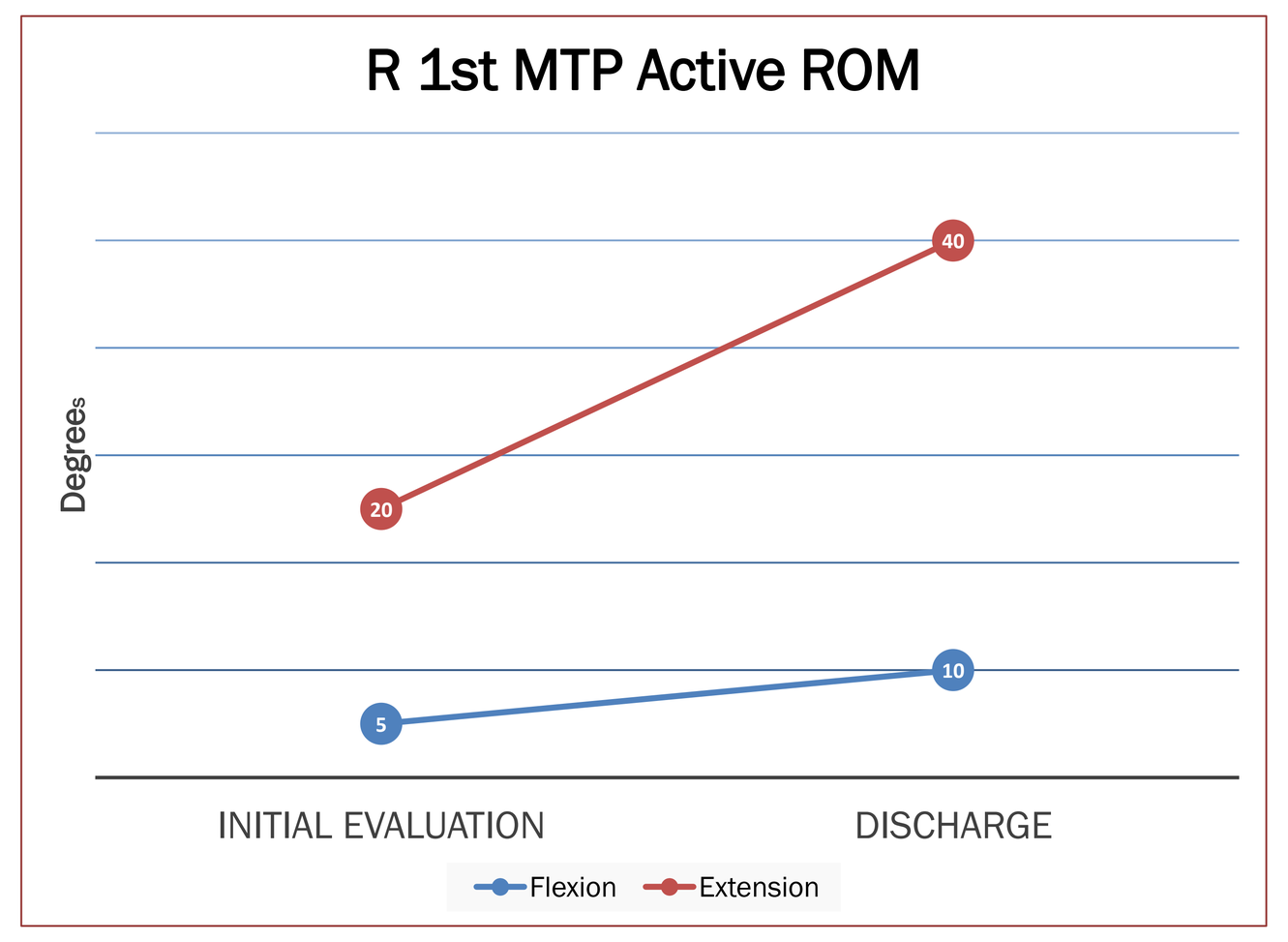


Figure 3: Comparison of R 1st MTP ROM Measurements

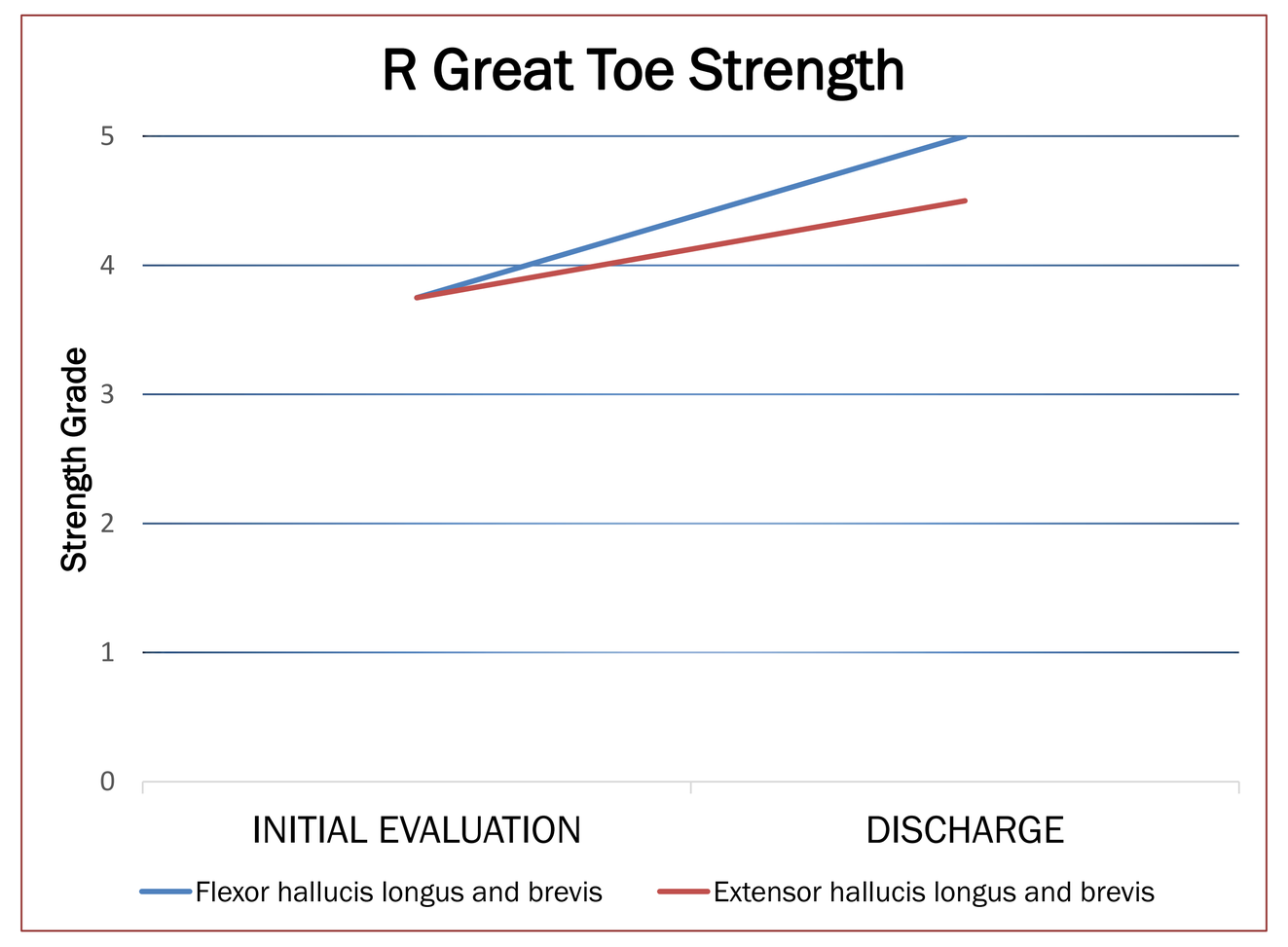


Figure 4: Comparison of 1st Ray MMT Grades

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® arthrosurface implant. Future research should investigate the use of the LEFS in larger populations of patients with foot and ankle pathologies.

References and Acknowledgements

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