Accurate Measurement of First Metatarsophalangeal Range of Motion in Patients With Hallux Rigidus

Ettore Vulcano, MD
Joseph A. Tracey III, MS
Mark S. Myerson, MD
Disclosure

No Conflicts to disclose

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We have no potential conflicts with this presentation
Standardized Hallux ROM

• The reliability of hallux range of motion (ROM) measurements has not been established.
• The aim of the present study was to prospectively assess the clinical versus radiographic difference in ROM of the arthritic hallux MTP joint and the intra- and inter-reliability of radiographic dorsiflexion measurement of the hallux.
Clinical Measurement

- The foot was dorsiflexed until the ankle was in neutral position relative to the leg.
- The ipsilateral knee was flexed 90 degrees.
- The proximal phalanx was grasped and moved into maximal dorsiflexion.
- A Goniometer was used to measure.
Radiographic Method

- The patient was instructed to flex the knee until maximum hallux dorsiflexion could be achieved, elevate the heel off the ground, and lean forward on the hallux.
Radiographic Measurement

- Difference between neutral and dorsiflexed radiographs used to determine ROM.
- Correlations evaluated between the delta dorsiflexion in two subgroups of patients with clinical dorsiflexion greater than or less than 30 degrees.
Results

- The mean difference between clinical and radiographic dorsiflexion was $13 \pm 9.1$ degrees ($P < .001$).
- The difference was greater in patients with a clinical dorsiflexion of less than 30 degrees than in the group with 30 degrees or more ($P = .038$).
- Intra-rater reliability on x-ray measurement was strong ($ICC1,1 = 0.88-0.94$).
- The inter-rater reliability of hallux dorsiflexion was also excellent ($ICC3,1 = 0.87-0.95$).
Conclusion

We describe a reproducible and straightforward method of measuring hallux MTP ROM that minimized the inaccuracies of measuring clinical ROM.

A standardized measurement of hallux ROM is important to compare pre- and postoperative results, to compare results between different studies, and to obtain precise and unbiased values of first MTP dorsiflexion.
References

References (cont’d)