Clinical and radiographic outcomes of foot orthosis for hallux valgus: A prospective one-year follow-up study

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Disclosure

NO CONFLICT TO DISCLOSE

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Our disclosures are in the Final AOFAS Mobile App.
We have no potential conflicts with this presentation.
Nonoperative care, which is safer and costs less than operative treatments, is the first-line treatment for hallux valgus.

Foot orthosis, or shoe insole, is one of the most widely used nonoperative treatments.

However, limited information is available on the efficacy of foot orthosis for hallux valgus.

Purpose
To evaluate clinical and radiographic outcomes of foot orthosis for painful hallux valgus.
**Study design**

- Case series
- Patients prospectively recruited
- Recruitment period: March 2011-September 2014

**Inclusion criteria**
- Hallux Valgus Angle (HVA) $\geq$ 20 degrees
- Hallux and/or forefoot pain $\geq$ 1 month
- Age $\geq$ 20 years
- Patients who selected to undergo orthotic treatment

**Exclusion criteria**
- Hallux rigidus ($\geq$ grade 2)$^4$
- Symptomatic flatfoot ($\geq$ stage 2)$^5$
- Chronic inflammatory disease (rheumatoid arthritis etc.)
- History of previous surgery in the foot
Custom-made insole

- One certified orthotist

Casting
- Impression foam box
- Partial weight bearing, ankle and subtalar joints neutral

Materials
- Top / Bottom: EVA
- Reinforcement: Thermoplastic resin
- Cushion: Polyurethane

(Trittschaum, Bauerfeind, Zeulenroda, Germany)
(Multiform / Microcork, Gotz, Göppingen, Germany)
(Relion, Tecnogi, Borgolavezzaro, Italy)
(PPT, Langer, New York, USA)
Outcomes

Patient demographics
- Age, sex, body mass index (BMI)

Compliance (@ 12 months)
- Usage rate
- Time to use

Clinical evaluations (@ Baseline, 3, 6, and 12 months)
- Visual analog scale (VAS) for pain
- American Academy of Orthopaedic Surgeons foot and ankle score (AAOS-FAS)
- Short Form 36-Item Health Survey (SF-36)\(^7\)
- VAS for treatment satisfaction

Radiographic evaluations (@ Baseline and 12 months)
- HVA, Intermetatarsal angle (IMA)
Results: patient demographics

Number of patients: 46
Age (Years): 64 ± 10
Sex (Women/men): 42/4
Bilateral/Unilateral: 31/15
BMI (kg/m²): 23 ± 4
Baseline HVA (Degrees): 40 ± 10
Baseline IMA (Degrees): 17 ± 4
Compliance (@ 12 months):
- Usage rate: 84%
- Time: 4.6 hrs/day

Visual information:
- 20-30 deg, 16 feet
- 31-40 deg, 23 feet
- >40 deg, 38 feet
Twenty patients (43%) experienced the clinically meaningful reduction in VAS (>20 points) at 6 months.
The SF-36 physical and mental summary scores and the other subscales did not improve.

**Results: clinical outcomes**

**SF-36 bodily pain**

- Baseline: 43 points
- 3 months: 45 points
- 6 months: 48 points
- 12 months: 48 points

*p = 0.04*

**VAS for satisfaction**

- Baseline: 65 points
- 3 months: 54 points
- 6 months: 55 points

*p = 0.32*
Results: radiographic outcomes

**HVA**
- Baseline: 41 degrees
- 12 months: 41 degrees
- p = 0.79

**IMA**
- Baseline: 17 degrees
- 12 months: 18 degrees
- p = 0.71
Discussion

• Wearing custom-made insoles improved pain and functional outcomes in patients with painful hallux valgus, and the effect lasted for at least 12 months.

• However, the effect was maximal at 6 months, and diminished slightly at 12 months.

This trend agreed with the previous study conducted by Torkki et al.³)

• The orthotic treatment had no effect on hallux valgus deformity over a 12 month period.
References

6) Ki SW, Leung AK, Li AN. Comparison of plantar pressure distribution patterns between foot orthoses provided by the CAD-CAM and foam impression methods. Prosthet Orthot Int. 2008 Sep;32(3):356-62