Which are the etiologic factors of metatarsalgia in hallux valgus patients?

A cross-sectional study


Foot and Ankle Group
IJS Orthopedics and Trauma Institute
Rosario - Argentina
Which are the etiologic factors of metatarsalgia in hallux valgus patients? A cross sectional study

< Gaston Slullitel MD >

- My disclosure is in the Final AOFAS Program Book.
- I have no potential conflicts with this presentation.
Background

✓ Central metatarsalgia is a frequent complaint in hallux valgus patients.

✓ There are two theoretical concepts that tried to explain the etiology.
  ✓ the “so called” first ray insufficiency.
  ✓ increased lesser metatarsal length.

✓ There is no current evidence, that any of them affect biomechanical parameters and predispose for primary metatarsalgia.
Purpose

The purpose of the study was to evaluate the etiologic factors associated with metatarsalgia in hallux valgus patients.
Methods

- Cross-sectional study of 121 consecutive adult patients with non-arthritic hallux valgus.

- Patients with previous surgeries, rheumatoid arthritis, metabolic or neuro-muscular pathology were excluded.

- Binary logistic regression was performed to identify the effect of the clinical and demographic factors on the occurrence of metatarsalgia.
The presence of metatarsalgia was crossed with the following features:

<table>
<thead>
<tr>
<th>Feature</th>
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<tbody>
<tr>
<td>Hallux Valgus Angle (HVA)</td>
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<tr>
<td>1-2 intermetatarsal Angle (IMA)</td>
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<tr>
<td>Age</td>
</tr>
<tr>
<td>Weight</td>
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<tr>
<td>Metatarsal index formula</td>
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<tr>
<td>Toe deformity</td>
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<tr>
<td>Gastroc-soleus shortening</td>
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<tr>
<td>Metatarsophalangeal instability</td>
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<tr>
<td>Foot Arch Type</td>
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<tr>
<td>Metatarsus Adductus</td>
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</tbody>
</table>
Results

✓ 184 hallux valgus patients.

✓ Mean age of 52 years (IQR 34 – 64) and median weight of 65 Kg (IQR 58 – 72).

✓ Metatarsalgia was present in 84 (45.6%) feet.

✓ Not significant association with:
  ✓ 1-2 intermetatarsal angle.
  ✓ Hallux valgus angle.
  ✓ Foot arch type.
  ✓ Metatarsus adductus.
Results

- Significant statistical associations between metatarsalgia and
  - Weight (>60 Kg)
  - Lesser toe deformity
  - Gastrocnemius – soleus complex shortening
  - Metatarsal index formula (inverse relationship)
Two groups: patients with metatarsalgia and healthy controls.

The relative length of the first and third metatarsals did not correlate ($r \leq 0.13$) with the maximal peak pressure or maximal force under the corresponding metatarsal heads.

Maximal force under the first metatarsal head was decreased in the metatarsalgia group.
Discussion

- Metatarsalgia remains a controversial clinical entity.
- Our results question the assumptions that both the magnitude of the deformity of hallux valgus and the increased length of a lesser metatarsal by themselves can act as etiological factors.
- There is no evidence that link those theories with the occurrence of metatarsalgia.
Conclusion

- Metatarsalgia occurs in almost a half of hallux valgus patients.

- Our finding questions the assumption that both the magnitude of hallux valgus deformity and an increased length of a lesser metatarsal by themselves, act as etiologic factors.

- Metatarsalgia was associated with Achilles shortening, excessive weight and associated lesser toe deformity.

- These factors should be addressed in order to treat this disorder adequately.
References


