Ultrasound-guided hyaluronic acid injections for the management of Morton neuroma

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My disclosure is in the Final AOFAS Mobile App.
I have no potential conflicts with this presentation
Introduction

- **Cause of Morton neuroma**
  - Exact cause - unknown
  - Response to irritation (High heels, Narrow shoe box)
  - Pressure to nerve
  - Injury to nerve
  - Deformity (Flatfoot, Cavus, Hammer toe, Hallux valgus)

- **Diagnosis of Morton neuroma**
  - Affect women ages between 40 and 50
  - Most common between 3rd and 4th metatarsal
  - P/Ex - Mulder Click
  - X-ray, USG, MRI
Introduction

- Tx of Morton neuroma
  - Injections (anesthetics, steroid, etc.)
  - Orthotics
  - Medications
  - Neurectomy
  - Metatarsal shortening osteotomy
Hyaluronic acid

- Non-sulphated, linear glycosaminoglycan
- Major component of ECM
- Tolerability and safety – proved

- No published reports on the management of Morton neuroma
Purpose

To determine the efficacy and adverse effects of hyaluronic acid in management of Morton neuroma.
Material & Method

- Total 83 subjects
  - M : F -> 8 : 75
  - Age : 48 (range: 25-62)

- Patients complaining of metatarsalgia for at least 2 months with Mulder click (+)

- Exclusion Criteria
  - Sx. onset < 2month
  - Previous steroid injection history
  - Coexisting arthropathy (ex. RA)
  - Diabetes mellitus
  - Foot deformity of foot on plain radiograph
Materials & Methods

- All Patients received custom made insole with metatarsal pad, then hyaluronic acid injections were performed under ultrasound guidance 3 times for 3 weeks.

- Assessments:
  - VAS, AOFAS forefoot scale evaluation at 2, 4, 6 months after injection
Results – Mean VAS

- Baseline: 73.1 ± 16.8
- 2 month: 24.6 ± 9.3
- 4 month: 22.2 ± 14.1
- 6 month: 22.7 ± 8.6
Results – AOFAS forefoot scale

<table>
<thead>
<tr>
<th>Time</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>32.2 ± 13.9</td>
</tr>
<tr>
<td>2 mo</td>
<td>83.4 ± 17.2</td>
</tr>
<tr>
<td>6 mo</td>
<td>86.0 ± 6.5</td>
</tr>
</tbody>
</table>
Discussion

- Conservative Management of Morton neuroma
  - Most focus on local steroid injections -> But…
    - Limited favorable results in long-term studies
    - Complications after steroid injects - catastrophic
    - Difficulty performing neurectomy in patients with poor outcome after prior steroid injects - due to soft tissue breakdown (fat atrophy)

- Excision of Neuroma
  - “Stump neuroma” - may occur from excised nerve end
    - Should be delayed until all possible conservative measures have failed
Conclusion

- The present study show that hyaluronic injection can be clinically effective for pain relief and functional improvement in patients with Morton neuroma for at least six months.

- However, numbness associated with Morton neuroma should be addressed more cautiously since it may persist without much improvement.