OUTCOMES OF FIRST METATARSOPHALANGEAL (MTP) JOINT MANIPULATION FOR ARTHROFIBROSIS

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Outcomes of First Metatarsophalangeal (MTP) Joint Manipulation for Arthrofibrosis

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

ARTHROFIBROSIS 1ST MTP JOINT

- ARTHROFIBROSIS
  - Complication following bunion surgery
  - Conservative treatment

- MANIPULATION
  - Simple
  - Safe
  - Will not affect subsequent surgeries

HISTOLOGY OF ARTHROFIBROSIS

- FIBROPROLIFERATIVE DISORDER
- UNKNOWN STIMULI
- STRONG IMMUNE RESPONSE ➔
  - Inflammatory cell activation ➔
  - Proliferation of residing cells in synovial tissue
PURPOSE OF STUDY

- Investigate:
  - Long term follow up
  - Clinical
  - Outcome surveys
- Medical records were reviewed to identify
  - Patients
  - Surgical correction of hallux valgus
  - Resultant arthrofibrosis
  - 1st MTP joint manipulation under sedation
  - May 2000 to December 2012
  - Pre-manipulation documented ROM of the 1st MTP joint
  - Pre-manipulation VAS scores
  - Complete medical records

- Exclusion criteria:
  - Incomplete medical records
  - Hallux rigidus and 1st MTP joint fusion

- Rosalind Franklin University of Medicine and Science IRB approved study.
**Methodology**

- **Research visit**
  - **Physical exam**
    - Dorsiflexion
    - Plantarflexion
    - Paper Pull out test
  - **Outcome surveys**
    - Visual analog scale (VAS)
    - Foot and ankle outcome score (FAOS)
    - Short form 12 (SF-12)
    - FFI

- **40 patients (48 feet)**
  - 35 females, 5 females
  - Average age 56.3 ± 12.7 years (range 30 - 83)
  - Follow up:
    - Average: 6.0 ± 3.6 years (range 1 - 11.6)
    - Median of 7.3 years
DORSIFLEXION OF THE 1ST MTP JOINT

- Ankle joint at neutral (90 degrees)
- The longitudinal bisection of the 1st metatarsal bone
- The longitudinal bisection of the proximal phalanx of the hallux
Ankle joint at 90° (neutral)

Patient curls their toes into plantarflexion

The longitudinal bisection of the 1st metatarsal bone

The longitudinal bisection of the proximal phalanx of the hallux
Paper Pull Out Test

- Patient is standing with a paper towel inserted between the hallux and floor
- Patient asked to grip the floor
- Examiner tries to remove the piece of paper
- Demonstrates the plantarflexory strength of the intrinsic muscles of the hallux
Joint Manipulation is a useful treatment modality

Clinically
- Increase in dorsiflexion & plantarflexion at 1st MTP joint
- Increased hallux strength

Outcome scores
- Significant decrease in VAS scores
- High outcomes scores (FAOS and SF-12)
- Low FFI scores

Arthrofibrosis is a known complication following bunion surgery.

This data demonstrates that manipulation of the 1st MTP joint may provide a long lasting increase in motion, increase in function and decrease in pain at the 1st MTP joint.
REFERENCES

6. Codman EA. The Shoulder In: Rupture of the Supraspinatus Tendon and Other lesions in or About the Subacromial Bursa. Robert E Kreiger, Florida, USA. 1984; 216-224