Proximal rotational closed-wedge osteotomy of the first metatarsal in rheumatoid arthritis: evaluation of a continuous series of 35 cases

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

• We performed joint-preserving forefoot surgeries, including a rotational closed-wedge osteotomy of the first metatarsal.

• The aim of this study is to assess short-term subjective, functional and radiographic results of the patients with rheumatoid arthritis who had undergone the procedure.
Methods

• From January 2011 to December 2011.
• 35 feet in 30 patients with rheumatoid hallux valgus deformity (an intermetatarsal angle of 10 degrees or more).
• The mean follow-up was 164.3 days (range 90 to 433).
Methods

Clinical examination

- AOFAS hallux metatarsophalangeal-interphalangeal scale\(^1\)
- JSSF (Japanese Society for Surgery of the Foot) RA foot ankle scale and Hallux scale\(^2\)

Radiographic examination

- Hallux valgus angle (HVA)
- Intermetatarsal angle (IMA)
- The position of the medial sesamoid
  (according to the measurement system proposed by Hardy and Clapham\(^3\))

Statistical analysis

- Paired-t test & Wilcoxon signed rank test
Surgical technique

Features
- The distal aspect of the wedge is vertical to axis of the first metatarsal (MT).
- The angle of the wedge is determined pre-operatively to make the first and second metatarsals angle as 5-10 degrees.
- As necessary, the first MT is shortened by resecting the distal end of the wedge to make the heads of the first and second MT as almost the same.
- The first MT is rotated to reposition the metatarsal head on the lateral sesamoid.
Pre-surgery

HVA: 48.1°
IMA: 18.9°
The position of the medial sesamoid: VII

Post-surgery

HVA: 5.2°
IMA: 9.1°
The position of the medial sesamoid: III

A modified method of shortening oblique osteotomies of the MT4 through second to fourth are almost performed.
Results

AOFAS
hallux metatarsophalangeal-interphalangeal scale

P=7.0e-09*

Pre-surgery
Post-surgery

JSSF
RA foot and ankle joints scale

P=1.1e-07*

Pre-surgery
Post-surgery

JSSF
hallux scale

P=6.6e-10*

Pre-surgery
Post-surgery

*: paired-t test
Results

Hallux valgus angle

Intermetatarsal angle

The position of the medial sesamoid (Hardy & Clapham)

P = 8.1e-13*
P = 4.7e-07*
P = 2.1e-10**

*: paired-t test
**: Wilcoxon signed rank test
Conclusion

A rotational closed-wedge osteotomy of the first metatarsal was beneficial for correcting forefoot deformities in RA patients over the short term.

References