Middle and Long-term Clinical Results of Dorsiflexion Osteotomy for Severe Hallux Rigidus
Hiroko Ikezawa, MD, Norio Usami, MD, Eiichi Hiraishi, MD, Yamada Takahiro

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Introduction/Purpose: Total arthroplasty or arthrodesis is often used as a surgical procedure for severe cases of hallux rigidus. However, because these procedures involve problems such as loss of joint function, age, and postoperative motion restriction, joint-preserving surgery is desirable for achieving a better quality of life. To resolve these problems, we have performed dorsiflexion osteotomy of the first metatarsal head since 2000, yielding favorable outcomes. We report about middle to long-term follow-up for our clinical results and radiographic findings.

Methods: The study involved 31 feet of 30 patients (20 male, 11 female) with Grade 2 (joint space narrowed to about 1/2 or less) or Grade 3 according to the Hattrup and Johnson classification. The mean age at surgery was 61.6 years (range: 53-77). Surgical techniques: We have used dorsal approach and conducted closed wedge osteotomy of the first metatarsal bone neck. Then, the bone head was flexed dorsally to form an articular surface and fixation. PWB was permitted 3 weeks after surgery. Mean postoperative follow-up period was 4 years and 2 months (range: 3-13 years). Clinical outcomes, range of motion (ROM), and radiographic findings were investigated.

Results: Clinical outcomes were rated as excellent in 24 feet, good in 7, and fair/poor in none. All patients returned to normal daily life. Stiffness while walking was noted in 10 feet. As for ROM, most patients had a 1/2 to 2/3 of the normal range. No complications such as infection, nonunion, or transfer metatarsalgia were seen in any case. An X-ray film showed joint space narrowing in about half of all cases. None of the patients experienced pain relapse requiring arthrodesis again.

Conclusion: The mechanism of pain relief is dorsiflexion osteotomy is by bone shortening, make a decreasing joint pressure and regaining of normal articular to the dorsal side so that it faces the articular surface of the proximal phalanx. The postoperative restriction of ROM may be attributable to changes in the bone alignment and in the tension of soft tissue around the joint as compared to the healthy condition. None of the patients experienced pain relapse. Our procedure appears to be useful as joint-preserving surgery for severe cases with hallux rigidus.

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