Acta Orthopaedica et Traumatologica Turcica xxx (2018) 1–6

Contents lists available at ScienceDirect

Acta Orthopaedica et Traumatologica Turcica

journal homepage: https://www.elsevier.com/locate/aott

MAKALEYE YENİ ÖZET GELMESİNİ BEKLİYORUM: A randomized comparison of the proximal crescentic osteotomy and rotational scarf osteotomy in the treatment of hallux valgus

Namık Şahin [a, *], Gökhan Cansabuncu [b], Nazan Çevik [c], Oğuz Türker [c], Güven Özkaya [d], Yüksel Özkan [c]

[a] Konya Training and Research Hospital, Department of Orthopedics and Traumatology, Konya, Turkey
[b] Bartın State Hospital, Department of Orthopedics and Traumatology, Bartın, Turkey
[c] Bursa Yüksek Ihtisas Training and Research Hospital, Department of Orthopedics and Traumatology, Bursa, Turkey
[d] Uludag University, Faculty of Medicine, Department of Biostatistics, Bursa, Turkey

ARTICLE INFO

Article history:
Received 1 October 2017
Received in revised form
19 December 2017
Accepted 26 February 2018
Available online xxx

Keywords:
Hallux valgus
Scarf osteotomy
Proximal crescentic osteotomy
Surgical treatment
Foot

ABSTRACT

Objectives: The aim of this study was to compare clinical and radiological results of proximal crescentic osteotomy (PCO) and rotational scarf osteotomy performed in the treatment of hallux valgus.
Methods: A total of 57 consecutive patients (60 feet) with symptomatic hallux valgus deformity were randomly assigned to one of two groups. The PCO group consisted of 22 women and 5 men (30 feet) and the mean age was 43(±14.5) years. The scarf group consisted of 23 women and 7 men (30 feet) and the mean age was 40.9(±12.6) years. Outcomes were assessed by using of preoperative and postoperative American Orthopaedic Foot and Ankle Society (AOFAS) scores and visual analogue scale (VAS). Weight bearing X-rays were used for radiological evaluation.
Results: The mean AOFAS scores improved from 42(±16.2) to 66.7(±13.4) points in PCO group and from 36.2(±16.1) to 73.2(±13.5) points in scarf group. The mean pain score improved from 6.3(±1.3) to 2.4(±2) in PCO group and from 6.5(±1.9) to 2.5(±1.3) in scarf group. The mean hallux valgus angle (HVA) decreased from 38.1°(±7.1) preoperatively to 23.8°(±8.5) at postoperative first year in PCO group, and from 36.1°(±7.5) preoperatively to 22.2°(±7.5) at postoperative first year in scarf group. The mean intermetatarsal angle (IMA) decreased from 17.3°(±3.8) preoperatively to 11.8°(±3.3) at postoperative first year in PCO group, and from 16.2°(±2.6) preoperatively to 9.3°(±2.4) at postoperative first year in scarf group.
When all the patients were assessed together, the relations between preoperative DMAA values and postoperative first year HVA (r = 0,327) and IMA (r = 0,399) values were positive but had low significance. The HVA and IMA values were increased in both groups at the end of the first year when compared to the postoperative sixth week values ($p < 0.01$ for both groups for both values).
Conclusion: The PCO and the rotational scarf osteotomy in the treatment of hallux valgus deformity provides a satisfactory correction. The clinical and radiological results of both methods are similar. Especially in patients with high preoperative DMAA, an increase in the HVA and the IMA values may occur in the first postoperative year when compared to the postoperative sixth week values.
Level of evidence: Level II, therapeutic study.

Introduction

Hallux valgus is a common pathology in the society, which impair quality of life.[1,2] Surgical treatment is usually recommended for symptomatic patients with moderate or severe deformity. Due to the variety of the components of hallux valgus deformity,

* Corresponding Author. Konya Training and Research Hospital, Hacı Şaban Mah. Yeniyol Cad. No:97. Meram, 42090, Konya, Turkey. Phone: +90 332 2210000/4007.
E-mail address: sahinnamik@yahoo.com (N. Şahin).
Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.

https://doi.org/10.1016/j.aott.2018.02.008

different surgical methods can be used. Particularly in moderate or severe deformities, metatarsal osteotomies carried out with distal soft tissue procedures are frequently applied surgical methods.[3]

Several proximal first metatarsal osteotomies have been defined with distal soft tissue procedures, especially in the treatment of severe hallux valgus deformities. Previous studies have reported that PCO, which is one of these osteotomies, has led to clinical and radiographic healing with over 90% patient satisfaction in the medium and long term.[3,4] On the other hand, dorsiflexion malunion of the first metatarsal bone has been recorded following PCO with a ratio of 16–28%.[5,6] In addition, metatarsalgia and hallux varus transfer are possible complications that can occur.[3,6]

Scarf osteotomy is suggested for the treatment of mild or moderate hallux valgus deformity and is defined as an osteotomy that translates the distal fragment laterally.[7] Scarf osteotomy has gone through several modifications in time. In one of these modifications, the distal plantar fragment was rotated laterally and a more efficient correction effect was targeted in the IMA without much impact on the DMAA.[8] Thus, rotational scarf osteotomy was became a surgical option that could be performed in severe deformities as well. Several studies have reported high patient satisfaction and important improvement in functional outcomes together with favorable radiographic results as a result of scarf osteotomy.[8–10] Following scarf osteotomy, through (an impaction of the two osteotomy fragments resulting in loss of metatarsal height and pronation of the distal fragment) reaching a 35%[11] and postoperative stiffness in the metatarsophalengeal joint have been recorded.[12] It has also been reported that a rotational scarf osteotomy helps to prevent complications like through.[8]

Both osteotomies can be expected to have a significant corrective effect on IMA. But due to the rotation as well as translation with rotational scarf osteotomy, there can be expected a less adverse effect on DMMA compared to PCO. The present study aimed to evaluate and compare the clinical and radiological results and the complications of PCO and the rotational scarf osteotomy which are frequently preferred techniques in recent years in the treatment of moderate and severe hallux valgus deformity.

Materials and methods

The prospective randomized study was performed at a single center between 1st October 2012 and 1st September 2014. The study was approved by the local medical ethics committee and an informed consent was provided for all patients. The inclusion criteria were the patients older than 18 years of age, HVA >30°, IMA>13° and symptomatic hallux valgus deformity. Patients with degenerative osteoarthritis of the first metatarsophalangeal joint, diabetes mellitus, rheumatoid arthritis, neurological diseases, vascular diseases, previous forefoot surgery and body-mass index >30 were excluded. A total of 57 consecutive patients (60 feet) with hallux valgus deformity were randomly assigned to one of the two groups (Fig. 1). The allocation was done double blinded. The PCO group consisted of 22 women and 5 men (30 feet) and the mean age was 43 years (±14.5). The scarf group consisted of 23 women and 7 men (30 feet) and the mean age was 40.9 years (±12.6). Demographic data (mean age and sex ratio) were statistically similar between the two groups.

Clinical evaluation was made using the AOFAS Score (100 points) and the VAS score (10 points) which were performed preoperatively and at the end of the first year after surgery.

The dorsoplantar and lateral weight-bearing radiographs of the foot[13] were obtained from all patients preoperatively, and at the sixth week, third month and first year after surgery. All the

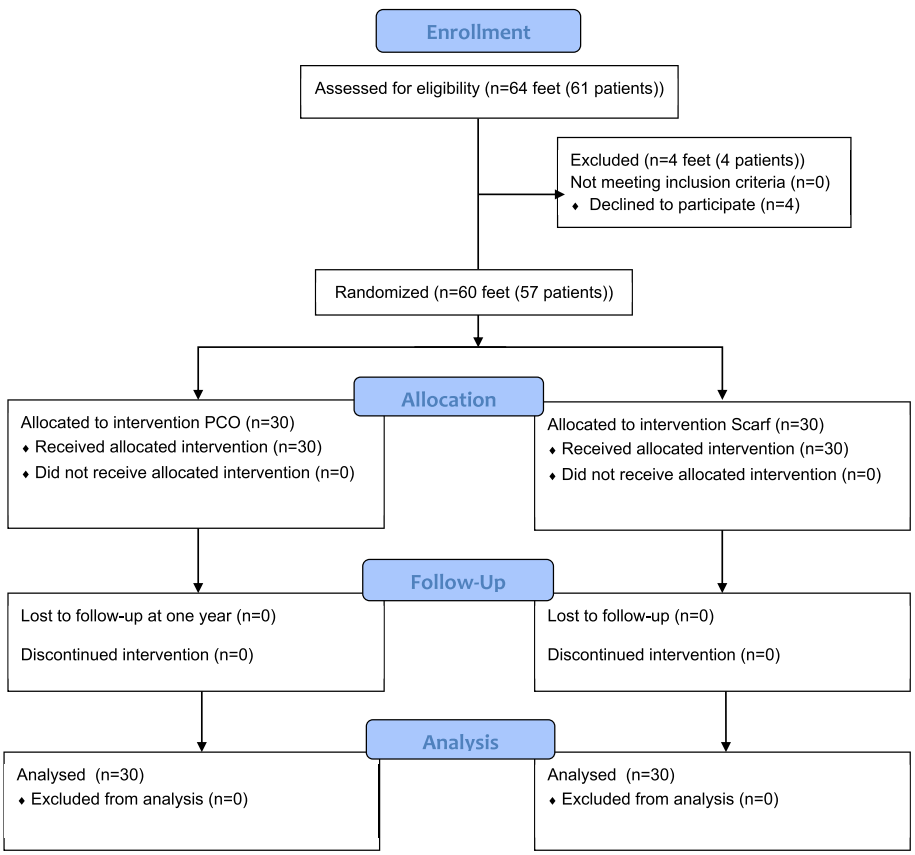

Fig. 1. Flow diagram.

Please cite this article in press as: Şahin N, et al., MAKALEYE YENİ ÖZET GELMESİNİ BEKLİYORUM: A randomized comparison of the proximal crescentic osteotomy and rotational scarf osteotomy in the treatment of hallux valgus, Acta Orthop Traumatol Turc (2018), https://doi.org/10.1016/j.aott.2018.02.008