Editorial

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High Tibial Osteotomy for Medial Knee Osteoarthritis

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High tibial osteotomy (HTO) has been rapidly adopted as a treatment for medial knee osteoarthritis with varus deformity[1,2]. This lower extremity realignment procedure is used to relieve pain and correct varus deformity of the knee joint. Preoperative planning to determine the correction gap and angle has a significant effect on postoperative results of HTO. However, postoperative correction can be incongruent with the preoperative plan, even with the use of a navigation system and computer imaging. In a clinical situation, postoperative correction may be influenced by several factors, such as muscle action in walking and ligament balance[3]. Still, the main purpose of HTO is relief of pain caused by osteoarthritis, rather than correction of the deformity, and most patients have shown improvement in clinical symptoms. However, good long-term results can be expected if accurate correction can be achieved through careful preoperative planning[4].

Traditionally, the cable method using a radiopaque line or a metal rod has been popular for the determination of correction in HTO as it allows real-time monitoring of the mechanical axis during surgery; however, the results can deviate due to non-weight bearing status and the influence of limb rotation during osteotomy, and it can increase radiation exposure during evaluation of the hip and ankle centers. Accordingly, preoperative planning using full-length weight bearing lower limb radiographs has recently been introduced for calculation of the correction angle and gap in weight bearing status using a picture archiving and communication system (PACS) or special software[5,6]. In this issue, we present a report comparing the two methods; the report showed that the PACS method yielded more accurate results with less radiation exposure. Some surgeons have suggested that HTO using a navigation system results in an accurate correction angle[7,8]. However, navigation-assisted HTO is performed in the non-weight bearing status, and thus the correction angle will change postoperatively in weight bearing status. In general, the Fujisawa point (a point 62.5% from the end of the medical tibial condyle) is considered the optimal location of the mechanical axis for deformity correction in HTO[9]. In the meantime, there are interesting reports stating that determination of the correction angle in open wedge HTO should consider the mechanical axis of the contralateral knee for balanced alignment of the lower extremities.

This issue of *Knee Surgery and Related Research* contains a report on open wedge HTO combined with arthroscopic surgery, which emphasized intra-articular debridement. The abrasion of eroded cartilage and removal of cartilage debris improved mechanically-induced symptoms[10,11].

Usually, a donor site defect is neglected after autogenous iliac bone grafting. However, there have been some interesting reports, including a report by Lee et al. published in this issue, showing that reconstruction of the iliac crest with bone cement decreases donor site pain and morbidity after autogenous iliac bone grafting in open wedge HTO.

A metal plate is frequently used for HTO. There are several reports on complications related to the plate, including screw loosening, metal failure, loss of correction angle, and infection[12,13]. However, Seo et al. reported that only minor complications were noted after HTO using a strong locking plate, and they concluded that the strong locking plate should be used for open wedge HTO due to many advantages it offers.

HTO is often performed in patients with medial knee osteoarthritis with varus deformity. Preoperative counseling with the patient is very important; the patient should be aware that the

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main purpose of HTO is pain relief, not complete resolution of osteoarthritis. The main complaints of the procedure including postoperative changes in the degree of correction in the lower extremity and leg length should also be taken into consideration[14,15].

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