Remodeling of the Calcaneocuboid Joint in the Flatfoot
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Category: Hindfoot

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Introduction/Purpose: Although the flatfoot has been successfully treated with a lateral column lengthening (LCL) for over half of a century, there has been controversy recently about whether the lateral column is actually short in a flatfoot, especially the acquired type. Some ask, “How can the normal, hard bones actually change and shorten?” And, if it is not short, perhaps the lengthening procedure is producing a non-physiologic state with abnormal anatomy. Would the flatfoot patient be better served with other procedures that don’t include a lateral column lengthening?

Level of Evidence: Therapeutic Level IV.

Methods: After observing a very dramatically changed calcaneocuboid (CC) joint when performing a double calcaneal osteotomy with a medial soft tissue reconstruction for a Johnson-Strom Stage II posterior tibial tendon insufficiency, it was decided to carefully observe, photograph, and record any changes in the CC joint at surgery in a consecutive series of 21 patients who were operated on who had this disorder(Figure 1). In total, there were fourteen double heel osteotomies, with medial soft tissue reconstructions for Johnson-Strom Stage II deformities, five triple arthrodeses for Stage III deformities, and two lateral column lengthenings with an ankle arthrodesis for a Stage IV deformity. All of the patients had a triple hemisection heel cord lengthening for hindfoot equinus.

Results: Every patient studied had some changes to the CC joint which were generally related to the amount of deformity present. At a minimum, the calcaneal side of the joint drifted proximally, laterally and dorsally, with bone being laid down on the outside of the calcaneus, resulting in the joint being larger. There was drifting and abduction of the lateral portion of the articular surface of the joint. In some joints the lateral portion looked like a distinct but confluent facet. Often times, a marginal osteophyte was present laterally and dorsally in the widened area of the calcaneus and “kissing” osteophytes were seen on the cuboid. All of these remodeling changes resulted in the calcaneal side of the joint being short, and facing laterally and dorsally.

Conclusion: These findings give evidence to the rationale for performing of a LCL proximal to the calcaneocuboid joint to treat the acquired flatfoot. When performing a LCL one should attempt to restore length to the calcaneal side of the joint, and to redirect it medially and plantarward. We do not remove the marginal spurs, rather they are maintained to provide an area to insert a retrograde fixation screw. If the patient has lateral column pain after the bone graft has incorporated, the screw and spurs are removed.