Evaluation and Surgical Management of the Overcorrected Clubfoot Deformity in the Adult Patient

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KEYWORDS

• Clubfoot • Overcorrection • Dorsal bunion • Flattop talus
• Dorsal navicular subluxation

KEY POINTS

- The overrcorrected clubfoot is a complication seen as the result of attempts to surgical address previously existing clubfoot deformity.
- Despite the infrequency with which the posteromedial release is performed today, this entity will present occasionally to the orthopedic foot and ankle surgeon.
- A sound understanding of the underlying muscle imbalance is essential when addressing the resulting deformities.
- The surgical aim is to provide the patient with a pain-free, stable, and plantigrade foot that is in neutral alignment.

INTRODUCTION

The overcorrected clubfoot represents a spectrum of deformity that follows a fairly consistent pattern. It may remain asymptomatic for years and the patient often presents only in adulthood. Historically, surgical correction obtained by extensive soft tissue release was the standard of care; the posteromedial release being the mainstay of treatment. Long-term outcomes of clubfoot patients treated with a posteromedial release have demonstrated significant stiffness and arthritis of the foot with revision surgery to address undercorrection or overcorrection a frequent finding.[1]

In comparison, modern treatment of clubfoot is by Ponseti casting, which has been shown to have good long term outcomes.[2–5] Most patients are successfully treated nonoperatively with Ponseti casting[6] and only in a minority of these patients, surgical

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intervention may be used to augment correction or address recurrent deformity. However, the more traditional posteromedial release is still performed for primary correction in some centers and more commonly for the management of the resistant or recurrent clubfoot. The outcome of treatment, whether nonoperative or operative, seems to be related in some degree to the etiology, and this should be taken into consideration when managing nonidiopathic clubfoot.[7,8]

PRESENTATION

History

Overcorrection occurs almost exclusively in patients who have had prior surgery, usually in the form of a posteromedial release, completed at around 2 years of age. It is not uncommon for many patients to have had additional surgery to either correct a residual deformity or to address overcorrection. There is another spectrum of problems that we treat, where patients have been quite stable for decades but where an anterior ankle cheilectomy is performed for impingement. Decompression of the anterior tibia exposes the underlying abnormal ankle motion secondary to a structurally abnormal flat top talus and, instead of providing pain relief, the cheilectomy leads to an exacerbation of the underlying ankle arthritis.

Patients with an overcorrected clubfoot often present much later in life. They typically give a history of managing for several years with few symptoms, despite the presence of deformity. The onset of acute symptoms or the deterioration of preexisting symptomatology is typically related to minor trauma, such as a sprain of the foot. During early adulthood, the complaints center mostly around the often marked deformity and stiffness that limits activity. These factors lead to discomfort and difficulties with shoe wear. Degenerative joint disease is often seen later in adulthood and is associated with a prior history of good function followed by the insidious onset of progressive pain.

Examination

Physical examination should begin with observation of the gait cycle, the posture of the foot during stance, and while performing a heel rise, if possible. Careful assessment of hindfoot alignment is necessary and its relation with the fore foot should be established.

The authors commonly observe weakness when performing a heel rise indicating a weak or nonfunctioning posterior tibial tendon. When performing a heel rise, the hindfoot does not swing into varus, but may correct only to the midline or stay in fixed valgus, indicating a rigid deformity. To assess for forefoot supination, the ankle is held in a neutral position and the hindfoot alignment corrected while observing the posture of the forefoot. Fixed supination of the forefoot is often seen in the setting of pes planus, and this finding is worse with more flexibility of the hindfoot. With significant hindfoot valgus, tenderness at the tip of the fibula or over the peroneal tendons is the result of calcaneofibular impingement. The navicular is frequently prominent dorsomedially and subluxated from a normal position at the talonavicular and naviculocuneiform joints where arthritis may be present. Tenderness over the anterior aspect of the ankle joint especially in dorsiflexion is caused by anterior ankle impingement.

The ankle, subtalar, and Chopart's joints should be evaluated for mobility and signs of arthritis. It may be difficult to accurately identify the symptomatic joint when all the joints of the hindfoot and ankle radiographically seem to be involved in the process. Selective intraarticular injection using 1% lidocaine under fluoroscopic guidance may help to differentiate between these potential sources of pain. Forefoot deformity