CHAPTER **27**

THE MIDDLE FACET COALITION: Influence of Lateral Talar Wedging on Surgical Planning

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Tarsal coalitions are seen in young patients complaining of "ankle pain." There are 3 typical clinical presentations of tarsal coalitions: the asymptomatic coalition that is found on routine examination for another unrelated condition; the painful peroneal spastic flatfoot with a hindfoot coalition; and the painful coalition with no foot deformity.

Asymptomatic coalitions are those that completely fuse a normal joint in a neutral position. Peroneal spastic flatfeet can have one or more locations of coalition, and may be complete or incomplete (arthritic) coalitions. These feet may have secondary arthritic changes in adjacent joints that are not part of the coalition process. These feet also require complex surgical procedures to address the coalition and realign the foot.

The painful coalition with no foot deformity occurs primarily in the middle facet or as a calcaneonavicular bar. In these instances, resection of the coalition is possible if there is no adjacent joint arthritis. In those cases where the coalition is effecting adjacent joint arthrosis, a fusion is necessary.

Radiographic evaluation of the coalition foot often reveals the site(s) of joint involvement, as well as position relation pertaining to foot deformity such as equinus and pes valgus. Additional evaluation of the coalition foot is enhanced by computed tomography (CT) and magnetic resonance imaging (MRI) results. The author prefers CT evaluation of a coalition foot, because the cortical margins of the joints are more accurately evaluated with a CT, and thin-slice imaging is possible (1.0-mm). Conversely, MRI is better suited for evaluating bony medullary edema, and is limited to thicker image slices that have more tissue averaging (3.0-mm slice thickness with typical 1-Telsa units).

The most common presentation of a painful tarsal coalition is in the subtalar joint middle facet. CT (or less preferred MRI) examination of these feet will reveal either a vertical alignment of the calcaneus to the tibia, and no apparent foot deformity (Figure 1); or a valgus alignment of the calcaneus to the tibia, which corresponds to a peroneal spastic flatfoot (Figure 2). The implication of this

Figure 1. Middle facet coalition with incomplete bridging, and a vertical alignment of the tibia to calcaneus, with no positional foot deformity.

Figure 2. Middle facet coalition with 45 degree valgus alignment of the tibia to calcaneus, and significant lateral talar wedging. Note that the calcaneus abuts the fibula, which is the limiting factor as to how far into valgus the foot can deform.

difference is tremendous when planning surgical correction of these feet.

In the foot with a vertical alignment between the tibia and calcaneus, the middle facet can either be resected or the entire joint fused. Whether or not coalition resection is possible depends on the age of the patient and the presence or absence of posterior facet arthritis. If there is a longstanding deformity or signs of arthritis, then a complete subtalar joint fusion is indicated.

In patients with a completely bridged middle facet with no foot malalignment, an in-situ fusion is possible, without disrupting the bony bridge along the middle facet. In this case, simple curettage of the posterior facet and packing the joint space with bone graft is sufficient, and requires no internal fixation (Figure 3).

In patients with a peroneal spastic flatfoot from a middle facet coalition, the degree of talar wedging precludes the ability to perform a coalition resection or in-situ fusion, as this will not address the flatfoot deformity or valgus alignment of the heel. In these cases, the subtalar joint needs to be wedged in the opposite direction to varus the heel into an acceptable alignment. This can be done by cutting away bone medially or by bone grafting with a lateral wedge of bone (Figure 4).

In addition to correction of the heel valgus alignment in these feet, each degree of heel valgus correction imparts a varus attitude to the midfoot/forefoot, since this is a rigid foot type. Therefore, another midfoot procedure is required to reduce the varus alignment – either an isolated talonavicular fusion in addition to the subtalar joint fusion, or a full triple arthrodesis.

In summary, the symptomatic middle facet coalition that is not amenable to coalition resection requires joint fusion(s). The author advocates CT examination to assess the coalition type and adjacent joint quality, as well as assessment of the tibio-calcaneal alignment. In patients with a well-aligned heel with a fully consolidated middle facet, an in-situ fusion with allograft and no fixation is recommended. In patients with an incomplete middle facet coalition in good alignment, then the author recommends a traditional open subtalar joint fusion with internal fixation (screw). In patients with a valgus heel alignment and talar wedging, the author recommends a lateral opening wedge bone graft subtalar fusion, and midfoot realignment via either a talonavicular fusion or triple arthrodesis.

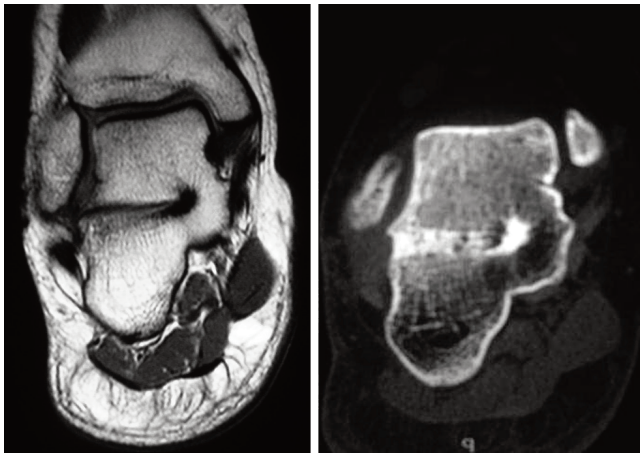

Figure 3. Preoperative magnetic resonance image and postoperative computed tomography image of a patient with an in-situ subtalar joint fusion with allograft, 6 months following surgery. Note that the middle facet was not resected and no fixation was used.

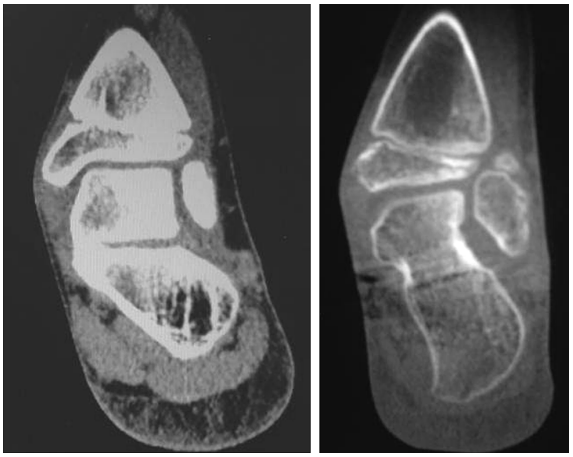

Figure 4. Middle facet coalition with valgus heel alignment on the left, and postoperative bone graft wedge realignment subtalar fusion on the right, 5 months postoperative.