A Simple Test for Hindfoot Flexibility in the Cavovarus Foot

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In recent years, the therapeutic approach to treatment of cavovarus foot has become better established. Greater acceptance of the importance of the pronated forefoot is evident in most communications having to do with this unique and challenging deformity. The fact that the excessively plantarflexed first ray is a significant element in the pathology of the condition is now well accepted. Whether it is the major or primary component of the problem is less well proven. If it is true that a fixed plantarflexed first metatarsal produces a pronated forefoot then it logically follows that a flexible hindfoot during weightbearing will be forced into varus (or supination) as the result of the "tripod" effect. Eventually, with growth and adaptive changes, the hindfoot may gradually assume structural bony changes. The foot will then have two major therapeutic prob-

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FIG. 1A. Posterior view of both feet, standing, showing the varus deformity of the heel on the right foot.

FIG. 1B. Posterior view of the right foot on weight-bearing with the lateral portion of the foot placed on a one-inch block. The first metatarsal head is then allowed to fall to the floor.

lems: a structural deformity in the forefoot (pronation), and a rigid hindfoot varus (supination).

If one accepts that the initial (and probably primary) deformity is in the forefoot, then the important issue is to determine whether the hindfoot is fixed or flexible. Conceptually and practically, if the hindfoot is flexible and the forefoot fixed, then correction of the forefoot deformity by whatever means necessary, will result in correction of the secondary, but flexible hindfoot varus. If the hindfoot is not flexible, then correction of the forefoot can obviously not produce hindfoot correction. The need to determine hindfoot flexibility has led to the development of a simple "cavovarus test" designed to ascertain and document whether or not a hindfoot is flexible during stance phase. If the hindfoot is flexible, which therefore means it has no fixed structural changes, then all therapeutic efforts should be directed towards correcting the forefoot. If, on the other hand, the hindfoot does not correct with this test, then a procedure or combination of procedures must be utilized to correct both forefoot and hindfoot elements.

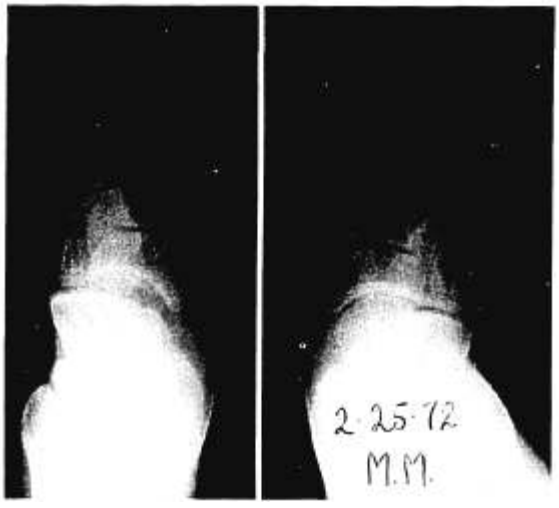

FIG. 2A. Anteroposterior roentgenogram of both feet in the standing position. The foot on the right is the normal foot; the foot on the left is a cavovarus foot, showing the abnormal relationships of the talus and calcaneus, the result of a supinated hindfoot.

FIG. 1C. Front view of the same foot showing the relationships of the foot on the block.

FIG. 2B. Lateral roentgenogram of the same foot showing the high arch and the "through and through" view of the subtalar joint.

FIG. 2C. Anteroposterior X-ray film of the same foot with the patient situated on the block. The effect of the forefoot on the hindfoot has been eliminated. The talus and calcaneus have assumed a normal relationship, indicating flexibility of the hindfoot.

The test is very simple. The patient's foot is placed on a wooden block, approximately one inch thick (Fig. 1). The heel and lateral border of the foot are placed on the block so that they can be full weightbearing; whereas the first through third or fourth metatarsals are allowed to fall into pronation. The block may be increased in height to any point necessary to remove the effect of the first metatarsal upon the hindfoot on weightbearing. To document the results of the test, an AP and lateral photograph and standing roentgenogram are taken (Figs. 1 and 2). Although not infallible, the test does provide clinical information which can be documented and upon which a rational therapeutic program might be based.