



Tarsal Coalition

Tarsal conditions can be thought of as a form of blockage between two bones. This can be osseous, cartilaginous, or fibrous. More coalitions are congenital but do not become painful until the teenage years. They can also be acquired due to fractures, tumors, infections, or arthritis.

A thorough patient history is vital to the diagnosis. Questions should be asked about trauma, increased training or activities. If pain occurs, it will usually start during the teenage years as children increase their activities, participate in more organized sports, and gain weight. The patient should be asked about a history of repeated ankle sprains, osteomyelitis, clubfoot, arthritis, tuberculosis, braces, orthotics or shoe modifications.

The foot with a tarsal condition may present with a normal arch height or as a flatfoot deformity. Shoes are usually worn down on the inside in chronic cases. On occasion the foot may be in inversion spasm rather than eversion. The range of motion may be normal, slightly restricted, or totally restricted. Pain may be elicited upon palpation of the sinus tarsi, joints involved, or the sustentaculum tali.

X-rays can be helpful in diagnosis of tarsal coalitions. A Calcaneonavicular coalition is best evaluated by taking a 45 degree lateral oblique projection. A 1cm in width bar may be seen in bony coalitions, while fibrous or cartilaginous may show joint space narrowing with irregular edges. Lateral views may show elongated anterosuperior process of the calcaneus also known as the 'anteater sign'. Talocalcaneal coalitions are more difficult to diagnose on plain films. Secondary signs include talar beaking; broadening of the lateral process of the talus; narrowing or obliteration of the middle facet; ball and socket ankle joint; asymmetric anterior subtalar joint; and the 'halo sign' which is a sclerotic ring around the subtalar joint. Harris Beath view, a 45 degree axial view of the calcaneus normally demonstrates the middle and posterior facets that are horizontal and parallel to one another.

Bone scans are an adjunct procedure for helping in the diagnosis. CT Scans are considered the 'gold standard' for diagnosis. MRI may show secondary arthritis or subchondral erosion better than CT.

The articular classification system is based on

- the patient's age
- the articular involvement or relationship of the involved bones
- the amount of arthritic deformity present.

Age is a factor in surgical treatment since patients with open growth plates have greater potential for remodeling and would respond better to resection arthroplasty. Extraarticular coalitions are between two or more tarsal bones that do not normally articulate with one another. Intra-articular coalitions occur within the joint space of two or more bones.

Additional classifying information:

Juvenile - open epiphysis
Adult - closed epiphysis
I - extraarticular
II - intraarticular
A - no secondary arthritis
B - secondary arthritis

Available conservative treatments are designed to limit motion at the subtalar and midtarsal joints. This would include orthotics, shoe modifications, casting, braces, and splinting. NSAIDs, injections, and muscle relaxers can be used to reduce spasm and pain. Surgical procedures would depend on the age, joints involved, amount of arthritis, and the patient's overall health and goals. Children have a better chance of remodeling with resection arthroplasty Adults, if arthritis is present respond better to arthrodesis procedures.