An unusual dislocation of the foot

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A 46 year old man presented to the orthopaedic emergency department with history of trauma to his left foot. The patient was trying to cross a wooden bridge over a gutter, when his foot slipped and he suffered an inversion injury. On inspection, the foot was swollen, there was inversion of the heel, and adduction of the forefoot. Diffuse tenderness was present on palpation. Radiographs of the foot were taken, both anteroposterior and lateral views (fig 1).

Questions

- (1) What injury do the radiographs show?
- (2) What is the line of management in such a case?
- (3) What is the prognosis for such an injury?

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Figure 1 Radiographs of left ankle with foot: (A) anteroposterior and (B) lateral views show a medial subtalar dislocation. There is dislocation at the subtalar and talonavicular joints. Associated fracture of the base of the fifth metatarsal and posterior aspect of the talus is also seen.

Answers

QUESTION 1

Radiographs of left ankle and foot show a medial subtalar dislocation. Dislocation of the subtalar and talonavicular joints is seen. The calcaneocuboid joint is normal. A fracture of the base of the fifth metatarsal and a small chip fracture from the posterior aspect of the talus is also seen.

QUESTION 2

Closed reduction under anaesthesia is the first line of management in such a case. Closed reduction should be attempted as soon as possible because the reduction is more easily accomplished when the swelling is less. The following steps should be performed:

- Adequate muscular relaxation, preferably with general anaesthesia.
- Knee flexion to relax the Achilles tendon thus increasing the mobility of the calcaneum.
- Gentle manual foot traction with counter-traction on the leg.
- Initial accentuation of the deformity (inversion), followed by eversion of the foot/heel. Mild digital pressure directly over the head of the talus may sometimes be required.
- The opposite manoeuvre should be done for a lateral subtalar joint dislocation.
- If closed reduction cannot be accomplished, open reduction of the dislocation should be carried out.

QUESTION 3

Simple uncomplicated subtalar dislocation, reduced by closed or open reduction generally do well with minimal symptoms at long term follow up. The various complicating factors affecting a good outcome are infection, magnitude of trauma, type of subtalar dislocation (medial or lateral), associated fractures, or failure to diagnose such an injury.

Discussion

Subtalar dislocation of the foot is one in which there is simultaneous dislocation of the talonavicular joint and the talocalcaneal joint while the tibiotalar relationship is unchanged. It has also been termed luxatio pedis subtalo, subastragalar dislocation, and peritalar dislocation. The medial dislocation has been termed basketball foot and acquired clubfoot, while the lateral dislocation has been called acquired flat foot.¹ Subtalar dislocations are uncommon and the incidence has been estimated to be 1% of all dislocations.^{2,3} These are broadly classified into two major types, medial and lateral, though very rare instances of anterior and posterior subtalar dislocations have been reported,

but these usually have some degree of medial or lateral displacement as well and can be grouped with either medial or lateral dislocation.⁴ Forceful inversion of the foot is responsible for the medial variety while the opposite, forceful eversion, is responsible for the lateral variety. Inversion or the eversion force is dissipated through the weaker talonavicular and talocalcaneal ligaments, disrupting these two joints and allowing displacement of the calcaneum, navicular, and all distal bones of the foot as a unit, either medially or laterally.¹ Associated fractures are common in the ankle and the foot.⁵ These may be shearing osteochondral fractures from the dislocated articular surface of the talonavicular or the talocalcaneal joints or may be fracture of the malleoli or base of the fifth metatarsal, cuboid, or navicular tuberosity.⁴ In one major series, associated fractures were present in 64% of the cases.⁶

Closed reduction is the mainstay of treatment and is successful in the majority of cases.^{2-4,6} Obstacles to closed reduction in medial subtalar dislocation include buttonholing of the head of the talus through the talonavicular joint capsule, the transverse fibres of the cruciate crural ligament or the extensor digitorum brevis muscle, while the obstacle in closed reduction of lateral subtalar joint dislocation is the tibialis posterior tendon.^{1-3,6} Open reduction is recommended when closed reduction fails. Dislocation once reduced is stable and no internal fixation is required. All that is required is a below knee plaster cast for four weeks followed by an active assisted exercise programme to regain strength and motion.⁴ These patients usually have minimal symptoms at long term follow up. Several complicating factors known to affect the outcome of a good result are infection, a more violent mechanism of injury, lateral dislocation compared with medial dislocation, associated fractures, or failure to diagnose such an injury.⁴

Final diagnosis

Subtalar dislocation.

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