

# Calcaneal Fractures: Controversy in Treatment



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## Opinion

Calcaneal fractures are the most common of the tarsal bones. It is common for them to occur after traffic accidents or due to rainfall in the work environment, [1,2] mainly in young people [2], and they are considered severe injuries that generate a high degree of disability [1,2]. They account for approximately 60% of fractures affecting the tarsus and 1.2% of all fractures [2,3]. In 70% of cases there is joint involvement [1], around 75% are intra-articular, compromising the subtalar joint [3], and even in the 26% of the subjects can find other associated lesions [1].

Intra-articular calcaneal fractures are characterized by the existing controversy regarding their treatment, since for the same fracture we can find very different solutions and opinions [4,5], although the literature agrees that the available evidence is insufficient to affirm that surgical treatment is superior to conservative [2]. Currently the treatment of choice is open reduction and internal fixation (ORIF) [2,5]. However, minimally invasive techniques, through the sinus tarsi approach (AST), have become in recent years an increasingly popular option among foot and ankle surgeons [2,4].

A widely used classification for its prognostic value in the treatment of intra-articular calcaneal fractures is the Sanders classification, which is based on coronal CT assessment of the posterior subtalar facet, according to the number of fragments of this facet displaced more than two millimeters [6,7]. Although its high intra- and inter-observer variability has been criticized, it is still the reference classification. In addition, its value in predicting

subtalar arthrodesis has been demonstrated (there is 5.5 times more probability of ending in subtalar arthrodesis in a Sanders IV than a Sanders II). Differentiates four main types: [8,9]

- i. Type I: without displacement or displaced <2 mm, subsidiary of orthopedic treatment.
- ii. Type II: in two fragments or split fractures (subdivided into A, B and C, depending on the fracture that sits laterally, centrally medially in the thalamus). Greater severity, the lesser is the anteromedial fragment.
- iii. Type III: in three fragments or split depression (subdivided into III AB, AC and BC).
- iv. Type IV: in four fragments or comminuted fractures.

The objectives in the treatment of intra-articular calcaneal fractures are to correct the height, width and length of the heel, [2,5] to reconstruct the depression of the posterior subtalar joint, to release the submaleolar impingement and the compression on the peroneal tendons produced by the fragment of the lateral wall, as well as correcting the varus or valgus deformity [5]. Open surgical treatment is associated with a high rate of complications (20-30%), such as wound dehiscence (10%), deep infection (5-22%) and even amputation (2-2.5%), lengthening the convalescence and darkening the prognosis. To avoid postoperative morbidity associated with open surgical treatment, multiple authors have sought alternatives through percutaneous techniques and limited approaches to reduce the risk of soft tissue damage [5]. Among

the factors to consider for the surgical approach is the fracture pattern, which, framing itself in the Sanders classification, is proposed: [7]

- a. Sanders's type I, closed treatment.
- b. Sanders's type II and III, open reduction.
- c. Sander's type IV, closed reduction and in hands experienced primary arthrodesis.

The approach through minimal incisions to resolve a calcaneal fracture requires knowledge of the anatomy of the calcaneus, as well as anatomical landmarks and measures to avoid complications with internal fixation [4]. It is the most experienced specialists who must undertake this treatment. In several studies carried out it has been possible to verify that the Sanders classification is an important prognostic factor of calcaneal fractures, together with the injury mechanism and the age of the patients [2,4,5]. It depends largely on these three factors future evolution of the patient. Given the severity and complexity of this type of injury, associated with the rate of surgical complications and physical sequelae that they entail, calcaneal fractures continue to be a real challenge for the orthopedic surgeon [2]. Without a doubt, in the event of a calcaneal fracture, a good assessment of the case as a whole and a correct selection of the treatment technique to be used is a guarantee for the prognosis to be expected. The goal is not only to treat the fracture, but to ensure that the patient has the best possible future quality of life. The training and skill of the surgeon is a decisive factor in the quality of the results.

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