

Is closed treatment of ankle fractures advisable?

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Guest Editorial

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In recent decades open reduction and fixation has become the preferred treatment of ankle fractures because closed treatment does not permit the anatomic reconstruction of this joint following so-called bi- and trimalleolar fractures; unimalleolar fractures with minimal dislocation are still usually treated closed.

The isolated oblique distal fracture of the fibula (the Lauge Hansen supination-eversion fracture Stage II) was previously regarded as benign; Watson-Jones (1955) and Bonnin (1965) recommended closed treatment and early weight-bearing. A trend towards open treatment of these fractures developed after Willenegger (1961) had shown that even mildly dislocated fractures caused articular incongruence associated with an increased risk for arthrosis; Cedell & Wiberg (1962) were early advocates of surgery aimed at the prevention of ligamentous insufficiency and the development of arthrosis.

In this issue Kristensen & Hansen (1985) and Bauer et al. (1985) have now published their observations that closed treatment of the supination-eversion Stage II fracture (SE II) has not caused any appreciable arthrosis development in patients followed up for 20–30 years. These observations challenge presently accepted routines: should we now return to closed treatment?

Kristensen & Hansen have reviewed 95 patients with dislocated SE II-fractures 21 (16–25) years after closed plaster treatment only, without reduction. Seventy-three patients were completely free of symptoms, and nine patients had only slight complaints after heavy exertion. Only 12 patients complained of pain, and they were subjected to a clinical and radiographic examination; none of them had radiographic evidence of arthrosis, only five had some complaints after particularly heavy exertion, but none of them had diminished working or sports capacity.

From a larger material Bauer et al. have followed up 49 patients with SE II-fractures for as long as 29 (25–34) years after closed plaster treatment. Only three patients had slight subjective complaints and one patient slight arthrosis; all patients were able to participate in sports activities.

The end results were thus very good, and it is particularly noteworthy that, even though the majority of patients had initially had abnormal anatomic position of the fracture, only one of them had developed arthrosis. What is the reason for such a good outcome in closed treatment of SE II-fractures? This question can be answered only by a closer analysis of the two components of the SE II-injury, viz. the rupture of the anterior tibiofibular ligament and the oblique distal fracture of the fibula.

1) The anterior syndesmosis ligament ruptures in practically all supination-eversion fractures; the only exceptions are the less than 5 per cent of all cases where the fracture runs distally and laterally to the fibular insertion of the ligament (Cedell 1967). In younger individuals the rupture usually occurs without the avulsion fragment from the fibula often seen in the elderly. During the operation of an SE II-injury one usually observes that the torn ends of the syndesmosis ligament are closely adapted, but sometimes one of the ends is interposed in the fracture. Healing of the tibial portion of the ligament in the fracture should not compromise its function, whereas the reverse must be true of the fibular ligament portion. When the rupture involves the bony insertion there is definitely a risk for non-union of the bone fragment with elongation of the ligament, which may cause instability and pain (Magnusson 1944). Unfortunately, neither Kristensen & Hansen nor Bauer et al. have made a detailed radiographic study of the anterior syndesmosis, and therefore we do not know whether some of the few problems reported by their patients were caused by this injury.

2) The fibular fracture is naturally the most spectacular component of the SE II-injury, as shown by the radiogram. By definition, the medial and posterior ligaments and capsular structures are intact and thus prevent any major dislocation of the fibular fragment; per-operatively, the dislocation is usually, at most, 2–3 mm in a dorsal and proximal direction, less often in a lateral. The fracture is usually stable except that it opens up substantially when the foot is rotated outwards. Postoperatively, serial radiographic examinations rarely show loss of reduction.

One must concede, therefore, that the observations made by Kristensen & Hansen and Bauer et al. correspond to the general experience that the ruptured anterior syndesmosis ligament and the fractured fibula usually heal in a good position. Apparently the ankle joint is more tolerant of minor lateral fracture dislocation than we have realized. Perhaps there is a parallel here with the rupture of the lateral ankle ligaments which usually causes few problems when treated closed. However, Kristensen & Hansen may be criticized in that a clinical and radiographic examination is, of course, much more satisfactory than a follow-up by questionnaire and telephone. Even though the majority of the patients had no complaints, some may well have had swelling, impaired range of motion, muscle atrophy and even radiographic arthrosis. Bauer et al. did make a careful clinical and radiographic follow-up of all their patients with SE II-fractures. Only a few of them had slight swelling and limited range of motion and only one patient had slight radiographic arthrosis, which undoubtedly supports the conclusions drawn by Kristensen & Hansen. All the patients with SE II-fractures were under 50 years of age at the time of their injuries; we do not know with certainty what happens with elderly patients, and especially women, who have a higher risk of developing arthrosis. However, this objection does not weigh heavily in this specific context; the fact remains that the majority of the patients in both materials were free of symptoms and had undiminished working capacity, and thus had every reason to be happy with their treatment.

In conclusion, I feel that the supination-eversion fracture Stage II could well be treated closed, possibly with the exception of those with ligament avulsion fracture. However, this is definitely not true of all unimalleolar fractures of the ankle, especially not the pronation-eversion injuries, which are far more extensive. Also, Bauer et al. have convinced us that dislocated bi- and trimalleolar ankle fractures should be subjected to surgery, as closed treatment of their patients with SE IV-fractures gave poor results. This applies especially to the women of whom every third had subjective complaints and every second, radiographic arthrosis as well. In addition, these authors have proved that Weber's classification of ankle fractures is less suitable, as type B contains various injuries with quite different prognoses. Hopefully, the papers of Kristensen & Hansen and Bauer et al. will inspire further studies of the treatment of ankle fractures, based on detailed analyses of different types. In a wider context they have reminded us that a final review of therapeutic results in orthopaedics should often be made in terms of decades rather than years.

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