Arthrodesis of the septic ankle joint*

Arthrodèse de cheville infectée

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Summary: In chronic septic complications of the ankle joint bony fusion can be achieved with radical resection of necrotic tissues, special positioning of the foot and extrafocal stabilisation. For non-cooperative patients with bland infections intramedullary stabilisation can be used after which early full weight bearing is possible. The correct technique of operation together with adjuvant therapy with a Septopal chain increases the healing chances of patients and reduces the time and costs of therapy.

Key words: Ankle — Arthrodesis — Infection

Posttraumatic infections of the ankle joint are the result of complications of open fractures or iatrogenic. In spite of debridement, irrigation-suction drainage and combined antibiotic therapy, septic damage of articular surfaces as well as subchondral osteitis are typically irreversible [3, 7]. Sometimes, late surgical treatment results in general septicemic symptoms, which can only be controlled by amputation for life-threatening indications.

Arthrodesis in a septic ankle joint is only indicated if expansion of subchondral infection is objectively demonstrated not only by clinical symptoms, but also by radiological or bacteriological documentation or arthroscopic examination. At this stage the regeneration of articular surfaces is impossible and the late results of the ankle motion are hopeless. In such cases delayed arthrodesis only lessens the chance of recovery and tremendously increases costs and time of treatment [3].

Material and methods

The approach consists of a medial and a lateral longitudinal incision. Advantages of this method are: possibility of exact resection of bone surfaces and preventing postoperative retention of wound secretions.

The first step of resection is the removal of the lateral malleolus. This is followed by the removal of the medial malleolus and the distal epiphysis of the tibia. The last step of resection is the removal of the trochlea tali.

After debridement and irrigation the foot is positioned and fixed temporarily with Kirschner-wires in an eight to ten degree extension, in a five to eight degree external rotation and is shifted backwards 10-15 mm. At this phase malpositioning of the talus in varus or valgus must be avoided.

In cases of acute infection intramedullary stabilisation is not suggested. The advantage of the external fixateur is the extrafocal positioning. With this method postoperative open wound treatment (subaqueal therapy, irrigation, etc.) is possible.

In cases of acute infection a Septopal chain is applied in the medial and lateral incisions, if germs are sensitive to Gentamycin. The average time to chain removal is 10-15 days. Intramedullary application for preventing recurrent fistulation is possible only after intramedullary metal removal and reaming of the medullary cavity. It is suggested that in these cases the chain also be removed within ten to fifteen days.

Between 1984 and 1992 we treated 9 males with ankle fusion due to joint infection. In five cases the septic complication was the late result of an operative treatment of closed ankle fractures, in one case the complication of a gunshot wound, in one case the result of a previously unsuccessful ankle fusion and in two cases the result of conservative treatment. The patients suffered from diseases: diabetes, alcoholism, manic-depressive psychosis, arteriosclerosis obliterans and compartment syndrome. In four cases we used intramedullary stabilisation, and in six cases an external fixateur (in one case the first procedure was successful).

Results

The average age was 43 years. In 8 cases primary fusion resulted in a bony consolidation. Stabilisation with external fixateur was unsuccessful in 1 case so we changed the method. After retrograde nailing with a Smith-Petersen nail in 2 patients the bone healed successfully. The average control-time was 5 years 5 months. At the time of follow-up studies all of the patients were free of fistulas and walked full weight-bearing.
Case report 1

A 74-year-old male with chronic diabetes and endarteritis obliterans suffered an ankle fracture Type Weber B. (Fig. 1a, b) He had been operated on, which resulted in a postoperative infection. After the removal of the metal it was treated with ankle fusion stabilised by external fixateur. Results of the microbiological investigations were Staphylococcus aureus infection. Augmentin was administred intravenously. Two weeks later a sympathectomy was performed. After secondary wound healing and removal of fixateur externe a temporary orthosis was applied. The patient is free of fistulas, walks full weight-bearing.

Case report 2

A 36-year-old male, with ankle fracture, type Weber B was treated with a gripper plate (Fig. 2). This non-cooperative alcoholic left the department on the 4th postoperative day and came back 6 days later with fever and lateral wound infection (Staphylococcus aureus).

Fig. 1a, b. The ankle fracture of a 74-year-old male was operated on with a gripper plate. Due to septic complications an ankle fusion with external fixator was performed. After bone healing the metal was removed and a temporary orthosis was worn by the patient for six weeks.

Fig. 2. The ankle fracture (Type Weber B) of a 36-year-old non-cooperative alcoholic male was treated with operative stabilisation.

Fig. 3. Due to an early postoperative infection we performed a suction-irrigation drainage which was uneffective. Four weeks later an arthrodesis was performed with external fixator. After bone healing and metal removal the patient was able to walk with temporary orthosis.