Reconstructive surgery after posttraumatic infected talus necrosis

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Abstract: Objectives: A case of a young female patient is presented who underwent a tibiocalcaneal arthrodesis for infected necrosis of the talus after talus extrusion. We report our surgical technique of tibiocalcaneal arthrodesis as a salvage procedure for this complex problem. It was performed in two stages. Total takedown and implantation of antibiotic spacer was followed by tibiocalcaneal fusion using a blade plate. The bone loss was compensated with autografted, antigen extracted allogeneic bone.

Background: Total extrusion of the talus is a rare and severe injury of the foot. The outcome is unpredictable and the presence of infection and bone loss is a challenge for the surgeon to achieve a successful outcome.

Methods: Union was defined both clinically and radiographically. The clinical outcomes were measured using an AOFAS hindfoot score. The radiographic healing was determined by the presence of trabeculation across the arthrodesis.

Results: The time of follow up was 18 months and the fusion was achieved after 8 months.

Conclusion: The presented technique for tibiocalcaneal arthrodesis is an option for the treatment of these serious lower extremity injuries and chemosterilized, antigen-extracted autolyzed allograft is appropriate for the reconstructive procedures of the foot and ankle (Fig. 2, Ref. 6). Full Text in free PDF www.bmj.sk.

Key words: tibiocalcaneal arthrodesis, allogeneic bone, talus necrosis.

A pure dislocation of the talus, characterized by complete disruption of the ankle, subtalar and talonavicular joints is a rare and severe injury of the foot. The outcome is unpredictable and mainly depends on whether infection and avascular necrosis ensues (1). The presence of infection and bone loss is a challenge for the surgeon to achieve a successful outcome. For patients who have a painful or poorly functioning ankle joint secondary to talus fracture, one potential option to alleviate the pain and regain function is ankle fusion. In the case of patients without viable talus, the surgical options are extremely limited and below-knee amputation may be warranted (2). We report our technique of tibiocalcaneal arthrodesis as a salvage procedure for these difficult and complex problems.

Methods

A 27-year-old woman suffered an open right talus extrusion after a car accident. Emergency open reduction under anesthesia and management of the wound including standart soft tissue debridement according to the principles of Gustilo was performed (3). After 5 months radiographic evidence of avascular necrosis arose and later it became infected (Fig.1). The first stage of surgery consisted of aggressive debridement and placement of antibiotic-loaden spacer prepared from 40 grams of methylmethacrylate cement (Simplex, Stryker, Limerick, Ireland) and one gram of vancomycin powder. The intraoperative cultures were positive for Staphylococcus aureus. Organism-specific intravenous antibiestic was applied. Eight weeks later the antibiotic spacer was removed from the posterior excessive approach and another debridement was performed. The tibia, calcaneus and navicular cartilaginous surfaces were denuded to bleeding subchondral bone. The talar space was filled with chips of chemosterilized antigen-extracted autolyzed allogeneic bone using the impaction grafting technique. Tibiocalcaneal fusion was performed with 95 degree angular blade plate (Medimetral, Eger, Hungary). The foot was posistioned in neutral dorsifilection with 5 degrees of valgus. Short leg cast with nonweightbearing was applied for 8 weeks, then weightbearing for 4 weeks in a walking brace.

Results

Union was defined both clinically and radiographically. The clinical signs included ambulation without pain and absence of swelling and warmth. The clinical outcomes were measured using an AOFAS hindfoot score. The maximum possible score for patients with a successful tibiocalcaneal fusion is 86 due to the elimination of tibiotalar and subtalar motion. Radiographic healing was determined by the presence of trabeculation across the arthrodesis. The time of follow up was 18 months and the fusion
was achieved after 8 months (Fig. 2). The patient had no pain, no limitation in daily and recreational activities, did not wear a brace or use walking aids. No leg length discrepancy was measured. Before the surgery the average AOFAS score was 44. This was improved to 83.

Discussion

The development of avascular necrosis after fracture and extrusion of the talus is well described (4). The surgical options include takedown, tibiotalar arthrodesis, pantalar arthrodesis, tibiocalcanear arthrodesis or below-knee amputations (5). Papa and Myerson stated that patients with tibiocalcaneal fusion were more mobile and had better function than those with a pantalar arthrodesis (6). Amputation gives the shortest rehabilitation time, and with modern prostheses a good functional result, but it is unacceptable to most patients. There is an emotional attachment to the limb which has been saved by previous surgery. All reconstructive options have long-term problems, functionally, and with the development of secondary deformity (5). The patient in this case study initially suffered from complex and difficult problems involving the ankle and subtalar joint that caused significant pain, deformity, and disability. Our goal was to alleviate the pain and provide a stable plantigrade foot for ambulation. The presented technique for tibiocalcaneal arthrodesis is an option for the treatment of these serious lower extremity injuries and chemosterilized antigen-extracted autolyzed allograft is appropriate for reconstructive procedures of the foot and ankle.

References


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