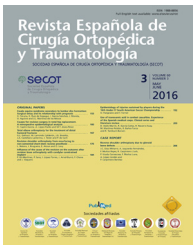
Rev Esp Cir Ortop Traumatol. 2017;61(6):441–445

Revista Española de Cirugía Ortopédica y Traumatología

www.elsevier.es/rot



CASE REPORT

Tibiotalocalcaneal fusion with a cemented coated retrograde nail as a salvage procedure for infected ORIF of the ankle☆

M. Herrera-Pérez[a,b,*], **J. Boluda-Mengod**[b], **M.J. Gutierrez-Morales**[b], **J.L. Pais-Brito**[a,b]

[a] *Departamento de Cirugía, Facultad de Medicina, Universidad de La Laguna, Tenerife, Spain*
[b] *Servicio de Cirugía Ortopédica y Traumatología, Hospital Universitario de Canarias, Tenerife, Spain*

Received 28 November 2016; accepted 18 April 2017

KEYWORDS
Ankle fracture;
Osteomyelitis;
Tibiotalocalcaneal arthrodesis;
Bone cement

Abstract Tibiotalocalcaneal arthrodesis is an effective salvage procedure in cases of combined ankle and subtalar osteoarthritis as well as severe multiplanar deformities and severe joint destruction of the hindfoot. Special mention should be made of this procedure in cases of bone loss, especially from the talus, secondary to failed previous surgeries or bone infection, often being the only way to achieve a stable and painless foot and ankle. We present a case of ankle fracture in a patient with associated morbidity and multiple complications following osteosynthesis, in which tibiotalocalcaneal arthrodesis with cemented with antibiotic coated retrograde nail has achieved a satisfactory final result.

PALABRAS CLAVE
Fractura de tobillo;
Osteomielitis;
Artrodesis tibiotalocalcánea;
Clavo cementado

Artrodesis tibiotalocalcánea con clavo retrógrado cementado con antibiótico en rescate de osteosíntesis infectada de tobillo

Resumen La artrodesis tibiotalocalcánea es un procedimiento de rescate efectivo en casos de artrosis combinada de tobillo y subastragalina así como en deformidades severas multiplanares y graves destrucciones articulares del retropié. Mención especial merece la indicación de este procedimiento en casos de pérdida ósea, especialmente astragalina, secundaria a cirugías

☆ Please cite this article as: Herrera-Pérez M, Boluda-Mengod J, Gutierrez-Morales MJ, Pais-Brito JL. Artrodesis tibiotalocalcánea con clavo retrógrado cementado con antibiótico en rescate de osteosíntesis infectada de tobillo. Rev Esp Cir Ortop Traumatol. 2017;61:441–445.

* Corresponding author.
E-mail address: herrera42@gmail.com (M. Herrera-Pérez).

t previas fallidas o como secuela de infección ósea, constituyendo muchas veces la única forma de conseguir un pie plantígrado y un tobillo estable e indoloro. Presentamos un caso de fractura de tobillo en paciente con morbilidad asociada y múltiples complicaciones tras la osteosíntesis, en el que la artrodesis tibiotalocalcánea con clavo retrógrado cementado con antibiótico ha conseguido un resultado final satisfactorio.

Introduction

Ankle fractures account for approximately 10–15% of total fractures, lower limb fractures being the most common.[1,2] They are also the fractures most frequently treated with surgery as a result of the uniformly favourable outcomes obtained. Notwithstanding, stable fractures, or unstable fractures in patients with major comorbidities, may also be treated conservatively.[3,4] With regard to complications, Spanish authors have reported that percentages range between 5% and 40% depending on the population group researched,[5] and several risk factors have been identified including diabetes mellitus, peripheral neuropathy, peripheral vascular failure, a tobacco habit, alcohol abuse and the use of immunosuppresors.[6–8] The most feared complications from surgery is deep infection, due to both the added morbidity and the high rise in material resource consumption with increase in costs.[7]

We present the case of a diabetic, kidney-diseased patient with a surgical infection secondary to open ankle fracture surgery, who was satisfactorily treated for fusion with a cemented coated retrograde ankle nail with antibiotics.

Clinical case

A female patient aged 67, diabetic with peripheral polyneuropathy and nephropathy (chronic kidney failure and in dialysis) who was admitted to our centre after suffering from an accidental fall resulting in a grade I open bimalleolar luxation fracture of the left ankle (1 cm wound on medial side) Emergency antibiotic prophylaxis and surgical scrubbing were carried out followed by osteosynthesis surgery with third shank plate in peroneal malleolus, cancellous bone distal screw in tibial malleolus and peroneal tibial screw fixation, with favourable post-surgical outcome. Following the correct healing of the medial wound and absence of complications, a partial load of 20 kg was permitted after 12 weeks with an orthosis brace. One week later, the patient presented at the emergency department, stating that the ankle had become red and was also painlessly deformed. An X-ray showed a loss of reduction at this stage with destruction of the articulation (Fig. 1). On suspicion of deep wound infection vs Charcot arthropathy, percutaneous biopsy was carried out, which tested positive for *S. aureus* in 4 samples. On diagnosis of secondary osteomyelitis, surgery was performed, which revealed the disappearance of over 50% articular cartilage and fragmentation and macroscopic signs of osteitis in peroneal malleolus. We therefore proceeded with exeresis of the malleolus, aggressive debridement and inter-positioning of the gentamycin impregnated cement spacer in the tibiotalocalcaneal articulation, to which we added 2 g of vancomycin, in accordance with antibiogram results. Intravenous treatment with vancomycin was also initiated and adjusted to kidney function, for six weeks.

During evolution and on assessment by the intensive care unit the patient presented with cardiac arrest and kidney failure and was admitted to this unit for 2 weeks. Once definitive surgery had been ruled out (tibiotalar arthrodesis) due to the further complicated patient morbidity on admission, the patient was subsequently discharged with the cement spacer as definitive treatment, together with oral antibiotics (levofloxacin 500 mg/24 h). After six weeks, at the first consultation the patient presented with acute phase reactant normalisation and an absence of any clinical signs of infection.

Two months after hospital discharge and again after partial load with an orthosis brace, the patient relapsed and presented with a medial ulcer with active discharge. An X-ray showed the rupture of the spacer (Fig. 2). In the light of this new situation it was suggested the patient undergo an elective below-the-knee amputation but the patient and family members rejected this. As a result, in order to stabilise the limb and treat the infection at the same time, ankle surgery with a posterior trans achilles approach was performed (due to the poor status of the soft tissues of the anterior and lateral sides of the ankle), and new debridement, with shortening of the limb and insertion of the Expert-HAN® (DePuy-Synthes, Spain) model tibiotalocalcaneal arthrodesis with cemented antibiotic-coated retrograde nail (gentamycin + vancomycin + tobramycin, see ''surgical technique'' section) (Fig. 3) was carried out.

After further specific intravenous treatment consisting of meropenem + linezolid, the patient evolved satisfactorily with wound healing and the disappearance of the ulcer. She was discharged with oral antibiotics (septrin Forte, one tablet every 24 h). At the latest review, 9 months after surgery, the patient was asymptomatic, with acute phase reactant normalisation, wound healing and radiological evidence of tibiotalocalcaneal fusion, walking with support from a crutch, without pain, and compensating the limb shortening with a shoe implant (Fig. 4).