mm. CaseStudy

Osteochondral talus lesion and malleolar osteotomy using resorbable magnesium screws

PD Dr. med. Christan Plaaß

Diakovere Annastift, Germany

Chief Senior Physician,
Specialist for foot and ankle surgery

CE 0297

medical magnesium

The Surgeon

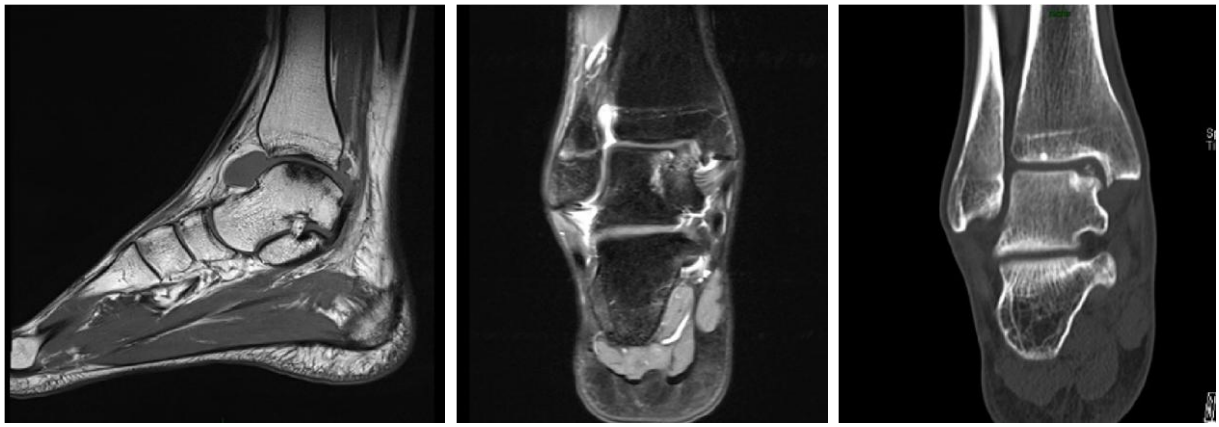
PD Dr. med. Christian Plaaß

PD Dr. med. Christian Plaaß completed his medical degree at Johannes Gutenberg University in Mainz, followed by specialist training in orthopaedics and traumatology of the musculoskeletal system (FMH) in Switzerland. Originally trained in general orthopedic and hand surgery, he gained his foot surgery knowledge from Prof. Dr. B. Hintermann in Liestal and Prof. Dr. Dr. V. Valderrabano in Basel. In 2009, PD Dr. med. Plaaß accepted a position in the Orthopaedic Clinic of the Hannover Medical School in Annastift. As senior physician since 2014, he holds an active leadership role in the foot and ankle team. PD Dr. med. Plaaß holds the D.A.F. certificate for foot surgery and has been a regular instructor in the D.A.F. course system since 2009. Besides he is an active member of other (inter) national societies (EFAS and others). PD Dr. med. Plaaß is regularly publishing in various high-ranked journals in the field of foot surgery and is an active speaker at national and international congresses.

The Case

Introduction

This case presents an 18-year-old patient suffering from a traumatized osteochondral lesion of the talus (OCLT) after supination injury (see figure 1). Due to persistent pain an operation was indicated. The patient underwent elective surgery in the department.



A B C

Figure 1: MRI scan (A,B) shows an osteochondral lesion of the medial talar shoulder, confirming the finding in a CT scan (C).

Surgical Treatment

In ankle arthroscopy medial and lateral ligament injury were diagnosed and the OCLT was visualized but could not be fully addressed in the arthroscopic approach. Therefore, it was decided to proceed in an open procedure through a medial malleolar osteotomy. The patient was in supine position and a 6cm long incision was performed over the medial malleolus. To allow precise placement of the osteotomy two K-wires have been set into the malleolar and prepared with the respective drill for later refixation. The malleolar angle for the osteotomy cut was set at 45° to access the lesion site.

After osteotomy the OCLT at the medial posterior shoulder was clearly visible. The cartilage was particulated using a special device for later replantation. Any further degenerated tissue was removed, the talar bone debrided and an iliac crest bone graft was used to fill the defect. The particulated cartilage was reimplanted and covered using a collagen membrane, which was fixed using autologous fibrin glue.

After covering the OCLT, the osteotomy fragment was repositioned using two 1.6 mm K-wires. Using the preliminary set drill channels, two cannulated mm.CS 5.0 in 44 mm length were placed to ensure anatomical refixation under compression. A precise refixation and the absence of any step in the medial intraarticular surface have been ensured under radiological control (see figure 2). A medial and lateral ligament repair was performed using titanium bone anchors. Wound closure was performed using standard surgical suture technique.

A B C

Figure 2: Refixation of malleolar osteotomy using cannulated bioabsorbable mm.CS 5.0 (A) and postoperative x-Ray Control after wound closure in saggital and frontal plane (B,C).

At six weeks follow up the x-Ray control the OCLT did not reveal any abnormalities (see figure 3). Fusion of the osteotomy at its desired anatomical position is visible. The bioabsorbable screws show a significant amount of hydrogen gas around the screw site, resulting from the beginning bioabsorption of the screws. No pain or swelling was reported at the 6 weeks follow up control.

Figure 3: X- Ray Control of the OCLT and malleolar osteotomy. The bone anchors and the mm.CS implants are clearly visible. The mm.CS screws with hydrogen gas around the screw site.

Postoperative Treatment

The patient was mobilized under no weight-bearing for 6 weeks. After the control at 6 weeks, low weight-bearing up to a maximum of 20 kg and accompanying physiotherapy until the 12th postoperative week was advised. The patient did not return to the treated hospital and no postoperative complication is known.