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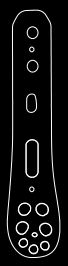
CASE REPORT



Patient specific open wedge supramalleolar osteotomy using Medartis CMX and APTUS 2.8/3.5 distal tibia plate in combination with AMIC for a persistent talar osteochondral lesion

The Surgeon

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Prof. Claassen is an experienced foot and ankle surgeon. His institution is specialized on treatment of all disorders regarding the foot and ankle. Dr. Claassen is a speaker at national and international congresses and an instructor for foot and ankle surgery workshops.

Introduction

Osteochondral lesions of the talus are frequently seen by foot and ankle surgeons. Treatment options include microfracture, anterograde or retrograde drilling, chrondrocyte transplantation and autologous matrix induced chondrogenesis (AMIC) using Chondro-Guide membrane. Beside the treatment of the osteochondral lesion itself, ligamental pathologies and deformities, especially those affecting the load distribution of the upper ankle joint, should be addressed.

The Case

Patient Profile
A 31 year old man came with pain of the medial upper ankle joint. Patient's surgical history included a Weber B fracture with ORIF 13 years ago and consecutive implant removal, stabilization of the syndesmosis twelve years ago, lateral ligament reconstruction including debridement of the peroneal tendons seven years ago and a medializing calcaneal osteotomy with retrograde drilling of the osteochondral lesion two years ago.

Clinical Findings / Preoperative Analysis

"The patient walked with limping of the right leg, he had pain on pressure of the ventral and especially ventromedial upper ankle joint. The range of motion of the upper ankle joint was 20° for dorsalextension and 40° plantarflexion without pain while moving. Clinically the hindfoot axis was phyisiological.

X-ray images illustrated the signs of the mentioned previous surgeries including two screws of the medializing calcaneal osteotomy. There was no high grade generalized osteoarthritis but a varus tilt of the talus and ventral exostoses (Fig. 1+2).

Figure 1

Figure 2

DVT and MRI images illustrated the three-dimensional volume of the osteochondral lesion. The orientation of the retrograde drilling procedure was visible. Additionally, MRI highlighted the relevant perifocal edema of the osteochondral lesion (Fig. 3-6).

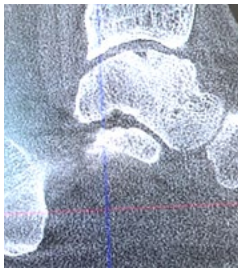

Figure 3

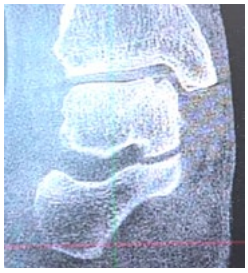

Figure 4

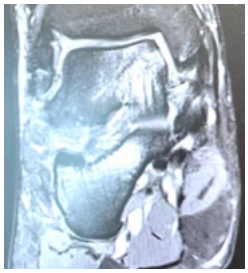

Figure 5

Figure 6

In conclusion the patient had a persistent osteochondral with varus tilt of the talus. It was aimed to treat the osteochondral lesion with the AMIC procedure, likely with transplantation of cancellous bone. The ankle joint incongruity was planned to be addressed via a medial opening wedge osteotomy of the tibia. The osteotomy was planned with Medartis CMX resulting in a patient specific instrumentation. Thereby the amount of deformitiy and necessary correction could be evaluated precisely preoperative. For surgery three-dimensional models of the tibia and a patient specific cutting and drilling block was generated (Fig. 7, 8)."

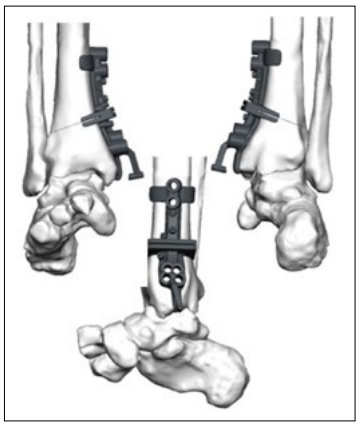

Figure 7

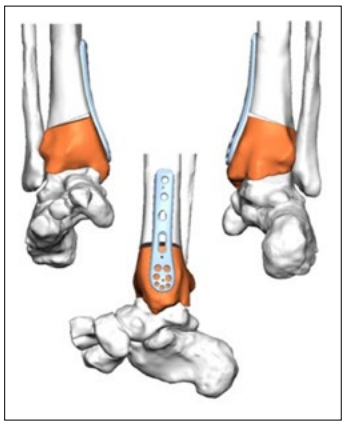

Figure 8

Surgical treatment

"The upper ankle joint was approached via a medial incision. An open arthrotomy was performed and the osteochondral lesion visualized and debrided. The AMIC procedure was performed including transplantation of cancellous bone gained from the tibia (Fig. 9+10).
For the osteotomy the cutting block was placed and the correct placement was verified radiologically (Fig. 11+12).

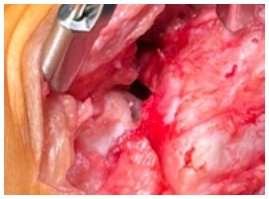
Figure 9


Figure 10

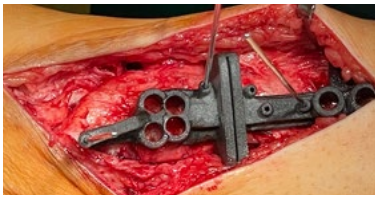
Figure 11


Figure 12

Led through the cutting block the bore-holes for the following screws were drilled. The osteotomy was performed using a saw and chisels and allogenic cancellous bone was applicated partially filling the opened wedge (Fig. 13+14). Finally the plate was placed and fixed with verified correct position via x-ray. Intraoperatively the lateral cortex was intact (Fig. 15-17)."


Figure 13


Figure 14


Figure 15


Figure 16


Figure 17

Postoperative treatment

"The aftercare consisted of mobilization in a walker without weight-bearing for 6 weeks followed by stepwise increase of weight-bearing wearing the walker. Mobilisation of the upper ankle joint was possible throughout this period. X-ray images after six weeks demonstrated a fissure of the lateral tibial cortex whereas the bony position and implant position remained correct (Fig. 18+19). Three months after surgery an increased bony consolidation was visible (Fig. 20+21). At this time point the patient could walk without pain and without support (Fig. 22)."


Figure 18


Figure 19


Figure 20


Figure 21

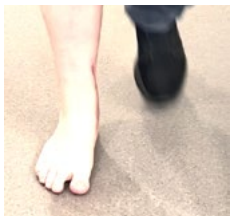
Figure 22

Conclusion

The patient specific instrumentation technique provided by Medartis is a very helpful and reliable tool for supra-malleolar osteotomies. Preparation and planning are straightforward. The three-dimensional models und cutting block are precise. The cutting block allows controlled drilling for the screws and a controlled sawcut for the osteotomy. Correction and plate placement are principally determined. As deformities might affect symptoms and healing of an osteochondral lesion, in such cases a supramalleolar osteotomy can be considered to correct deformities.

Case Report Patient specific open wedge supramalleolar osteotomy using Medartis CMX and Aptus 3.5 distal tibia plate in combination with AMIC for a persistent talar osteochondral lesion_2025-02