

# CASE REPORT



## Treatment of osteomyelitis with continuity resection of the mandible and reconstruction with a free fibula flap.

### The Surgeon

**Dr. Florian Peters MD DMD**  
**University Hospital Aachen**

Dr. Peters is an OMFS surgeon in the Department of OMFS of the University Hospital Aachen. Microvascular reconstruction is performed commonly in this department. Since 2008 virtual surgery planning has been used for bony free flaps in this department resulting in a wide knowledge of in house planning.

### Introduction

A protracted and commonly multilevel therapy is necessary for treating an osteomyelitis of the mandible. Recurrences are frequent and the severity often increases over time. Therefore, this disease sometimes leads to a continuity resection of the mandible.

### The Case



#### Patient Profile

A 61 year old female patient was suffering from osteomyelitis of the mandible. The patient had not taken antiresorptive medication at any time. A continuity resection of the mandible was performed two years ago at a different center. The bridging osteosynthesis plate had to be removed after 10 months. No new osteosynthesis plate was inserted. Then the patient was referred to our department with a mobile mandible.

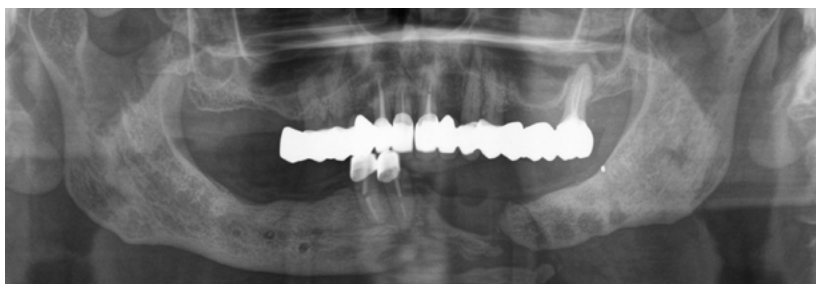


Figure 1

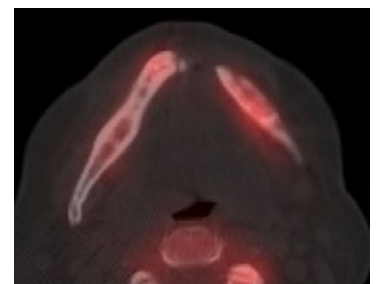


Figure 2



### Clinical Findings/Preoperative Analysis

Prior to surgery a multiphase skeletal scintigraphy combined with a SPECT-CT was performed. This revealed a huge traces uptake in the mandible stumps next to the continuity resection.

The CT angiography of the lower legs showed a three-vessel supply in both lower legs. Therefore, a further resection and virtual surgery planning of a free fibula flap were performed. Cutting guides for the mandible and the fibula were 3D printed for the operation.

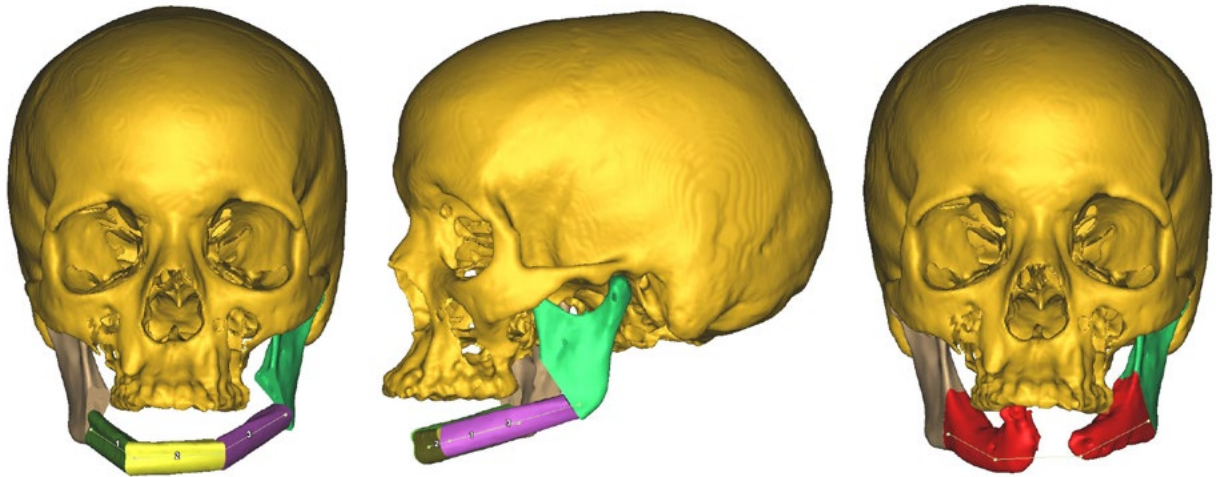


Figure 3



### Surgical Treatment

During surgery the osteomyelitis of the mandible was resected using the cutting guides. The free fibula flap from the right lower leg was harvested. Then the osteosynthesis was performed using a Medartis MODUS plate with 2.3 mm screws. After attaching the fibula flap to the osteosynthesis plate the vessels were cut and the flap was transferred to the mandible. The mandible was connected to the fibula flap and afterwards the flap was anastomosed to cervical vessels.

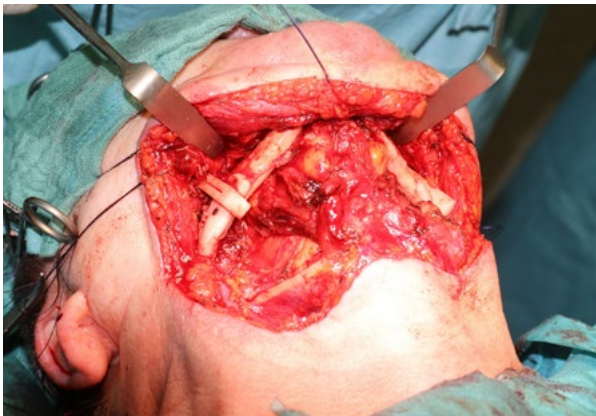


Figure 4

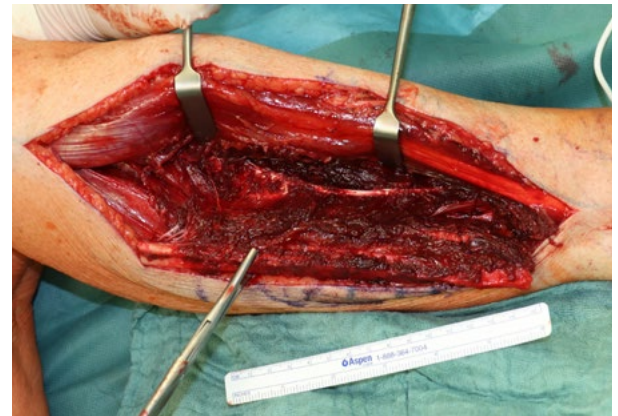


Figure 5



Figure 6



Figure 7



Figure 8



### Intraoperative Findings

Due to the preoperative virtual surgery planning the dimensions of the free fibula flap fitted to the resected mandible. The osteosynthesis with the anatomical standard plate worked well.

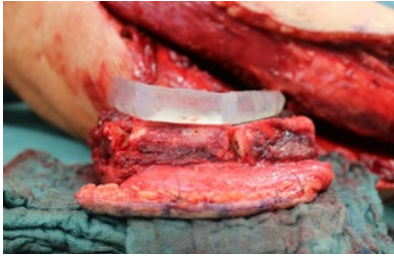


Figure 9



Figure 10



Figure 11

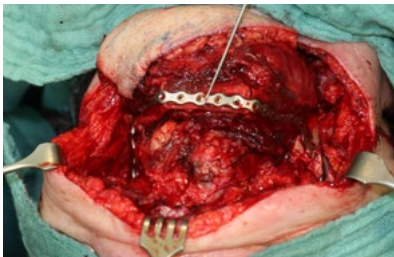


Figure 12

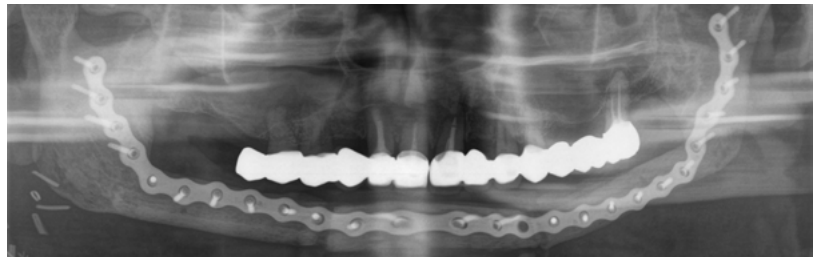


Figure 13



### Postoperative Treatment

Postoperatively the patient was fed through a gastric tube for 7 days. Afterwards for 14 days only liquid alimentation was possible followed by 14 days of smooth food and 2 months of soft food. During follow up there was a wound dehiscence intraoral which granulated with conservative treatment. The patient is now scheduled for insertion of endosseous dental implants.



### Conclusion

Marking the resection borders after a multiphase skeletal scintigraphy and reconstruction with a free fibula flap, often leads to a cure of the osteomyelitis of the mandible. Virtual surgery planning makes the reconstruction more accurate and enables the dental rehabilitation with endosseous dental implants. The osteosynthesis of the virtually planned fibula flap can be performed with manually bent standard plates.

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