

# CASE REPORT



## Mandibular Reconstruction with a Medartis patient-specific Implant and CMX Planning Solution

### The Surgeon

#### Dr. Matthias Zimmermann

Matthias Zimmermann studied medicine and dentistry at the Medical University of Vienna, works as a specialist at the University Department of Oral and Maxillofacial Surgery at the Medical University of Vienna/AKH Vienna and did his PhD studies at the Christian Doppler Laboratory for Diagnosis and Regeneration of Cardiac and Thoracic Diseases at the Clinical Department of Thoracic Surgery at the Medical University of Vienna.

### The Case



#### Patient Profile

- 64 year old male patient with known history of cancer of the tonsils
- Diagnosed in 2013, followed by resection of the tonsils and adjuvant radiochemotherapy
- Secondary diagnosis: hypothyroidism, liver cirrhosis, arterial hypertension
- After removal of tooth 47 (right mandible) in May 2020 occurrence of wound healing disturbance
- At time of first presentation in July 2021 orthopantomogram and CT scan show typical signs of an osteoradionecrosis with pathologic fracture of the right mandible
- Diagnosis got confirmed by histological evaluation



Figure 1



### Clinical Findings / Preoperative analysis

- Intraorally exposed bone in right lower jaw, orocutaneous fistula, bad tooth status



Figure 2



Figure 3



### Surgical Treatment

- Partial resection of the mandible through submandibular approach
- Reconstruction with patient-specific implant (cutting guide + metal plate) as patient does not want microvascular reconstruction and due to internistic diseases
- Removal of teeth not worth preserving

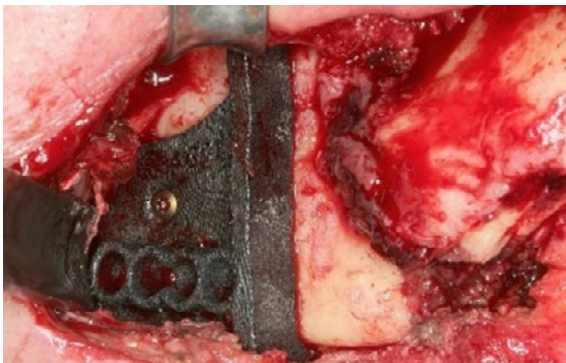


Figure 4



Figure 5



Figure 6

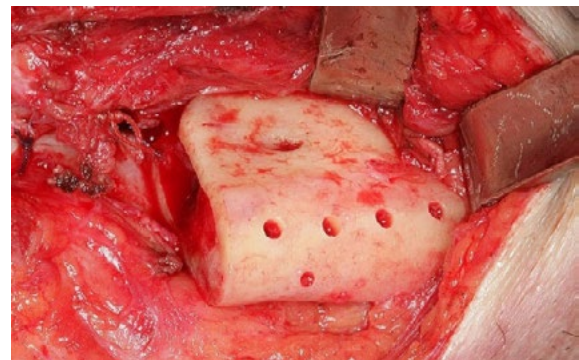


Figure 7

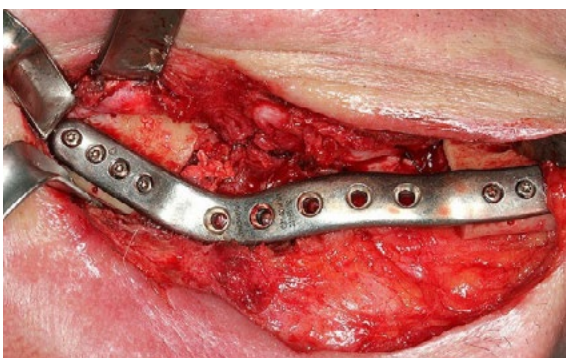


Figure 8

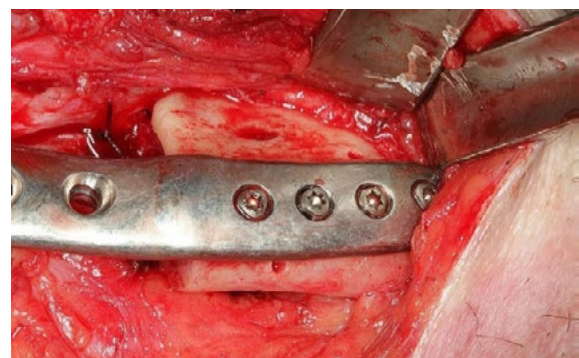


Figure 9



### Intraoperative Findings

Virtual surgical planning facilitated mandibular resection by using 3D CT visualization to determine appropriate extent of osteoradionecrosis. Preoperatively planned osteotomies were transferred to the OR by cutting guides, which showed an excellent and unambiguous fit. A prefabricated reconstruction plate was used to perfectly maintain the contour of the mandible by mirroring the native contralateral side. Intraoperative in situ bending of the plate was no longer required. With an accurate execution of the virtual plan, the position of the condyle and the occlusion of the remaining teeth could perfectly be maintained, therefore avoiding any future TMJ problems.

As another major benefit, overall surgery time has been reduced with a more specific treatment plan.

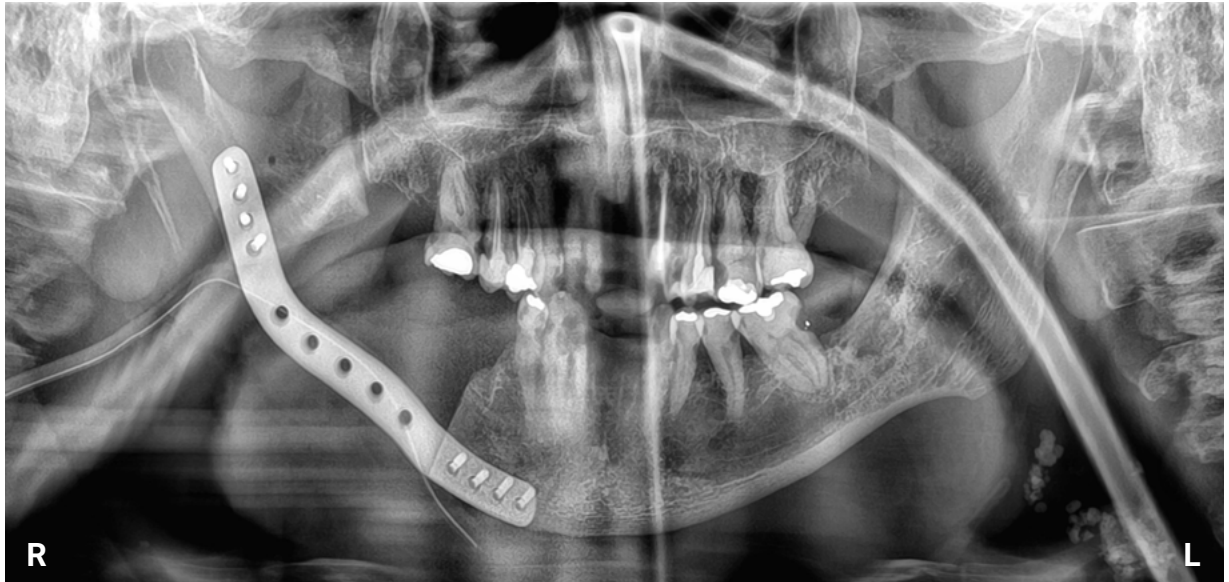


Figure 10



### Postoperative Treatment

- Antibiotic treatment
- Enteral nutrition administered via gastric tube
- Close clinical follow-up



### Conclusion

- Preoperative virtual planning reduces surgical time.
- Use of PSI ensures correct positioning in temporomandibular joint and perfect fit of metal plate reduces local wound complications.
- The gains seen in operative time efficiency and surgical precision make the CMX technology of Medartis a valuable addition in head and neck reconstruction.

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