

Virtual planning of complex head and neck reconstructions - satisfactory match between real outcomes and virtual models

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Purpose: The reconstruction of large facial bony defects using microvascular transplants requires extensive surgery to achieve full rehabilitation of form and function. This retrospective study evaluates the virtual planning tool ProPlan CMF® in 30 consecutive cases to enhance precision and efficiency of the reconstructions.

Methods: Thirty patients with virtual planned immediate or secondary microvascular reconstructions of bony and soft tissue defects of the mandible and maxilla were acquired for this study. The virtual planning was done using ProPlan CMF® (Materialise NV, Leuven, Belgium). Postoperatively, a CBCT scan was used to assess the accuracy and precision of the acquired results in comparison to the virtual planned outcome.

Results: 63 bone segments were transplanted. In average, the deviations between the virtual planning and the postoperative situation were for the defect sizes +1.17mm, for the resection planes +/- 1.69mm and 10.16° and for the planes of the donor segments 10.81°. The orientation of the segments differed by 6.68° from the virtual plan, the length of the segments differed by -0.12mm and +0.17%, respectively, while the volume differed by -31.02%. **Conclusions:** ProPlan CMF® is a reliable and precise tool for virtual planning of microvascular bony reconstructions in the head and neck.

Biography

Ahmed Al-Dam is a Senior Consultant Maxillofacial Surgeon at the University Medical Centre Hamburg, the largest Maxillofacial Department –in one hospital- in Germany. He studied Medicine and then Dentistry in Frankfurt (Germany) and then finished his Facharzt (Fellowship of the German Board) of Maxillofacial Surgery in 2009. Since 2012, Al-Dam is a Fellow of the European Board of Oral-Maxillo-Facial Surgery and Head&Neck Surgery (FEBOMFS-HNS). In 2013 he obtained the supplementary qualification in Regional Plastic Surgery. He is a specialist in Head and Neck surgical oncology and microvascular reconstruction and has performed over 300 major oncological procedures. Traumatology, Orthognathic Surgery, implantology and rehabilitation of the paralysed face belong to his main focuses.

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