

# SYNERGISTIC APPROACH: EXPLORING THE COLLABORATION BETWEEN PLASTIC AND RECONSTRUCTIVE SURGERY AND ORAL-MAXILLOFACIAL SURGERY FOR FACIAL RECONSTRUCTION WITH FREE FLAPS

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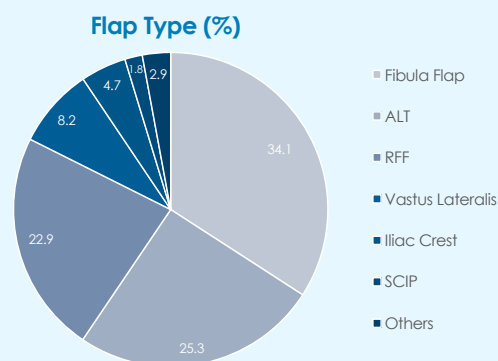
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## INTRODUCTION

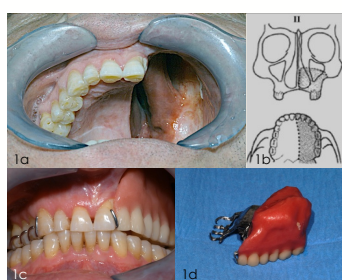
Free tissue transfer is a cornerstone in the reconstruction of complex head and neck defects. The purpose of our study is to demonstrate the frequency and positive aspects of interdisciplinary collaboration between plastic and reconstructive surgery and oral and maxillofacial surgery in the treatment of complex cases.

## METHODS

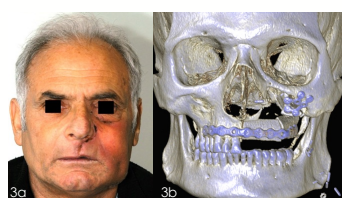
A retrospective cohort study was established by collecting data from all patients who underwent facial reconstruction with free tissue transfer between 2013 and 2022. The data were statistically analyzed and evaluated and compared with the international comparable literature.



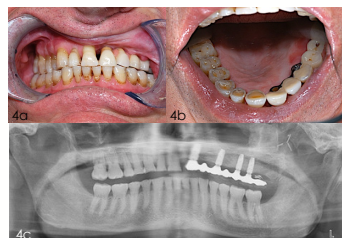
## PATIENT EXAMPLE



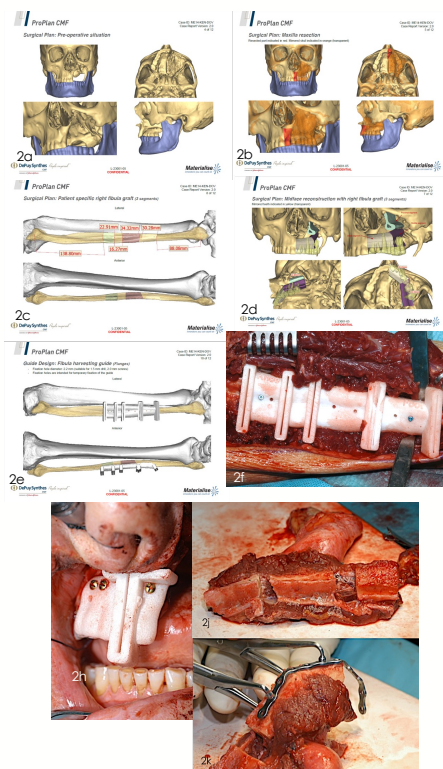
**Figure 1** Extended defect in the left maxilla after hemimaxillectomy for squamous cell carcinoma (a,b), initially covered with a resection prosthesis serving as a long-term temporary solution (c,d)



**Figure 3** 10 days post-reconstruction of the left maxilla defect with an osteomyocutaneous flap from the right fibula (a). Postoperative CT-scan (b) shows the fibula reconstruction fixed with titanium plates.



**Figure 4** After complete maxillary reconstruction, titanium plates were removed, and four dental implants were placed and fitted with fixed prostheses (a,b). Final orthopantomogram (OPG) (c).



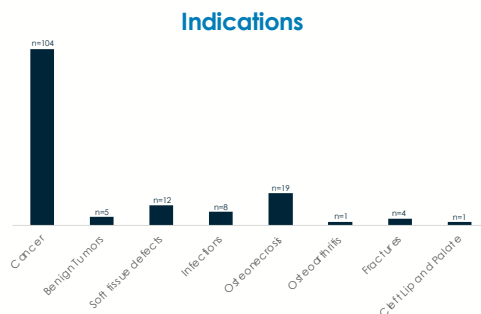
**Figure 2** Virtual planning based on 3D reconstruction of the skull. Resection and reconstruction of the left maxillary reconstruction using an osteomyocutaneous graft (bone, muscle and skin tissue) from the right fibula.

Pre-operative situation (a). Mirroring of the right maxilla onto the left maxilla in order to recreate the anatomy of the left maxilla in the best possible virtual way. The area marked in red shows tissue (anterior tooth / bone) that is to be removed before reconstruction (b). Virtual planning of the reconstruction of the left maxilla using the patient's right fibula (c,d).

Resection and osteotomy templates produced using CAD-CAM technology. These templates allow the virtually planned operation to be transferred to the patient 1:1 with millimeter precision during the operation (e-k).

## RESULTS

- A total of 166 free flap surgeries in the head and neck region were performed with the participation of both teams.
- The overall complication rate was 43.4 % (incl. minor complications).
- Survival flap rate was 94.6%.
- Over the years, the number of free flaps for head and neck reconstruction has increased more than eightfold from 4 flaps performed in 2013 to the current maximum of 34 flaps in 2021.
- Increasing case complexity over the years, indicated by longer operating time, higher T-stages, elevated ASA classifications, and older average patient age, though these trends were not statistically significant.
- Complication rates are comparable with international literature.



## DISCUSSION

- The collaboration between plastic and reconstructive surgery and oral-maxillofacial surgery clearly divides responsibilities: plastic surgeons manage flaps, anastomosis, and donor sites, while maxillofacial surgeons handle resection, tumor management, and prosthetics.
- At our regional hospital, this synergy is enhanced by a 24-hour plastic surgery service, allowing effective coordination with maxillofacial surgeons who maintain private practices.
- Over the years, the growing expertise in both plastic and reconstructive surgery as well as oral-maxillofacial surgery has demonstrated that optimal facial reconstruction with free flaps can only be achieved through close collaboration between both departments, which we see as a forward-thinking model for delivering the highest possible quality of treatment, benefitting not only the patients but also the trainee surgeons.