CONCLUSIONS: According to the elemental analysis by EDX, the u-HA content was low in the hypodense part, as confirmed by the SEM, and this part had many pores from which u-HA was released. We infer that the u-HA detached from the plate’s fine pores, and it adhered to the bone on the plate. Additionally, we presume that the bone tissue did not migrate to the plate due to the force during plate removal. Absorption and bone substitution progressed favorably where the plate was in close contact with the cortical bone compared with where the plate was not in close contact with the cortical bone. Skill may be necessary to close and fix the plate. Although PLLA is absorbed with time, the u-HA requires more time for bone replacement; in many cases, the u-HA remains visible on images for at least up to 5–6 years. Follow-up observation is needed.

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Utility of Creating Surgical Guide Using Sterilizable and Inexpensive Dental Impression Silicon in Free Fibula Flap Mandibular and Maxillary Bone Reconstruction

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INTRODUCTION: In recent years, mandibular and maxillary bone reconstructive surgery using free fibula flap transfer is a commonly-performed surgical procedure, and increasing number of reports have been published about preoperative simulation surgery using models that utilize 3D printers. However, 3D printed models made from sterilizable materials are uncommon, making it difficult to introduce the model into the surgical field. One problem is that the use of such materials would significantly increase the cost of surgery. We introduce a method in which we perform osteotomy on the 3D fibula model preoperatively by using a guide molded from the inexpensive and easy-to-use silicon Protesil labor® to the correct bone size and osteotomy angle. This formed silicone mold was steam autoclave sterilized and used within the surgical field as an osteotomy guide. This reduced the time required for osteotomy and was effective in accurate reproduction of the simulation surgery on the surgical field.

MATERIALS AND METHODS: Six patients who were treated between October 2016 and February 2017 were included in this study. One patient underwent maxillary segmental resection for maxillary cancer, one patient underwent surgical resection and left hemimandibulectomy for mandibular gingival cancer and the remaining four patients underwent segmental mandibulectomy for mandibular gingival cancer. Free fibula flap transfer was carried out for reconstruction in all patients. Preoperative CT images and a 3D printer were used to create simulation models for the mandible, maxilla and fibula. Preoperative simulation surgery was performed by cutting away the scheduled region of the mandibular and maxillary bone models, after which the fibula model was cut at an angle that allowed it to be inserted into the defect region. The 3D models used materials that were not sterilizable. Protesil labor®, a dental silicon, was placed on the cut fibula models and given approximately 5 minutes to harden. It was then cut to the same size with the fibula bone model, and sterilized in an autoclave. After these processes, it was used as a surgical guide to mark the bone cutting line on the fibula flap.

RESULTS: We checked the differences between pre- and post-operative bone angles and bone lengths for all cases using simulation surgery models and post operative 3DCT. Mean bone angle difference was 2.7 degree and the mean bone length difference was 1.9mm. The mean bone cutting time was 35 minutes. The cost of producing the surgical guide was approximately 5 US dollars/piece.

CONCLUSION: Creating a surgical guide using sterilizable material allows the surgeon to perform the osteotomy more accurately and in less time. It is also inexpensive and does not require the use of specialized instruments such as expensive computer softwares and sterilizable 3D printer materials. We believe that the use of this surgical guide is simple, and applicable even in smaller hospitals.
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Combined Flexor Hallucis Longus Muscle and Free Fibular Osteocutaneous Flap for Head and Neck Reconstruction

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BACKGROUND: Reconstruction of head and neck defect after tumor ablation is challenging. The aim of reconstruction is not only repairing the defect, but maintaining functional demand and a pleasing facial contour. In some cases, the conventional fibular osteocutaneous flap may not provide sufficient soft tissue for obliterating dead space after tumor ablation. Increased incidence of fluid accumulation, poor wound healing and unsatisfactory cosmetic results perplex both patients and surgeons. In this study, we used a combination of a segment of fibular bone osteocutaneous flap and flexor hallucis longus muscle for reducing recipient site complication and achieving better cosmetic results in head and neck reconstruction after tumor ablation.

MATERIALS AND METHODS: This retrospective study evaluated 212 consecutive patients (201 males and 11 females) with an average age of 52.75 years (range, 26–78 years) who required mandibular reconstruction for aggressive benign or malignant disease with a free fibula osteocutaneous flap at Kaohsiung Veterans General Hospital (Kaohsiung, Taiwan) between February 1998 and December 2017. In each case, a segment of fibular bone (range, 5 to 22 cm, mean 10 cm) was harvested with single or double skin paddle (5.5x3.5 to 13x10 plus 12x8 cm² in size) in combination of flexor hallucis longus muscle which was nourished by peroneal artery. The flexor hallucis longus muscle was used for obliterating the dead space in cheek, retromolar, mouth floor region or shaping the mandibular contour.

RESULTS: All flap survived except total flap failure occurred in 7 patients (3.3 percent of the flaps) and orocutaneous fistula occurred in 2 patients (0.9 percent of the flaps). Patients had achieved satisfactory contour without significant donor site morbidity at a mean 12-months of follow-up. The flap related complication (wound infection, poor healing and fistula) is reduced. However, the flap failure rate is slightly higher (no significance) than conventional osteocutaneous fibular flap (4.1 percent of 121 flaps) due to complexity of the chimeric flap harvest and inset.

CONCLUSION: This refinement of free fibula flap for mandibular reconstruction can reduce surgical complication and achieve better aesthetic results when combined with flexor hallucis longus muscle.

Multiple Lymphaticovenular Anastomoses in Preventing Lymphedema Following Complete Lymph Node Dissection in Melanoma Patients

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PURPOSE: Sentinel lymph node biopsy (SLNB) is an essential surgical procedure in staging and management of intermediate-thick melanomas. Although recent studies have shown that complete lymph node dissection (CLND) does not improve 3-years specific survival, its usefulness in increasing disease-free period and control of local disease remains confirmed. The most frequent complication related to CLND is lymphedema, that could affect, in either its clinical or subclinical form, up to 40% of patients undergoing CLND. Our purpose was to assess the preventive use of lymphatic-venous micro-anastomoses in avoiding such complication.

MATERIALS AND METHODS: We performed a single-institution retrospective case-control study, including patients treated with CLND from June 1994 to December 2016. CLND was proposed to all subjects with positive-SLN; from 2012, a preventive procedure with preparation of multiple lymphaticovenular anastomoses, which we named preventive multiple anastomoses (PMA) was proposed to subjects undergoing CLND. Frequency of