



## **Simultaneous Free Tissue Transfer Using Fibula and Radial Forearm Free Flaps for Complex Soft Tissue and Osseous Defects of the Oromandibular Complex – A Case Report**

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### **Abstract**

In complex oromandibular defects, single composite free flaps do not provide superior results in providing both osseous and soft-tissue reconstruction. Multiple reports suggest dual free tissue transfer for

reconstruction of the extensive defects which overcome the shortcomings of single composite flaps. In this article, we report a unique case of a lady presenting with squamous cell carcinoma of the tongue and anterior mandible, reconstructed with simultaneous free tissue transfer of fibula and radial forearm free flaps. By simultaneously transferring the fibula and radial forearm free flaps we were able to reconstruct complex soft tissue and osseous oromandibular defects with superior results. We believe results would have been less optimal if the same was reconstructed with a single composite free flap. The two team approach also resulted in substantial reduction in the operating time.

Keywords – dual transfer, free flaps, fibula, radial forearm, complex oromandibular defects.

### **Case Report**

A 55 year old, otherwise healthy lady presented with poorly differentiated squamous cell carcinoma (T4aN1M0) on her tongue and anterior floor of the mouth extending to the attached gingiva of the anterior mandible since the past 4 months (Fig. 1). Contrast Enhanced Computed tomography (CECT) Scan of the face and neck revealed an enhancing lesion involving almost the entire tongue and the floor of the mouth. The normal trabecular pattern of the lingual cortical border of the anterior mandible was disrupted. A large right submandibular lymph node measuring 1.75 cm was observed. Treatment plan consisted of surgical ablation followed by reconstruction with dual radial forearm and fibula free flaps. A pre-operative Allen's test and a CT angiography was performed on the left arm and left lower limb respectively to determine the patency of the vessels. Type IVb (near-total) glossectomy was then performed followed by segmental resection of the mandible from the first premolar of the left side to the first molar of the right creating an LCL mandibular

defect according to Boyd et al . (Fig. 2). Modified radical neck dissection type III on the right side and Supra omohyoid neck dissection on the left side was performed. Prior to completion of the ablative surgery, dissection of both flaps were completed and left attached by their vascular pedicles. Preparation of the recipient vessels started once the tumour resection of the primary lesion was completed. Recipient vessels for the micro-anastomosis were selected according to the vessel quality, calibre and availability following resection. A 9cm free fibular flap osteotomised into three segments (3cm, 4cm and 2cm) along with a 4x3 cm skin paddle (covering the osteotomised segments and floor of the mouth) was harvested from the left lower limb and fixed with titanium miniplates to the remaining mandible on both sides (Fig. 3). Glossectomy defect was reconstructed with a 12x8cm radial forearm free flap. Anastomosing vessels included end to end anastomoses of the peroneal artery with the facial artery, peroneal vein with the common facial vein, radial artery with superior thyroid artery, cephalic vein with the external jugular vein and end to side anastomoses of the venae comitantes of radial artery with the internal jugular vein. The total operating time was 10.5 hours. With the radial forearm flap remaining intact, the skin paddle of the free fibula flap showed evidence of venous thrombosis on the second post-operative day (Fig. 4). The patient was taken back to the theatre and the flap was salvaged. She was kept on a strict liquid diet via a nasogastric tube for the next 8 weeks. Radiotherapy was started after 6 weeks. Patient was followed up for 1 year without any signs of recurrence.

### **Discussion**

In patients with combined osseous and a three-dimensional soft-tissue deficit, a satisfactory outcome

using a single flap reconstruction is not obtained. In extensive anterior or through-and-through soft tissue defects in combination with partial mandibular defects, a single free flap shows limitations, hence indicating transfer of simultaneous free flaps.<sup>[1,2]</sup> Reports of simultaneous transfer of two free flaps in complex oromandibular reconstruction includes the iliac crest with the radial forearm<sup>[3,5,6]</sup> the osteo-cutaneous scapula with the radial forearm,<sup>[5,6]</sup> and the fibula with radial forearm or lateral arm flaps<sup>[3,4,7]</sup>. We chose fibula for the osseous reconstruction as a two-team approach was permissible lessening the total operative time. In glossectomy defects an acceptable reconstructive option

is one that covers the raw tongue surface without interfering with mobility which is important for an improved functional outcome. The radial forearm free flap is a versatile soft tissue flap and provides thin pliable tissue which is an excellent reconstructive option for tongue defects. Donor site morbidity is minimal with acceptable restoration of form and function.<sup>[8]</sup> The prognosis of advanced oral and oropharyngeal cancer is deemed to be poor but an aggressive surgical approach is justified considering the possibility of long term disease-free survival along with the resolution of symptoms arising from extension of the lesion.

**Figure legends**



**Fig. 1** - Extensive ulcero proliferative lesion on the tongue and floor of the mouth



**Fig. 2** – Post ablative surgical (both soft tissue and osseous) defect



**Fig. 3** – Free fibula flap osteotomized and fixed with the remaining mandible with mini plates



**Fig. 4** – Intact radial forearm flap with evidence of venous congestion in the skin paddle of the free fibula flap

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