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# Intraoral approach for oral floor reconstruction with the submandibular gland flap



## KEYWORDS

Intraoral approach;  
Oral floor  
reconstruction;  
Submandibular gland  
flap

When primary closure of the oral defect is difficult, skin grafting or local flaps have been performed. However, these methods cause discomfort for invasion of the donor site and tie-over. In contrast, the buccal fat pad adjacent to the oral cavity is used to fill intraoral defects, but it is impossible to fill the oral floor with buccal fat pads from the buccal side when the molars are present. To overcome these problems, the submandibular gland (SMG) flaps have been reported for repair of the intraoral defects.<sup>1–4</sup> As a minimally invasive approach, we reported a case of an intraoral approach for oral floor reconstruction with the SMG flap.

A 76-year-old male with the right mandibular gingival cancer with extension to the oral floor underwent marginal mandibulectomy and removal of the sublingual gland (Fig. 1A). The lingual nerve was preserved, and the Wharton's duct was ligated. After separation of the submandibular ganglion, the SMG was elevated from the surrounding structures with preservation of main facial artery and vein (Fig. 1B). The defect of the oral floor was filled with the SMG flap, and the surface of the flap was covered with a polyglycolic acid sheet using fibrin glue (Fig. 1C). Postoperative course was uneventful, and the wound showed a good healing (Fig. 1D). Computed tomography 1 year after surgery showed no atrophy of the SMG flap with good blood flow (Fig. 1E and F). There was no recurrence or metastasis 4 years after the surgery.

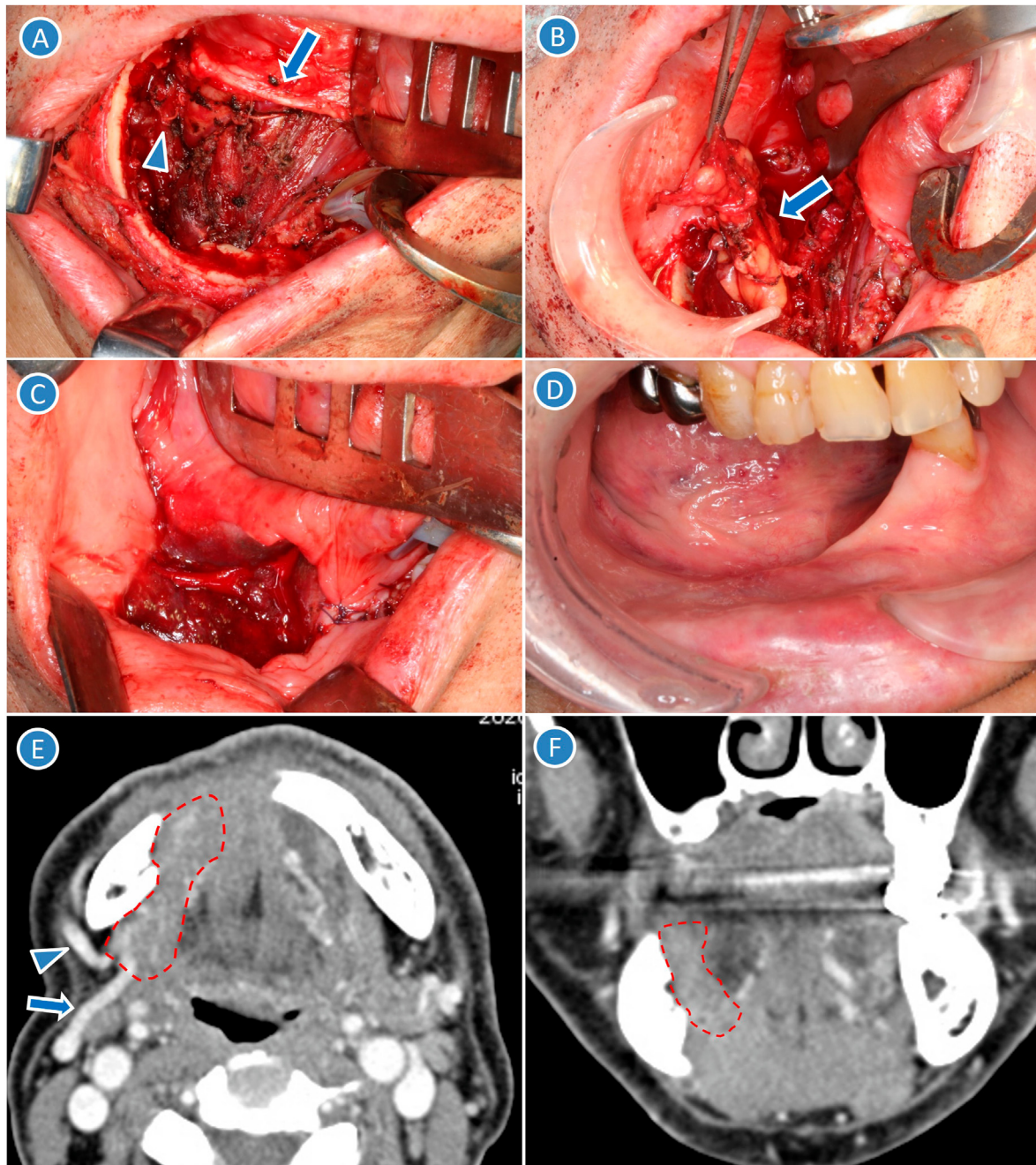
The SMG flaps are usually pedicled and have been used for the reconstruction of oral defects at the tongue, floor of

mouth, mandible, maxilla, palate, and retromolar region.<sup>1,3</sup> The elevation of the SMG flap can be easily performed in an extraoral approach.<sup>1,2,4</sup> After preserving the facial artery/vein and Wharton's duct and cutting the submandibular ganglion, the SMG is filled into the defect site and sutured to the surrounding tissue. However, depending on the site of the defect, ligation and cutting of Wharton's duct may be necessary.<sup>2</sup> For further mobilization of the SMG flap, it is necessary to ligate and cut the proximal or distal facial arteries and veins, resulting in an antegrade or retrograde flap.<sup>1,2</sup> According to Liang et al.,<sup>2</sup> dissection of the facial arteries and veins and elevation of the SMG flap can be performed in approximately 20 minutes. Because the motion range of the SMG flap is limited by the vascular pedicle, it can be an option for reconstruction for small to moderate tissue defects adjacent to the SMG. For large tissue defects, combinations with other flaps are required.<sup>9</sup>

The present case is the first reported case of an intraoral approach for oral reconstruction using the SMG flap. A minimally invasive intraoral approach for oral reconstruction using the SMG flap can be applicable if the surgeons have sufficient knowledge of vascular anatomy and skill in intraoral removal of the SMG. In oral cancer patients without the SMG invasion and cervical lymph node metastasis, the SMG flap would be one of the treatment options for repair of the oral soft tissue defects.

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**Fig. 1** Intraoral photographs and computed tomography images. (A) The wound after marginal mandibulectomy and sublingual gland removal. Arrowhead indicates ligated Wharton's duct. Arrow indicates the lingual nerve. (B) Elevation of the submandibular gland (Arrow) from the surrounding structures. (C) Covering of the submandibular gland flap with a polyglycolic acid sheet using fibrin glue. (D) Intraoral view 6 months after surgery. (E and F) Computed tomography images 1 year after surgery. Arrowhead indicates the facial artery. Arrow indicates the facial vein. Borderline indicates the submandibular gland.

### Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

### Acknowledgments

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