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Use of the superiorly-based facial artery musculomucosal flap for defect reconstruction in stage 3 medication-related osteonecrosis of the maxilla: Technical note



KEYWORDS

Facial artery
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To manage the exposed bone in the surgery of medication-related osteonecrosis of the jaw (MRONJ), coverage methods using various local flaps have been developed; however, each flap has inherent limitations with respect to both coverage area and aesthetic results.^{1–4} Here, we reported our experience using a superiorly-based facial artery musculomucosal (FAMM) flap⁵ to overcome these shortcomings in reconstructing the maxillary defect of stage 3 MRONJ.

An 81-year-old female with stage 3 maxillary MRONJ was referred to our department from her local hospital. She had been taking denosumab 60 mg/6 months for osteoporosis for 24 months. Intraoral examination revealed mucosal swelling and fistulae with exposed bone and purulent discharge in the left anterior area of the maxilla (Fig. 1A). In the surgical treatment, the teeth and the necrotic bone were completely removed, causing a large defect in the anterior area of the maxilla (Fig. 1B). The superiorly-based FAMM flap was designed to cover the trajectory of the facial artery from the gingivolabial sulcus of the second premolar to the level of the ipsilateral retromolar trigone with 7–9 cm length and 2–3 cm width

(Fig. 1C). The facial artery was attached to the overlying buccinator muscle through the entire length of the flap (Fig. 1D). The flap was rotated and fitted into the recipient site so that it slightly overlapped all sides of the defect to provide sufficient tissue over the decorticated bone (Fig. 1E). The base of the flap was divided for dental restoration 3 weeks after the initial surgery. At 12 months postoperatively, complete healing was observed in the treated areas, and maximal mouth opening of the patient was not changed (Fig. 1F). The Osteolytic lesion in a pre-operative panoramic radiograph (Fig. 1G) was completely removed and further osteolysis was not identified in a post-operative panoramic radiograph (Fig. 1H).

For surgery of MRONJ with local flaps, double-layer closure technique using a pedicled buccal fat pad flap for the maxilla in combination with a mucoperiosteal flap have been advocated by Ristow et al.³ Although this technique achieved high success rates, the size and volume of the flap are not always sufficient to cover the anterior areas of the maxilla. Alternatively, Lemound et al. have reported the usefulness of a nasolabial flap to reconstruct defects with excellent healing rates in MRONJ cases.⁴ The nasolabial flap

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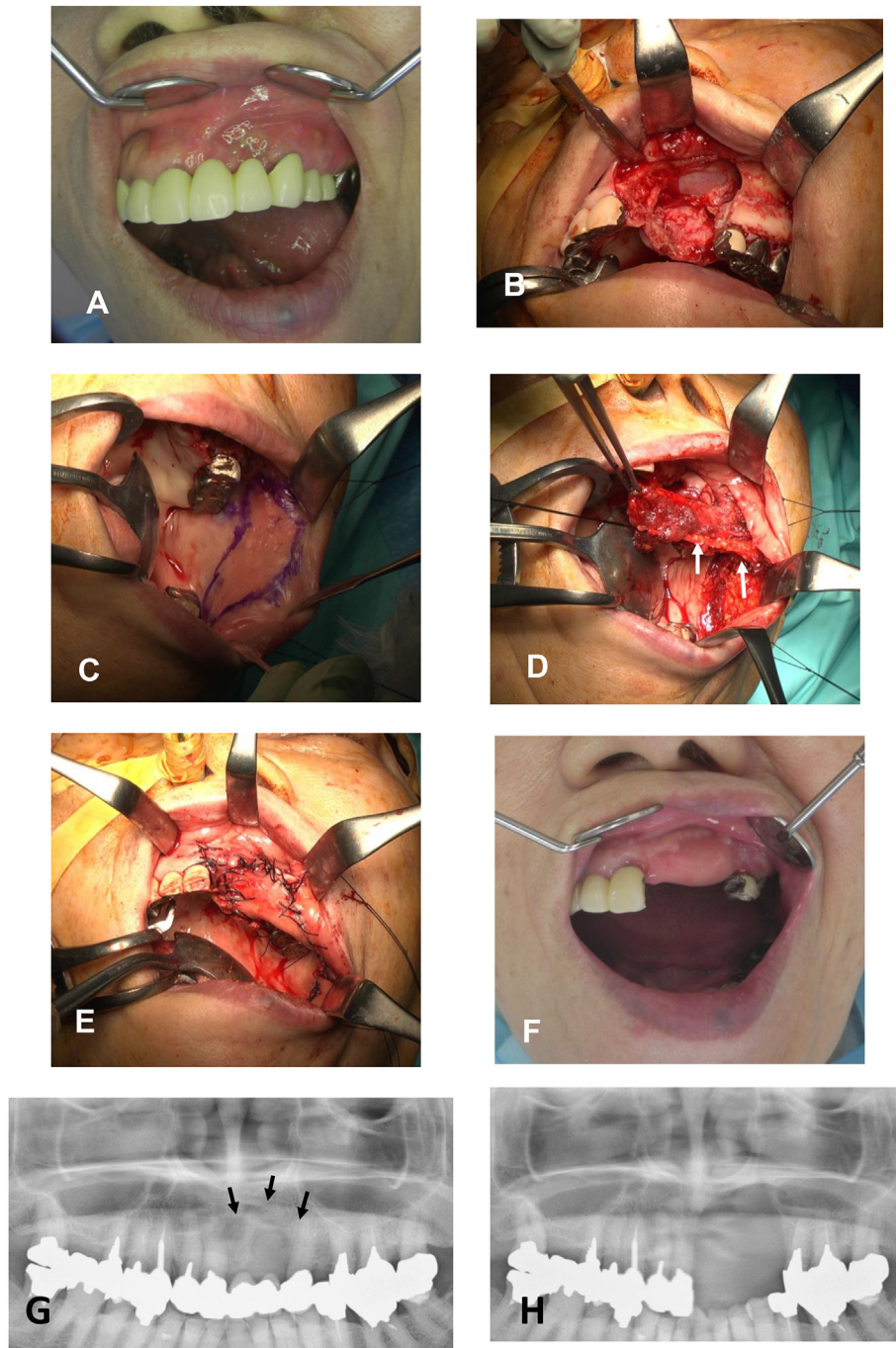


Figure 1 Clinical and radiographic findings of the patient. (A) Mucosal swelling and fistulae with exposed necrotic bone and purulent discharge. (B) Removal of teeth and necrotic bone in the maxilla. (C) Outline of superiorly-based facial artery musculomucosal flap. (D) Fully mobilized superiorly-based facial artery musculomucosal flap. White arrows point to the facial artery. (E) Final flap inset into the defect. (F) Follow-up at 12 months of superiorly-based facial artery musculomucosal flap reconstruction without bone exposure. (G) Osteolytic lesion in a preoperative panoramic radiograph (black arrows). (H) Complete removal of the osteolytic lesion in a postoperative panoramic radiograph.

provides broad wound coverage in the anterior and posterior areas of the maxilla, but extraoral donor sites may leave a visible scar and hypoesthesia. In contrast to these local flaps, a superiorly-based FMM flap presented here can cover both anterior and posterior areas in the maxilla

without leaving facial scars or hypoesthesia in reconstructing the maxillary defect of stage 3 MRONJ.

We so far experienced two cases of maxillary reconstruction of stage 3 MRONJ using a superiorly-based FMM flap, and have followed them up for more than 10 months

without relapse of bone necrosis. Thus, the superiorly-based FAMM flap should be considered a reliable option for defect reconstruction in stage 3 maxillary MRONJ with promising results.

Declaration of Competing Interest

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

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