

margin of the tarsal plate. This skin flap is reversed and sutured to the tarsus superiorly and to the retractors and conjunctiva inferiorly as a hinge flap (Fig. 1). To strengthen the entropion correction, the eyelash-side skin is fixed onto the tarsal plate with three sutures.

We performed this technique on three patients, and all patients reported symptomatic improvement, with no complications, and were satisfied with the results (Fig. 2).

No one has challenged using skin as a “spacer,” because it is suspected of leading to corneal injury, infection, increased mucus, and obturation of the lacrimal canaliculus with dirt. However, the skin of the inferior eyelid is among the thinnest on the body and the hair is silky,<sup>5</sup> so it is thought that there are few complications resulting from use of this skin. Also, it is useful for reconstruction because it is originally removed surgically in almost all procedures. We decided to use not the skin graft but an orbicularis oculi mucocutaneous flap to stabilize the blood circulation. Furthermore, this procedure does not require harvesting grafts from other areas. The disadvantage of this procedure is that, because of the amount of handling in the same region, the patients developed postoperative edema and required approximately 1 month to recover.

Because cases of severe entropion are rare, we only have experience with three cases. In the future, we will increase the number of cases and would like to evaluate the usefulness of this technique. We believe that the technique described here is one of the choices for use in severe cicatricial entropion for the following reasons: ease of handling, few complications, and good results. DOI: 10.1097/PRS.0b013e3181ea91f7

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#### DISCLOSURE

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#### Free Chimera Lateral Arm Flap for Repair of Orocutaneous Fistulae/Osteoradionecrosis in Oromandibular Cancers

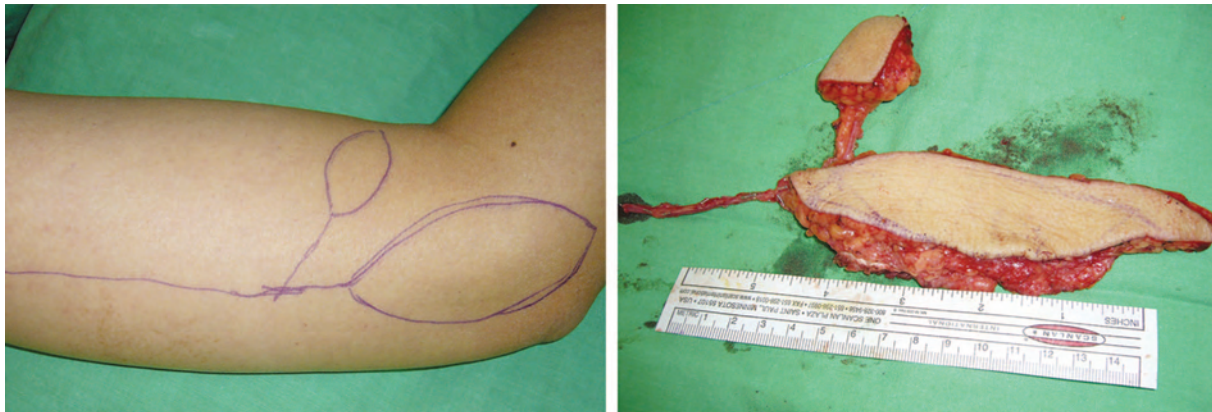
Sir:

Orocutaneous fistula is regarded as the consequence of osteoradionecrosis involving the mandible after radical irradiation for advanced oromandibular malignancies. The presence of the fistula not only affects normal oral function, but also has negative effects on the body image of those affected. Conservative treatment, including hyperbaric oxygen therapy and antibiotics, may be helpful for some patients; however, for those in whom these treatments fail, surgical intervention is indicated.<sup>1</sup> Free tissue transfer after radial sequestrectomies may offer reliable soft-tissue coverage for damaged bony tissue.<sup>2</sup>

Sealing of obstinate orocutaneous fistulas caused by osteoradionecrosis on post-marginal mandibulectomy sites requires double-layered, well-vascularized flaps to cover both inner and outer linings. A free chimera lateral arm flap was designed and elevated under the supporting vasculature, the anterior and posterior radial collateral arteries for the minor and major flaps, respectively (Fig. 1, *left*). With this approach, the intraoral mucosa is covered with the minor flap, a fasciocutaneous flap; and the external lesion is covered with the major flap, a compound flap composed of the skin, fascia, and part of the triceps muscle (Fig. 1, *right*).

A 43-year-old woman with advanced salivary gland adenocystic carcinoma had undergone wide excision surgery and anterolateral thigh flap reconstruction at another medical center. Postoperative external beam radiotherapy resulted in a poorly healing, painful ulcer with bone exposure over her left submandibular area (Fig. 2, *left*). Persistent saliva discharge was noted from the pit. After radical sequestrectomy, the defects measured 10 × 4 cm externally and measured 3 × 2 cm internally. After 4 months' follow-up, there was no recurrence and she could drink water well (Fig. 2, *right*).

The original design of the lateral arm flap is that of a composite flap overlying the posterolateral aspect of the upper arm, based on a branch of the



**Fig. 1.** (Left) A free chimera lateral arm flap was designed according to the size of the defect, with the minor flap measuring  $3 \times 2$  cm and the major flap measuring  $10 \times 4$  cm. (Right) The chimeric design of the free lateral arm flap. The intraoral mucosa was covered with the minor flap and the external skin was covered with the major flap.



**Fig. 2.** (Left) An orocutaneous fistula at the left submandibular area above the anterolateral thigh flap. (Right) Four weeks after the reconstruction, the wound healed well.

profunda brachii artery, the posterior radial collateral artery.<sup>3,4</sup> It has been a valuable technique for reconstruction in covering small and moderate-sized defects, especially in the head and neck region. Knowledge of the consistent vascular anatomy of the lateral humerus and soft tissue of the donor site allows for separate smaller skin flaps to be raised based on the posterior radial collateral artery<sup>5</sup> or even as a chimera design with the use of the anterior radial collateral artery, which is usually 8 cm proximal to the lateral epicondyle.

The merits of this free chimera lateral arm flap include the following: (1) proper thickness of the flap for soft-tissue reconstruction in the head and neck lesions; (2) use of the minor flap to reconstruct the intraoral lesion instead of scarifying the local

tissue as a local flap; (3) relatively small caliber and length of the pedicle of the minor flap that is well suited for the fistula tract; (4) the minor flap tunnels through the fistula tract, with less damage to surrounding tissue; (5) a composite flap in which part of the triceps muscle, the humeral bone, or both can be included; and (6) minimal donor-site morbidity. DOI: 10.1097/PRS.0b013e3181ea920b

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**DISCLOSURE**

*The authors certify that no financial support or benefits have been received by any coauthor, by any member of our immediate family, or by any individual or entity with whom or with which we have a significant relationship from any commercial source that is related directly or indirectly to the scientific work reported in this article.*

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### Perifascial Areolar Tissue Graft as a Nonvascularized Alternative to Flaps

**Sir:**

The treatment of skin ulcers and fistulas with poor blood circulation associated with tendon and bone exposure<sup>1,2</sup> is frequently difficult. Various distant flaps and free flaps are used for treatment; however, Kouraba et al. have recently advocated the use of perifascial areolar tissue as a free graft material, which survives on such areas.<sup>3–5</sup> Perifascial areolar tissue is the loose connective tissue on the deep fascias and has an abundant vascular plexus. This study

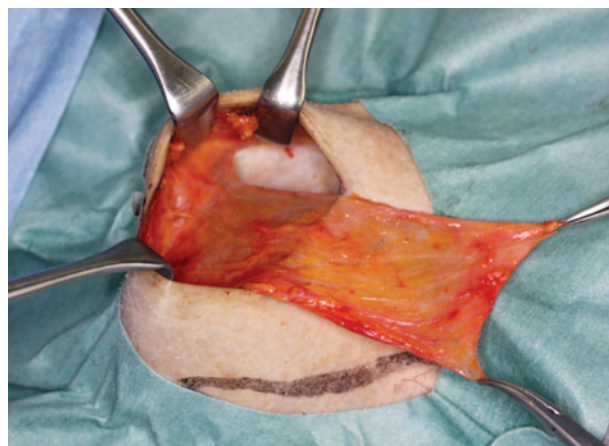
reports the utility of the perifascial areolar tissue used as a minimally invasive surgical material for skin ulcers and fistulas accompanied by tendon or bone exposure.

The clinical indications were (1) small range of defects, (2) restricted use of local flaps because of a post-irradiation or postoperative scar around the graft bed, and (3) absence of perifascial areolar tissue grafted onto an infected wound. The donor site was usually in the inguinal region or outside of the thigh for elevation of the grafts. The graft can be raised easily with a scalpel because of the loose attachment to the deep fascia (Fig. 1). The graft was laid over the defect, and spread thinly for close attachment.

A 28-year-old man sustained an orocervical fistula after ablation of submandibular gland cancer. The perifascial areolar tissue graft filled in the fistula and the outer surface in the mouth was covered with a lip mucosal flap, whereas the outer surface of the neck remained a raw surface (Fig. 2, left). Six months after surgery, the wound was well healed without complications (Fig. 2, right).

Perifascial areolar tissue is a new material that has a rich vascular plexus and that can survive on an area with scarce circulation while providing new blood circulation to the defect. The tissue is sufficiently flexible to fix many types of defects, such as a plane or spaces with complex shapes, and does not require microsurgical anastomosis. This is advantageous in patients such as those with many complications or in poor general condition.

A skin graft should be performed with delayed surgery, but a simultaneous skin graft was successful in some cases. Therefore, a simultaneous skin graft is possible at the initial operation, depending on the condition of the graft bed or the thickness of the graft. Schwabegger et al.<sup>2</sup> stated that fascial flaps can be molded to fit a three-dimensional defect; thus, perifascial areolar tissue can obviously be used as an amorphous material to fill a fistula. With its special



**Fig. 1.** The loose connective tissue on the deep (muscle) fascias was exposed.