



Superficial circumflex iliac artery perforator flap aided by color Doppler sonography mapping for like-with-like buccal reconstruction

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Objective. To assess an alternative method for buccal reconstruction using a superficial circumflex iliac artery perforator flap (SCIP) with preoperative color Doppler sonography mapping.

Study Design. From January 2014 to June 2014, we enrolled six patients with buccal defects that occurred following cancer resection. Surgical procedures, superficial circumflex iliac artery perforator flap anatomy, and the outcomes are described.

Results. The flap sizes measured 30 to 63 cm². The mean diameter of the superficial circumflex iliac artery was 0.6 mm and of the vein was 1.1 mm. The mean arterial pedicle length was 6.9 cm, and the venous pedicle length was 7.3 cm. The mean reduction of mouth-open width was 0.4 cm. No flap failure was evident, and a good aesthetic outcome was obtained in all cases.

Conclusions. The SCIP flap is a reliable and pliable flap with long vascular pedicles, hidden donor site morbidity, and perfect texture match for buccal defect reconstruction. (Oral Surg Oral Med Oral Pathol Oral Radiol 2015;119:170-176)

The ideal method for buccal reconstruction in patients who had undergone oral cancer resection should not only cover the mucosal defects but also provide satisfactory contours and preserve the original mouth-open width. In recent years, buccal defect reconstruction with a variety of flaps, such as buccal fat pad,¹ radial forearm free flap,² and anterolateral thigh free flap,³ has been reported.

The size of the defect, location on the cheek, involvement of the adjacent structures, available donor site, and the preference of the surgeons all influence the decision with regard to the reconstructive technique that should be used. The flap needs to contain the correct components and fulfill the cosmetic and functional requirements of the recipient defect. Moreover, the donor site should be convenient to harvest from and remain inconspicuous, with minimum morbidity. In addition, sufficient open-mouth width must be obtained for satisfactory recovery because it plays a key role in swallowing and articulation.

The free radial forearm flap has been widely used due to its pliability and hairlessness. Nevertheless, the radial forearm flap does not achieve a stable functional

outcome, since it loses its initial volume and shape, especially in the patients who received postoperative radiotherapy. Moreover, donor site morbidities, including sacrifice of one main trunk vessel, tendon exposure, requirement of skin graft, and poor aesthetic contour, have been reported.⁴

The groin flap, supplied by the superficial circumflex iliac artery (SCIA) was first described as a free flap by Daniel and Taylor⁵ in 1973. Thirty years later, Koshima⁶ presented the superficial circumflex iliac artery perforator (SCIP) flap, in which the concept of using the perforator flap was incorporated into the use of the groin flap. The researcher also reported that three cases of free SCIP flaps were successfully transferred for coverage of defects in the limbs. This flap has such advantages as avoidance of deeper and longer dissection for pedicle vessels and a shorter flap harvest time. This flap can be harvested without excising the deep fascia or muscle and thus has overcome the inherent drawbacks of the conventional groin flap, such as abdominal wall weakness and herniation.⁷ The SCIP flap provides a large amount of soft tissue compared with the radial forearm free flap and thus maintains the buccal fullness and restoring the facial symmetry.

This study highlighted the application of the SCIP flap in buccal defect reconstruction with preoperative color Doppler sonography mapping.

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Statement of Clinical Relevance

This study investigated the reliability of superficial circumflex iliac artery perforator flap with color Doppler sonography mapping used for buccal defect reconstruction in patients who had undergone oral cancer resection.

Table I. Patient characteristics and outcomes

Patient	Gender/Age (years)	Lesion	Tumor stage (TNM)	Defect area	Donor site closure	Complication	Follow-up (months)	Recurrence*
1	M/ 31	BSCC OSF	pT2 N1 M0	R	Primary	None	8	Absence
2	M/ 66	BSCC	rT4 N0 M0	L	Primary	None	7	Lymphatic metastasis
3	F/ 63	BSCC	pT2 N2 M0	L	Primary	None	5	Absence
4	F/ 40	Mandibular osteosarcoma	rT4 N0 M0	R	Primary	Cutaneous Fistula	4	Absence
5	F/ 60	BSCC	pT3 N1 M0	L	Primary	None	3	Absence
6	F/47	BSCC	pT2 N1 M0	L	Primary	None	3	Absence

F, female; M, male; BSCC, buccal squamous cell carcinoma; OSF, oral submucous fibrosis; pTNM, pathologic tumor–node–metastasis; rTNM, recurrence TNM; R, right; L, left.

*Recurrent disease in the follow-up period.

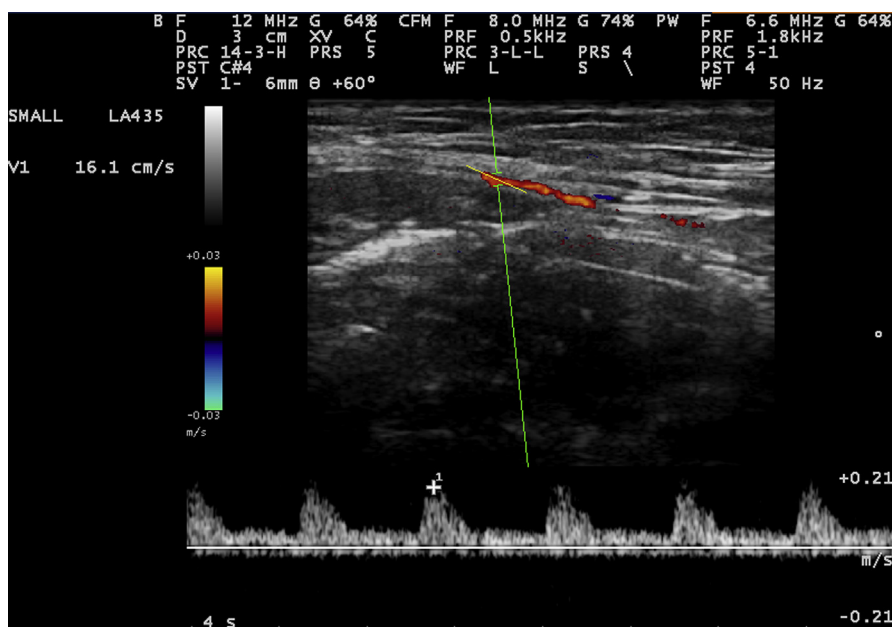


Fig. 1. The superficial circumflex iliac artery was tracked by Color Doppler sonography and the velocity of the bloodstream was calculated.

PATIENTS AND METHODS

Patients

From January 2014 to June 2014, six patients (2 males and 4 females) underwent buccal reconstructive surgery with an SCIP flap following oral cancer radical resection by a single surgeon’s team. The mean age of the patients was 51 years (range 31-66 years), and the follow-up period ranged from 3 to 8 months. Pathologic examination revealed 5 cases of buccal squamous cell carcinoma and 1 of recurrence of mandibular osteosarcoma. Clinical staging was performed according to the 2002 Union for International Cancer Control TNM Classification of Oral Malignant Tumors. The details of patient are summarized in Table I. Of the 6 patients, 2 had through-and-through defects, whereas the remaining 4 had mucosal defects.

The open-mouth width was defined as the interincisor distance (IID) and was measured

preoperatively and at least 3 months postoperatively in all patients.

The present study was approved by the hospital’s independent ethics committee (Shanghai, China), and all patients signed informed consent agreements.

Preoperative planning

Color Doppler sonography was routinely performed before the surgery to confirm the course of the SCIA and localization of the suitable perforators from the SCIA on the bilateral abdominal region in all patients. The patient was placed in the supine position on an examinational table. First, the femoral artery and the SCIA were detected. Then, the superficial branch of the SCIA was tracked. During tracing for the potential dominant perforator, the velocity of the bloodstream was calculated and marked (Figure 1). The body surface

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