

# *Combined Free Flaps for Major Head and Neck Reconstruction*

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## **Abstract**

Between June 1995 and April 1997, two patients with large ulcerated recurrent squamous cell carcinoma involving the face and intraoral region were operated upon for extensive excision in desperate attempt to achieve better patient quality of life. The resultant defects required the use of combined latissimus dorsi and serratus anterior muscle flaps for reconstruction of the wounds.

The procedure can be accomplished in single-stage with only one arterial and one venous anastomosis to the selected recipient vessels. This helps in reducing the operative time. The combined free flaps in both of our cases survived well postoperatively.

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Microvascular free tissue transfer is now widely accepted as a very useful and reliable technique that offers great versatility in the selection of appropriate tissue for reconstruction of head and neck defects as well as certain defects on other body parts.<sup>1-6</sup> The free tissue to be transferred can be simple tissue such as skin flap,<sup>7-9</sup> fascial flap,<sup>10</sup> muscle flap,<sup>11-13</sup> or as vascularized bone or complex tissue grafts such as myocutaneous flap, osteocutaneous flap,<sup>14,15</sup> osteoseptocutaneous flap,<sup>16</sup> and osteomyocutaneous flap.<sup>17</sup> However, in the case of a very large defect, a single free tissue transfer may not be sufficient to resurface or cover the entire defect in a single setting.

We herein would like to present our experience in utilizing the combined free flaps that can provide good solution for a very large surgical defect in the head and neck region.

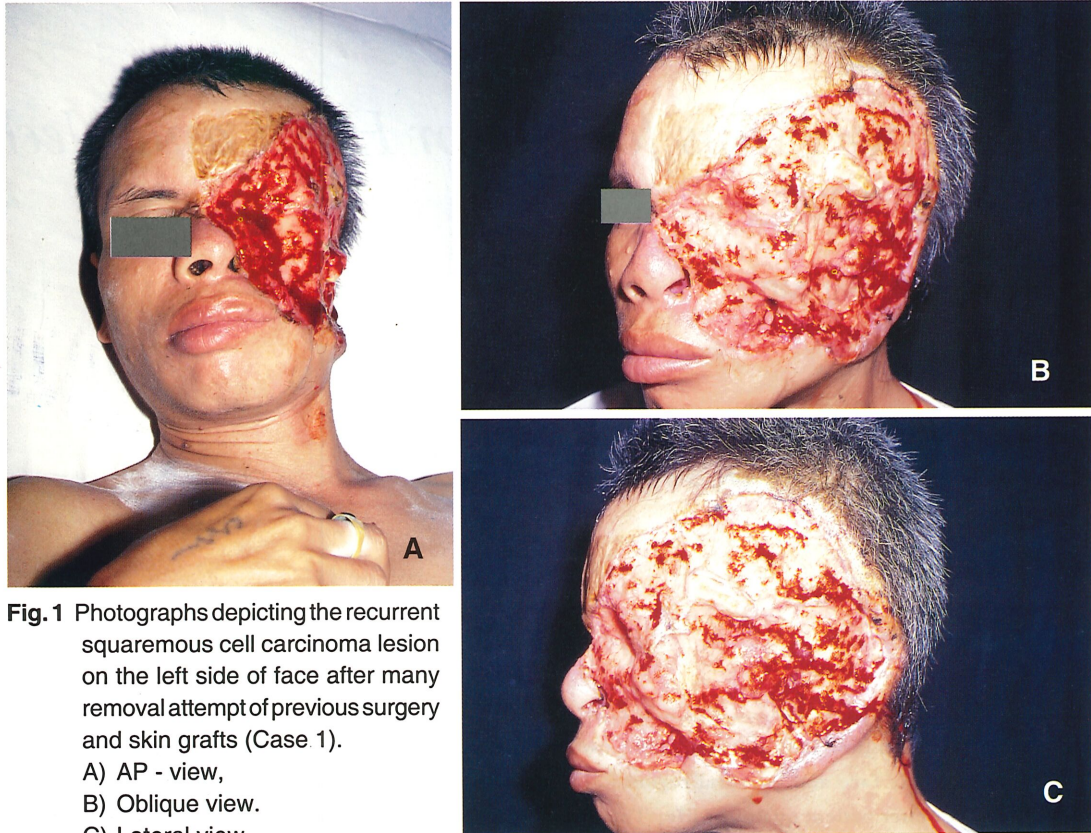
## **PATIENTS AND METHODS**

Between June 1995 and April 1997, there were two patients with large ulcerated recurrent squamous cell carcinoma involving the face and intraoral region. No other palliative modalities were available because of the extensive involvement. Surgical excision of the invasive tumor was carried out in an attempt of tumor extirpation and to achieve quality of life for patients. After wide excision of the lesion, each surgical defect was very large that required the use of combined latissimus dorsi and serratus anterior muscle flaps for reconstruction of the wounds.

## **CASES REPORT**

### **Case 1**

A 36-year-old male, presented with a large lesion

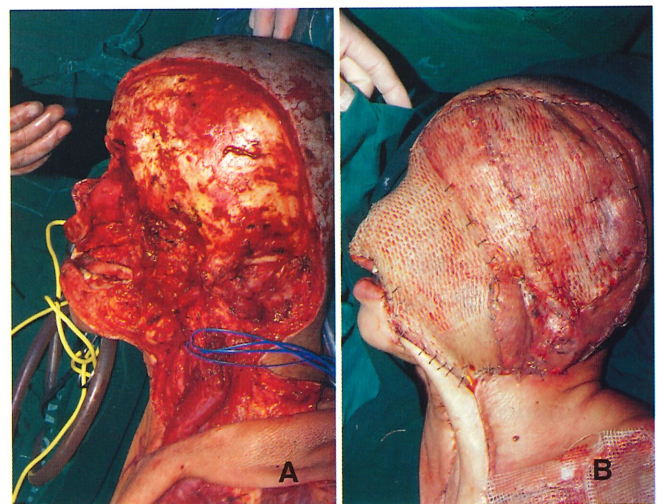


**Fig. 1** Photographs depicting the recurrent squamous cell carcinoma lesion on the left side of face after many removal attempt of previous surgery and skin grafts (Case 1).

- A) AP - view,  
B) Oblique view.  
C) Lateral view.

of recurrent squamous cell carcinoma on his left side of face (Figure 1). Eight years ago he had a squamous cell carcinoma lesion at the left side of face excised in a provincial hospital. After few years, he noted the recurrence of tumor at the site of previous surgery. The recurrent lesion was re-excised but was followed shortly with recurrence and he subsequently received two more local excisions done at the same hospital. However, following each excision, the wound failed to heal and progressively enlarged. He then moved to get treatment at a hospital in Bangkok. Again, after attempt at excision, the wound did not heal. The ulcerated tumor became weeping and with foul smell. Suffering from pain and unsightly appearance he sought unsuccessful treatment of many attempts at surgery and skin grafting from several hospitals. Ultimately he was told that nothing much could be offered.

After a lengthy discussion about the outcome, prognosis and the risks of attempting a more aggressive



**Fig. 2** A) The very large defect after wide excision exposing nasal and oral cavities which would be reconstructed with the left deltopectoral flap.  
B) The combined latissimus dorsi and serratus anterior free muscle flaps were used to resurface the very large defect. Finally the split thickness skin graft was applied on the combined flap.



surgical treatment with the patient and his relatives, we obtained consent to proceed with wide excision of the recurrent lesion and radical neck dissection. Combined latissimus dorsi and serratus anterior free muscle flaps were used to resurface the very large defect. Finally, split thickness skin graft was applied to cover on the combined flap (Figure 2).

Unfortunately, the patient developed paraplegia on the sixth post-operative day. Neurological investi-

gation revealed spinal metastatic foci compressing the spinal cord. The patient and his relatives refused further treatment and left for home the following day.

### Case 2

A 36-year-old man presented with squamous cell carcinoma of the left aspect of tongue at a provincial hospital in late 1995. He was operated upon with wide excision. Few months later (February 1996), due to



**Fig. 3** Photograph showing lesion in Case 2.

- A) Large recurrent squamous cell carcinoma of tongue involving the left mandible and neck.
- B) Wound defect after wide excision exposing nasal and oral cavities.
- C) This extensive surgical wound required reconstruction with the left deltopectoral flap to cover the oro-nasal cavity and combined latissimus dorsi and serratus anterior free muscle flaps.



cervical node metastasis, he received radical neck dissection and adjuvant radiation treatment of 5,000 cGy.

Eight months later he developed a recurrence at the floor of mouth with invasion of tumor to the mandible. A more radical excision with a mandibular plate was used and the surgical defect was covered with a pectoralis major myocutaneous flap. Adjuvant chemotherapy was given postoperatively. Tumor recurrence in the pectoralis myocutaneous flap occurred 3 months later. Palliative radiation and chemotherapy were given.

Despite the treatment, the tumor grew progressively and the patient became extremely depressed necessitating many psychiatric consultations. Subsequently, a wide excision with left hemimandibulectomy and hemimaxillectomy were performed utilizing left deltopectoral flap to reconstruct the lining of oronasal cavity and resurfacing with combined serratus anterior and latissimus dorsi free flaps reconstruction (Figure 3). Post-operatively the covering flaps survived well but the patient developed respiratory failure and expired 9 weeks after surgery.

## DISCUSSION

The combined latissimus dorsi and serratus anterior muscle flaps that can be harvested relying upon a single vascular pedicle (thoracodorsal vessel). The flaps are very useful in resurfacing very large defect because of a huge tissue that is sufficient to cover a large area of defect. The procedure can be accomplished with only one arterial and one venous anastomosis to the selected recipient vessels. This helps in reducing the operative time and giving good operative results. Although both of our cases were done in desperate situation just for a better quality of life of patients, the combined free flaps survival was technically achieved.

Another advantage of this combined flap is the independent vascular pedicles of its components which allow freedom in orientation of the various tissue segments. Thus, the combined flap can be helpful in reconstructing complex three-dimensional composite defects of the head and neck. There was no significant donor site morbidity (shoulder function, etc) following the use of combined latissimus dorsi and serratus anterior muscle flaps.

It is our opinion that a one-stage, combined latissimus dorsi and serratus anterior muscle free flaps with one common nutrient pedicle formed by the thoracodorsal vessels may serve as an alternative procedure of choice to resurface the very extensive defect in the head and neck region.

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