

# ANTEROLATERAL THIGH FREE FLAP IN RECONSTRUCTION OF ORAL CAVITY MALIGNANCY: UMMC EXPERIENCE

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**ABSTRACT:** : Oral cavity malignancy reconstructive surgery has advanced from pedicle flaps to microvascular free tissue transfer. Previously, reconstruction of these defects were done using radial forearm free flap in this centre. We report our experience using anterolateral thigh free flap in a 49 year old lady with squamous cell carcinoma of the tongue. Excision of tumour left a defect which was later reconstructed using microvascular free tissue transfer using the right anterolateral thigh free flap. The flap was well taken up at the recipient site and no evidence of flap failure noted post operatively and on completion of radiotherapy. She was able to maintain comprehensible speech and swallowing ability. (*JUNMEC 28; 11(1): 33–36*)

**KEYWORDS:** Anterolateral thigh free flap, head and neck reconstructive surgery

## Introduction

Oral cavity malignancy has been difficult to manage in the past with regards to closure of defect post oncological resection, which requires a large surgical margin within the small confines of the head and neck region. Recent advances using free tissue transfer has revolutionized the surgical management of such cancers. We would like to highlight the use of the anterolateral thigh free flap, where this was the first successful case to be done in our centre.

## Case Report

A 49-year-old lady was referred from Seremban to the University of Malaya Medical Centre (UMMC) with a non-healing ulcer on the left side of the tongue of six months duration. The ulcer was painful, especially during eating. It gradually increased in size. She did not recall having a whitish patch on her tongue before the onset of the ulcer. She denied chewing betel nut and smoking.

Examination revealed an ulcer on the left lateral border of the tongue measuring 4 cm at the widest diameter. It was foul smelling. Surrounding margin was indurated and extended to the floor of the mouth. Tongue movement was restricted. No cervical lymph node was palpable.

Incision biopsy of the lesion revealed a moderately differentiated squamous cell carcinoma. On Computed

Tomography scan, it was noted that the tumour was at the left lateral border of the tongue approaching midline but not crossing the raphe of tongue. There were also multiple cervical lymph nodes of varying sizes: left Level I – 5mm, left level II – 8 to 10 mm and bilateral Level III shotty lymph nodes.

Clinically though, she was staged as T4N0Mx. She was then planned for left hemiglossectomy, lingual corticotomy of left mandible, left radical neck dissection, right supraomohyoid neck dissection and tracheostomy to be done by the Otorhinolaryngology and Oral Maxillofacial Surgery teams. As the defect post-hemiglossectomy was not suitable for primary closure, decision for flap reconstruction was made. Referral was made to the Plastic Surgery team and she was worked up for free flap reconstruction using anterolateral thigh free flap.

Intraoperatively, the ulcer base was noted to extend inferiorly towards the hyoid bone in the midline. It was

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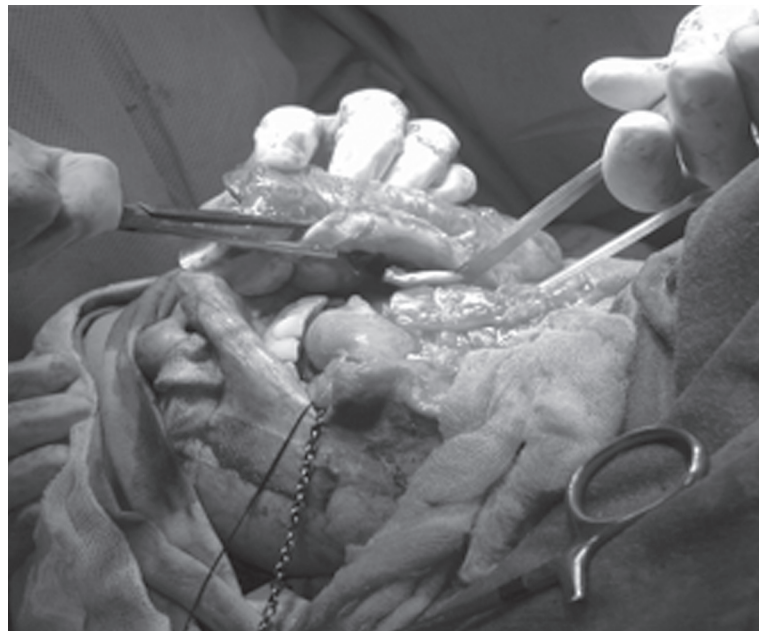
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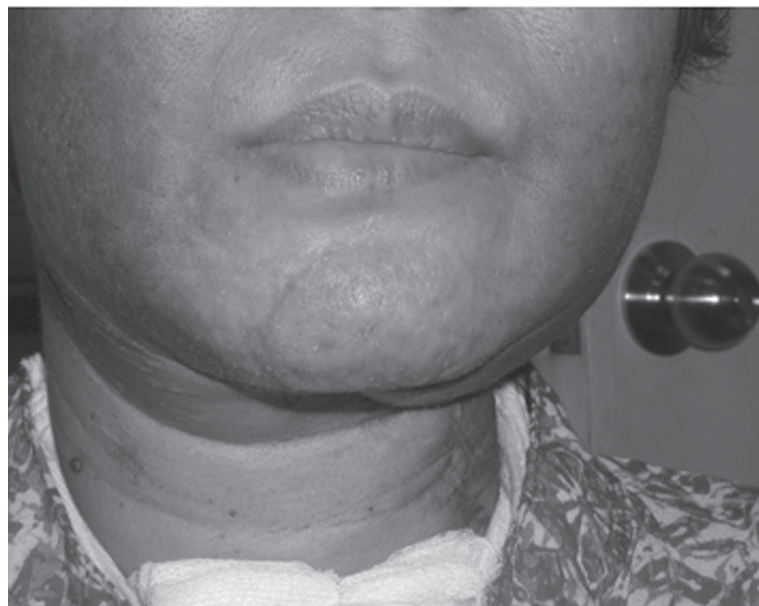
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**Figure 1.** Access for tumor excision via mandibular split



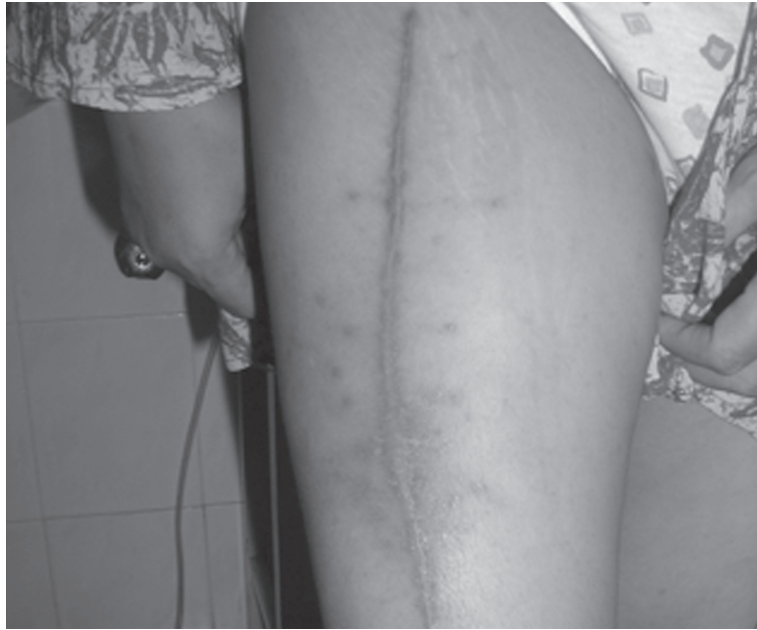
**Figure 2.** Neck scar after 20 fractions of radiotherapy

excised with a 2 cm margin (Figure 1). Only  $\frac{1}{4}$  of the right tongue remained post excision. Neck dissection was done and the anterior jugular vein was preserved for anastomosis of flap. Simultaneously, harvesting of flap from the right thigh was done.

The flap was inserted intraorally to cover the left tongue defect medially. The remaining part of the flap was laid laterally to cover the buccal mucosa overlying the left mandible. Subcutaneous tissue from the flap was trimmed minimally to fit the defect. It was left slightly

bulky to allow post-operative atrophy and further shrinkage post-radiotherapy.

The artery supplying the flap was anastomosed end-to-end with the left superior thyroid artery under microscopy. Ischaemic time from flap elevation was 1 hour 50 minutes. Subsequently single vein end-to-end anastomosis was performed using a tributary of the anterior jugular vein. The flap was viable at the end of the procedure. The donor site defect was closed primarily.



**Figure 3.** Donor scar on the right thigh



**Figure 4.** Dissection scar on left side of neck

She recovered very well post-operatively. She was put on subcutaneous heparin for three days and covered with intravenous cefuroxime and metronidazole. Post-operative histopathological examination correlated with the initial biopsy which was moderately differentiated squamous cell carcinoma. All surgical margins were clear and no malignancy noted on the cervical lymph nodes. Tracheostomy and gastrostomy feeding was maintained until radiotherapy was commenced and completed (Figure 2).

She did not show any evidence of residual tumour. There was no evidence of breakdown or gap noted on her tongue. It had adequate mobility and she had adapted her speech to be mostly comprehensible. No regurgitation was noted. She was able to walk well with no significant complaint regarding her donor site on the right thigh (Figure 3). The neck did not show evidence of recurrence (Figure 4). Her only complaint was trismus, attributed to radiotherapy.

## Discussion

Head and neck malignancy has taken a leap forward in its management with the advent of free tissue transfer. Previously, relying on pedicled flaps from deltopectoral and pectoralis major, we have moved on to free flaps for reconstruction. This was the first successful reconstruction using the anterolateral thigh (ALT) flap in the University of Malaya Medical Centre.

Microsurgical free tissue transfer has revolutionized head and neck reconstruction, where it allows function and aesthetics to be preserved without compromising the principles of oncologic surgery. Currently, the ALT flap has recently gained increasing popularity. It is versatile for reconstructing a wide range of complex head and neck defects. The unique anatomy of the thigh allows unparalleled flexibility in flap design, useful for reconstructing defects of the tongue, buccal region, midface, scalp, and through-and-through defects of the cheek (1).

Previously for oral cavity reconstruction, the radial forearm flap and the free lateral arm flaps were frequently used. However, the radial forearm flap in the donor area requires hand immobilisation during grafting and leaves a cosmetically unfavorable scar with long healing time in cases with complications caused by tendon exposure (2). In contrast, the ALT donor site can be closed without much residual morbidity. Primary closure of the defect can be performed comfortably when the defect is 6 to 9 cm or less. Any defect greater than 6 to 9 cm in width requires a skin graft (3).

The ALT flap is one of the fasciocutaneous flaps in the thigh based on the septocutaneous or musculocutaneous perforators derived from the lateral circumflex femoral system (4). Patient is laid supine, then a line is drawn between the anterior superior iliac spine to the superolateral border of the patella. This line represents the muscular septum between the rectus femoris and the vastus lateralis muscles. The cutaneous vessels are mapped by Doppler probe placed over the midpoint of this line, with the majority of skin perforators located within a 3-cm radius of this midpoint. The flap is

centered over these vessels, with the long axis designed parallel to that of the thigh (5).

Dissection is started at the medial border of the flap over the rectus femoris muscle. Incision is made through the deep fascia and the flap is raised laterally for a short distance until the intermuscular septum is reached. The descending branch of the lateral circumflex femoral artery is then identified in the groove between the rectus femoris and vastus lateralis, and a septocutaneous vessel may be identified to facilitate further dissection. The flap is then raised suprafascially with a small cuff of fascia maintained around the perforator. Microvascular anastomosis of the pedicle is then performed using the suitable recipient vessels described above (5).

In this setting, the ALT flap offers much versatility in offering adequate bulk, thickness or thinness for reconstruction of head and neck defects, post oncological resection or from other causes. In addition, it offers minimal donor site morbidity as compared to other free flap options. We, therefore, recommend this flap for future similar cases.

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