# Case Report

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# Anterolateral thigh free flap- largest size flap till date in lateral skull base defect reconstruction: an interesting case report

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#### **ABSTRACT**

Vascularised free tissue transfer has revolutionized skull base defect reconstruction. It allows to restores form and functions without compromising the principles of oncoplastic surgery. Anterolateral thigh (ALT) free flap is a workhorse flap in head and neck reconstruction. The versatility of the ALT-free flap makes it unique to reconstruct almost every soft-tissue defect in head and neck reconstruction. Due to the large surface of the anterolateral thigh, a very large flap can be harvested with very little donor site morbidity. Here we have reported a case of 40 years, male patient, with a known case of primary squamous cell carcinoma (SCC) of the left parotid gland. After the surgical extirpation of the tumor, an extensive soft-tissue defect was created in the region of the left lateral skull base defect. For coverage of large defect, we did the ALT free flap size 25×18 cm (450 cm²). The donor site was partially closed primarily and partially skin grafted. The patient was discharged uneventfully on the 7<sup>th</sup> postoperative day.

Keywords: Vascularised free tissue, Oncologic surgery, ALT free flap, SCC, Skin graft

# INTRODUCTION

Microvascular free tissue transfer has revolutionized skull base defect reconstruction. It allows to restores form and functions without compromising the principles of oncoplastic surgery. Song et al. first described the ALT free flap in 1982.1 ALT free flap is a workhorse flap in head and neck reconstruction. Kimata et al. described the versatility of the flap in head and neck reconstruction.<sup>2,3</sup> The versatility of the ALT-free flap makes it unique to reconstruct almost every soft-tissue defect in head and neck reconstruction. Due to the large surface of the anterolateral thigh, a very large flap can be harvested with very little donor site morbidity. ALT flap based on the musculocutaneous and septocutaneous perforators of the descending branch of the lateral circumflex femoral artery. The ALT-free flap has many advantages in head and neck reconstruction such as reliable anatomy, the

large size of the flap can be harvested, long pedicle, good size vessels for anastomosis at the recipient site, versatility in tissue volume and design, two-team approach, and minimum donor site morbidity.

SCC of the parotid gland is a rare histologic subtype and very aggressive tumor with less than 50% of 5 years survival rate. <sup>4-7</sup> After the surgical extirpation of the tumor extensive soft tissue defect was created in the region of the left side of the face, neck, and scalp. The size of the soft-tissue defect was 24×17 cm (Figure 2). This poses a real challenge to the reconstructive and micro-vascular surgeon to cover the defect with a single free flap.

### **CASE REPORT**

A male patient (40 years) with a known case of primary squamous cell carcinoma (SCC) of the left parotid gland

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was reported in the department of oncology. On initial assessment, the patient was diagnosed with SCC of the left parotid gland with the locoregional involvement of the left preauricular region, left facial nerve, neck lymph nodes, skin, and soft tissue of the left temporal region and left auricle (Figure 1). A Template of the defect was made and we planned to reconstruct the defect with a vascularised free ALT flap. For coverage of large defects, we planned the ALT free flap size 25×18 cm (450 cm<sup>2</sup>) (Figure 2). Marking of ALT-free flap was done over the left thigh in a standard manner. Two perforators were identified by handheld Doppler in the lower outer quadrant of a 3 cm circle. The template of the defect was superimposed over the left thigh. The centre of the flap was marked over both perforators. An anterior skin incision was made first then a stair-step incision was made through the fascia.



Figure 1: Primary SCC of the left parotid gland with the loco-regional involvement of left preauricular region, left facial nerve, neck lymph nodes, skin soft tissue of left temporal region and left auricle.

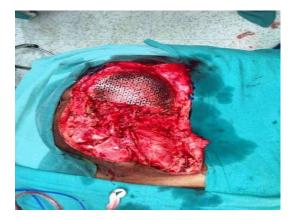


Figure 2: Post tumor excision defect and the calvarial bony defect were reconstructed with titanium mesh.

Two perforators were identified and safeguarded at doppler marked sites. The intermuscular septum between the vastus lateralis and rectus femoris was identified distally. Exploration of the intermuscular septum begins from the distal to proximal direction. The descending branch of the lateral circumflex femoral artery (LCFA)

was identified in the septum. The dissection of LCFA was done up to the rectus muscle branch. Both perforators have intramuscular courses. The dissection of the rest of ALT flap was elevated in a standard manner (Figure 3). The calvarial bony defect was reconstructed with titanium mesh. ALT-free flap was transferred to the head and neck region. Partial flap in setting was done with 3-0 vicryl. The microvascular anastomosis of one artery and one vein was done with the left transverse cervical artery and vein and second vein with tributaries of the internal jugular vein with 8-0 nylon. Final flap in setting was done. Three romovac drains were kept under the flap, one under the scalp and two in the neck region. After the microvascular anastomosis, the good vascular flow was ensured.

Hand-held Doppler was done and a good audible signal achieved and the doppler site was marked with a skin stapler for future doppler monitoring (Figure 4). Left thigh Donor site partially closed primarily and partially skin grafted.

The postoperative period was uneventful and the patient was discharged in satisfactory condition on the 7<sup>th</sup> postoperative day. In follow-up patient received radiotherapy. Figure 5 represents the stable condition on follow-up at 2 months after ALT free flap reconstruction. The donor site healed well (Figure 6).



Figure 3: ALT free flap.



Figure 4: After the reconstruction ALT free flap.



Figure 5: Post operative at two months of ALT free flap.



Figure 6: Almost healed donor site of ALT free flap.

## DISCUSSION

The parotid gland involved 80% of salivary gland tumors, out of these 80% are benign and 20% are malignant. SCC of the parotid gland is a very rare entity and at the same time, it is a very aggressive tumor. The mortality rate of SCC is very high. Radical tumor ablations in the head and neck region can significantly impair form and function and usually require complex reconstructions. Options for soft tissue coverage were limited to locoregional flaps in past. Traditional free flaps were either too thin or too bulky, small in size, or were not ideal for texture matching. ALT free flap introduced by song et al. ALT free flap is a versatile flap which fulfills all requirements of complex head and neck reconstructions. I

#### **CONCLUSION**

Although numerous other soft tissue flaps have been described, most are less useful than the ALT flap for extensive skull base defect reconstruction. ALT free flap

some unique quality such as extra-large size, good pedicle length and size, the flexibility of tissue volume, constant anatomy, and a two-team approach. All these qualities of ALT flaps make it the best choice to reconstruct the extensive skull base defects easily.

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