**TITLE: Anterolateral Thigh Free Flap Transfer**
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The goal of reconstruction in the head and neck involves three fundamental components: wound healing, function, and cosmesis. When deciding which reconstructive option is best suited for a particular patient, the reconstructive ladder must be taken into consideration. These options include healing by secondary intention, primary closure, skin grafting, local flaps, distant pedicled flaps, and free tissue transfer.

The anterolateral thigh free flap (ALT) has emerged as a popular option for reconstruction of head and neck defects. It has the attributes of a "workhouse" flap which include absence of patient repositioning, remote location from the potential defect, and a long pedicle. The ALT was first described by Song in 1984. It should be emphasized that the skin associated with this flap is anterolateral thigh skin and that the pedicle is the descending branch of the lateral circumflex femoral artery. This differs from the lateral thigh flap that was described by Baek in 1983 which involves posterolateral thigh skin and a pedicle from the third cutaneous perforator off of the profunda femoris. After description of the ALT it mainly had reported use in Asia. Proposed reasons for this trend were vascular anatomy variations, difficult dissection, and thick thigh fat. However, in the last decade, the ALT has become a popular reconstructive option in Western countries.

In designing an ALT, a line is drawn between the anterior superior iliac spine and the lateral border of the patella. This line approximates the septum between the rectus femoris and the vastus lateralis. Skin perforators are mapped with a Doppler. As mentioned before, the pedicle is the descending branch of the lateral circumflex femoral artery. Perforators come off of the descending branch and are labeled A, B, and C (A is the most proximal and C is the most distal). Perforators range between 0 and 3 per patient with the mean being 2. The perforators are classified as either septocutaneous or musculocutaneous. Septocutaneous perforators run between the rectus femoris and vastus lateralis and traverse the fascia lata to the skin. Musculocutaneous perforators traverse the vastus lateralis and deep fascia to the skin. After mapping the perforators with the Doppler, the skin paddle is planned and an incision is made on the medial aspect. Lateral dissection is performed to locate the perforators. Once the perforators have been identified, the skin incision may be completed. Retrograde dissection of the perforators to the pedicle is performed to the descending branch of the lateral circumflex femoral

artery. Alterations in harvesting the flap based on the defect size are instituted. The flap may be harvested as a subcutaneous flap, a fasciocutaneous flap, a myocutaneous flap, or an adipofascial flap. Additionally, the flap has the ability to be sensate via the lateral femoral cutaneous nerve which comes from L2 and L3.

The largest case series of ALTs was published by Wei. It involved 660 patients with 672 ALTs. A total of 484 flaps were transplanted to the head and neck region. A total of 1.8% had total failure and 2.5% had partial failure. This is consistent with the failure rate from other case reports which ranged from 2.2 to 3.3%.

Issues involving the recipient site with ALTs can be divided into functional outcomes and aesthetic outcomes. From a functional perspective, problems encountered include speech problems, oral incompetence, swallowing problems, facial pain, nasal obstruction, and flap contracture. From an aesthetic perspective, problems encountered include flap sagging, color mismatch, hair growth, contour defect, and flap bulkiness. Issues involving the donor site with ALTs can also be divided into functional outcome and aesthetic outcome. Functional issues include gait alteration, sensory disturbance, and cold intolerance. Aesthetic issues include hypertrophic scarring, hypopigmentation/hyperpigmentation, keloid formation, and contour defect.

Comparisons have been made between ALTs and other free flaps from a functional standpoint. Intraoral defects repaired with an ALT versus a radial forearm free flap show no functional difference regarding swallowing, aspiration, and speech. Repair of circumferential pharyngeal defects with ALTs compared to jejunal flaps showed better function, quicker recovery, less cost, and similar complication rates with regards to ALTs.

ALTs have recently taken an increased role in head and neck reconstruction. It is a versatile flap with the necessary “workhorse” attributes. The large skin paddle that can be harvested in combination with the potential harvest of muscle allow for reconstruction of large defects. Additionally, it can be a sensate flap. Keeping these facts in mind, ALTs will likely continue to be a quality reconstructive option for head and neck defects.

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