

# PRINCIPLES OF SOFT TISSUE RECONSTRUCTIONS IN ORAL AND MAXILLOFACIAL REGION

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## 1. Introduction-

**Reconstruction of face encompasses three categories of tissue transfer full thickness grafts are preferable because split- thickness often provide inadequate thickness for fully satisfying aesthetic results and tend to show discoloration by increased pigmentation.**

***Keywords- facial skin, oral mucosa, muscle, tongue.***

## 2. Discussion-

Reconstruction of facial skin:

Facial skin<sup>(1)</sup> is repaired best by pedicled transfer of fascial skin itself because skin tissue adjacent to the resected skin portion usually provides ideal nature match of color, texture, thickness and pattern of hair growth. No continuous superficial fascia overlies the muscles which usually facilitates the dissection of pedicled skin flaps and the facial nerve limits the depth of dissection to a level above the mimic muscles Axial flaps, which include the facial artery are therefore impossible to dissect without violating the facial nerve function for this reason axial flaps are used only in the forehead region, where the supratrochlear artery, frontal artery , superficial temporal artery can be included without jeopardizing facial nerve. This vascularizing in particularly intensive area of the check and the nasolabial fold, which allows for a variety of random pattern flaps of large size and increased length to width ratio. Although this ratio is supposed to be no larger than 2:1 in most regions of the body surface, it can be upto 3;1 in the maxillofacial area. Thus in most cases, local random flaps are used for the closure of facial skin defects. When large intra-extraorally perforators defects have to be covered intracranial contents has to be accomplished, pedicle transfer of myocutaneous flaps or vascularized myocutaneous and fasciocutaneous grafts are reconstructive means of first choice in these cases the two muscles from the trunk commonly used for closure of defects in the maxillofacial region are the pectoralis major and lastismus dorsi muscle. Fortunately, this muscle are type V muscles which render them well suited for simultaneous transfer overlying skin. The intrinsic muscles of the head and neck area namely, the sternocleidomastoid muscle, the trapezius muscle and the platismus are type II muscle with one dominant vessel and atleast one minor vascular pedicle there uses transposition flap requires the division of atleast one of the pedicles.

According to the volume of the deficit to be filled, suitable flaps for these location are deltopectoral flap<sup>(2)</sup>, a pectoralis major island flap, or a pedicled transfer of the latissimus dorsi. Posterior defects may be like wise suitable for closure by trapezius flap. However the defect s above the occlusal plane and extensive defects involving bone, muscle, cutaneous tissue, are frequently beyond the possibilities of pedicle transfer for anatomical reasons because the volume supply of the flap is insufficient or the pedicle is too short for

adequate mobilization and complete defect closure. If the defect is shallow and there is not too much of volume to be replaced, a vascular flap from the forearm or lateral thigh may be the material of choice. In large defect additional transfer of muscle tissue or fat tissue may be required using the latissimus dorsi, the rectus abdominis, or the parascapular flap.

#### Reconstruction of subdermal<sup>(4)</sup> flap-

Reconstruction of subdermal tissue may be necessary in sectional defects in cases of posttraumatic atrophy or congenital hypoplasia, where the skin surface has been preserved but underdevelopment or loss of subdermal soft tissue has resulted in a volume deficit and loss of contour deviation. In general, fat and muscle can be used for the correction of these deformities. The major problem of any flap used for augmentation of soft tissue contour and volume in the head and neck region, however in the long term maintenance of the grafted tissue volume after transfer to the recipient area. One of the vascularized free flaps most frequent used for the replacement of subcutaneous soft tissue is the depithelized parascapular flap. This flap offers adequate volume and has a reliable vascular anatomy. Another frequently used donor site for vascularized fat graft in the groin area. When depithelized myocutaneous flaps are used to fill in defects of the facial contour, denervation atrophy can cause an unpredictable reduction of volume in long term results, requiring initial overcorrection of volume and contour with the option of secondary surgical reduction. For this reason, revascularized fat tissue grafts are considered to be the means of first choice for the reconstruction of subdermal soft tissue because their long term volume maintenance has been found to be superior to muscle flap.

#### Reconstruction of muscle-

Reconstruction of muscles<sup>(5)</sup> combines the replacement of muscle volume and its function. The volume and function is difficult to achieve at the same time. The transfers of muscles is associated with a division of nerve supply, causing a shrinkage of graft volume from denervation atrophy. These innervated muscle are unlikely to replace the lost muscle function completely, for they can exert only the pattern of movements specific for the previous donor site. Since oral and maxillofacial area contains a large number of muscle with a subtle anatomy and a complex interwoven pattern of function, reinstatement of the muscle function is far too complex to be achieved by grafting one or two individual muscles. Thus functional reconstruction of the facial muscle even today remains a challenge for the reconstructive surgery. Some muscular function are special and cannot be compensated eg: tongue movement, soft palate movements. Facial reanimation after long standing paralysis of facial nerve has made a great progress with the transfer of the neurovascular segments of the gracilis muscle or the pectoralis minor, these grafts have been used to restore movement of the oral commissure and the cheek with good success. The restoration of periorbital muscle functions and orbicularis oculi functions also has been achieved to some extent by the free or pedicle transfer of muscle tissue.

The functional replacement of tongue muscles is still a largely unresolved problem in reconstructive surgery. Replacement of the volume of the tongue is possible with a muscle graft like a myocutaneous flap. The free vascularized tissue transfer, however helps to avoid the tethering effect of the soft tissue pedicle of myocutaneous island flap. Many muscle grafts and myocutaneous flaps can be raised with their supplying nerve and can be raised with their supplying nerve and can be sutured to a nerve from the donor site. However, even the reinnervated function of this muscle cannot replace the subtle and complex movements of the intrinsic muscles of tongue. The same consideration holds true for replacement of the soft palate. Post resection defects of moderate size after ablative procedures can be repaired immediately by a velopharyngoplasty<sup>(7)</sup>. In extensive defects that include more than half the soft palate, vascularized transfer of intestinal mucosa or a thin and pliable skin graft has been advocated.

#### Reconstruction of oral mucosa-

Reconstruction has been a major problem because there is only a limited amount of mucosa<sup>(8)</sup> surface available inside the oral cavity for defect closure by intraoral local flaps without subsequent functional defect. Superficial defects in the floor of mouth and the cheek may be repaired by avascular transfer of split-

thickness<sup>(9)</sup> skin grafts. With complete defects, pedicled arterialized skin flaps from the forehead and from the deltopectoral region have long been used as standard means of reconstruction of intraoral soft tissue. The use of these skin flaps, however has shortcomings in terms of long term graft performance.

When large mucosal defects were associated with extensive loss of soft tissue volume in subtotal or total glossectomies<sup>(10)</sup>, the replacement of tissue volume rather than the closure of the surface defect appears to be of major functional importance. This can be accomplished by the vascular transfer of rectus abdominis and the latissimus dorsi muscle with an overlying skin area for closure of mucosal defect. Although this kind of reconstruct grafted soft tissue, we know that it is only passive tissue bulk without active mobility and thus cannot replace the function of tongue.

### 3. Conclusion-

The reconstruction of the soft tissue and restoring its oral function is a complex process and requires a proper planning. The volume of soft tissue to be replaced, shrinkage of grafted tissue due to nerve atrophy all plays a major role in determining the type of graft needed. Replacement of tongue and soft palate movement is very complicated even though the volume could be replaced very easily.

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