

Use of Autologous Uplift Sling in Reconstruction of Complex Lower Face Defects after Cancer Excision

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Abstract

Facial sling have been used traditionally in plastic surgery for treatment of facial nerve palsy. Slings can be used either in dynamic or static forms depending on the damage and type of function required. It is commonly used for upper eyelid and oral commissure. Use of static sling for lip is a well known method to maintain the competency of commissure in case of facial nerve palsy. Other conditions where facial sling is used are irreparable facial nerve injury or facial nerve resection as a part of extirpative surgery. Problem faced by patients with complex lower face reconstruction is deviation of oral commissure and drooping of saliva due to significant removal of lip tissue, bulk of the flap, effect of gravity and downward traction forces acting on the flap leading to downward pull or scar contractures. Through this article we highlight the prophylactic use of facial sling during reconstruction of complex lower face defects following cancer to prevent these complications.

Keywords: Sling; Oral Commissure; Reconstruction.

Introduction

Oral cavity cancer is one of the major neoplasm worldwide and accounts for most head and neck cancers [1]. Any red, ulcerated wound present for more than 3 weeks warrants careful examination and prompted diagnosis to rule out malignancy [2]. Oral cavity cancer affects three quarters people in the developing world, being third most common cancer after stomach and cervical cancer it is also one of ten most common sites of cancer internationally. Once diagnosed and complete work up done clinical

decision has to be taken for management. If tumor is small surgical excision is usually preferred. Chemotherapy or radiation therapy may be used as adjuvant or definitive radical treatment modalities, especially if tumor is found to be inoperable. Since cancer is known to have a major impact on social, mental, physical and cosmetic aspects a multidisciplinary team is required for treatment of oral cancers including radiotherapist, chemotherapist, cancer surgeon, plastic surgeon, dental professional, psychologist and rehabilitation professional etc.

Head and neck region contains important vital structures and provides identity to an individual, hence any surgery in this region is technically demanding and should meet both functional and cosmetic criteria. After wide local excision most of the moderate to large size tumors leads to complex defects with loss of lining, cover, bone, muscles etc. According to Gillies principles of plastic surgery all the losses has to be replaced in its kind [3]. Also size and bulk of the defect has to be considered before replacement as for effect of small bulk may cause significant deformity if large bulk is replaced. Hence thinned and super thinned flaps are discovered to provide good appearance. Thinning of flaps has its own limitations and complications and in many situations mere thinning and making the flap small is not sufficient to prevent deformity especially in lower face. Lower face is provided with less support as compared to upper and middle face, which further decreases with the effect of gravity. The combination of less support, effect of gravity, scar contraction and bulk of the flap itself increases downward forces and causes downward displacement of lower face and oral commissure leading to continuous dribbling of saliva and loss of oral competence. It is observed that after major cancer excision and reconstruction with

flap in lower third of the flap one of the common complaints of patient is dribbling of saliva, dry mouth, difficulty in eating and deviation of angle of mouth. Prognosis depends multiple factors like grade, invasiveness, stage, spread, patient's general health etc [4].

Through this article we highlight the use of autologous facial lata sling to prevent these complications and improve overall cosmetic and functional outcomes.

Methodology

A 40 year old gentleman presented with complaints of ulceroproliferative growth in the mouth. On examination an ulceroproliferative growth was noticed in left lower alveolus with skin infiltration and enlarged left submandibular nodes. Almost entire middle and lower face on left side was found to be involved (Figure 1a, 1b). CECT reported heterogeneously enhancing mass lesion involving the body of mandible on left side (Figure 2). Biopsy reported Pleomorphic sarcoma. Malignant peripheral nerve sheath tumor with rhabdomyosarcomatous differentiation also known as malignant triton tumor (Figure 3a, 3b) accounting for <10%, is rare in head and neck [5].

On initial workup and systematic analysis patient was found to operable and fit for anesthesia. After informed consent and surgery was planned under general anesthesia. Wide local excision of the lesion was done. Condyle preserving hemimandibulectomy and MRND was done (Figure 4). Resultant defect was extensive and included full thickness near total cheek with lining and cover and left hemi mandible (Figure 4). Owing to large and complex nature of defect double free flap was designed. Free fibula

osteocutaneous flap for mandible with lining (Figure 5a) and free anterolateral thigh (ALT) fasciocutaneous flap for cover were used (Figure 5b).



Fig. 1b: Showing skin involvement

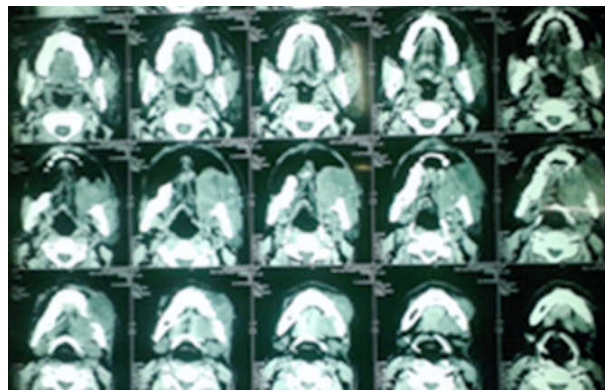


Fig. 2: Radiology showing mandible involvement

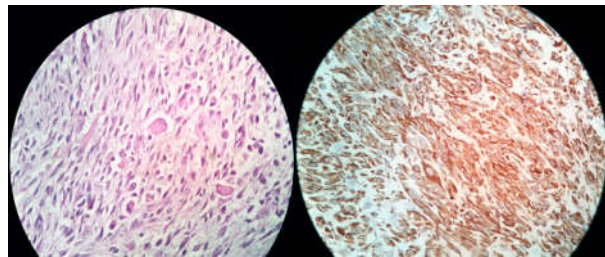


Fig. 3a & 3b: Rhabdomyosarcomatous differentiation



Fig. 1a: Ulceroproliferative growth

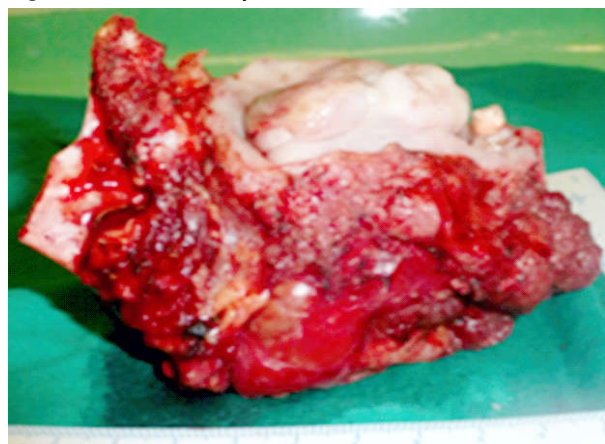


Fig. 4: Excised defect showing both soft tissue and bone

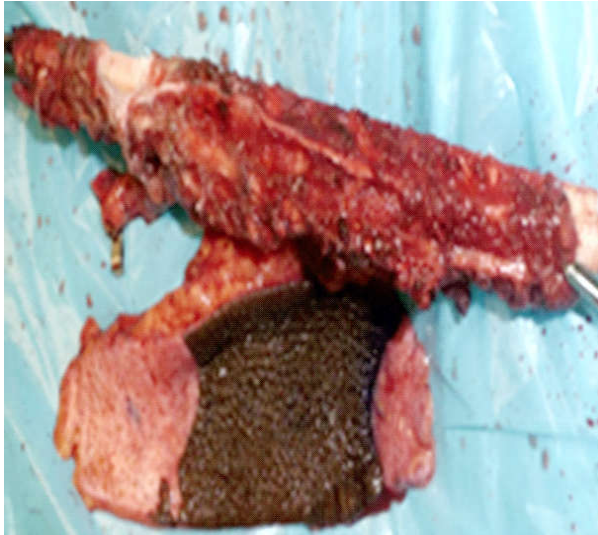


Fig. 5a: Free fibula osteocutaneous flap



Fig. 7: Showing normal oral commissure in spite of bulky flap



Fig. 5b: Free ALT flap

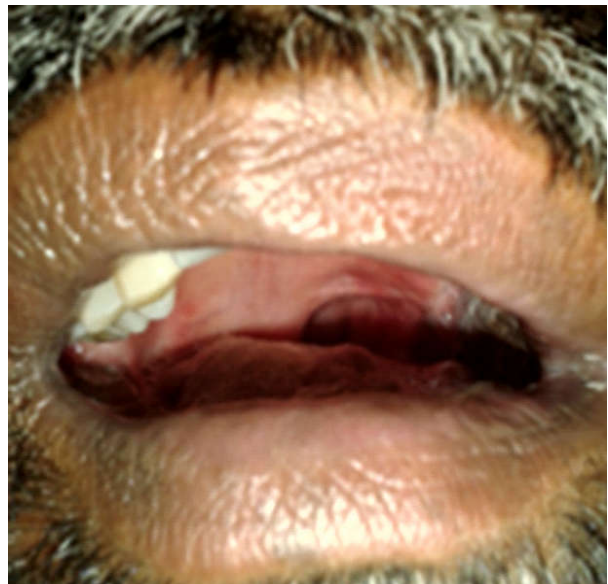


Fig. 8: Showing both commissure at same level



Fig. 6: Fascia lata sling being fixed

Partial flap inset of the flap was done. Fascia lata sling was harvested and designed in a 'V' shaped pattern. Divided end was sutured with upper and lower lips while undivided end was sutured with the zygoma by making drill holes and using non absorbable suture (Figure 6). Vessel anastomosis and complete Flap inset was done. Donor sites were closed primarily

Post operative period remained uneventful both flaps settled well and donor sites healed well. Patient was followed up in OPD after discharge. Long term results (after three month) were found to be satisfactory. Although we used two free flaps with moderate bulk but oral commissure was well maintained and no deviation of angle of mouth was seen (Figure 7). Height of both oral commissures was at the same level and oral competency was well maintained (Figure 8)

Discussion

Use of dynamic and static sling is well described in literature for the purpose of facial reanimation surgery in patients with facial paralysis [6].

Goals of facial reconstruction are

- ◆ Symmetry of face in repose.
- ◆ Symmetrical/ natural looking smile
- ◆ Oral competence
- ◆ Coordinated, spontaneous facial movements.

Sling surgery is one of the methods used in facial reanimation among other methods like facial nerve repair with or without grafting, nerve transfer, cross-facial nerve grafting, and muscle transfer (either regional muscle or free-muscle neurotized transfer [7].

Use of fascia lata sling in the treatment of facial paralysis was first described by Dr Rose. Lemound J et al performed a study on use of fascia lata graft as a static support in 15 cases. They used two fascia lata grafts for upper and lower lip and fixed with the zygomatic arch. They noticed improvement in overall outcome [8]. Static facial suspension procedures traditionally involve suspension of the mid and lower face with a sling consisting of variable materials. Static facial suspension is usually performed in conjunction with a traditional unilateral face-lift on the paralyzed side for further elevation [9].

Various modifications have been done in sling procedure including use of alloplastic materials (Gore-Tex, and AlloDerm), introduction of multivector suture techniques etc [10].



Fig. 9: Deviation of angle of mouth usually seen without sling

Recreation of the symmetry of lower face after moderate to large tumor excision and reconstruction is often difficult. Usually after reconstruction of such a complex and big defect using double flap, deviation of angle of mouth and drooping of lower lip is noted post operatively, bulk of the flap itself acts as major

contributor. The loss of facial nerve branches also contributes to the final deformity. This is cumbersome for both patient and surgeon with respect to cosmetic and functional results (Figure 9).

Although use of static sling is described in literature in lip reconstruction and following facial nerve resection. Prophylactic use of sling to prevent cosmetic and functional deformity in major facial reconstructions is not reported. We used fascia Lata sling before flap inseting to prevent post operative drooping of angle of mouth. Bone scan showed viable condyle and free fibula after 4 weeks. No deviation of angle of mouth or drooping of lower lip was noted in delayed follow up.

Advantages of Fascia lata sling

- ◆ Autologous tissue
- ◆ Easy to harvest
- ◆ Minimal to no donor site morbidity
- ◆ No need for extra procedure as ALT flap is commonly used in moderate to large defects

We present such rare diagnosis with extensive disease treated with functional and aesthetic reconstruction following oncologically safe resection and by prophylactic use of fascia lata sling to prevent post operative drooping of lip and oral commissure.

Conclusion

Use of fascia lata sling may be consider as an affective and prophylactic measure to prevent post operative deformity after cancer excision and reconstruction of lower face. Large series of cases may be required to provide more significant results.

Conflicts of Interest

None.

Reference

1. Lozano, R et al. "Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010". *Lancet*. 2010; 380(9859): 2095-128.
2. Sawair FA, Irwin CR, Gordon DJ, Leonard AG, Stephenson M, Napier SS. Invasive front grading: reliability and usefulness in the management of oral squamous cell carcinoma. *J Oral Pathol Med*. 2003 Jan; 32(1): 1-9.

3. Gillies H, Millard DR. Principles. Sir Harold Gillies and D Ralph Millard ed. The Principles and Art of Plastic Surgery. Boston: Little, Brown and Company. 1957; 48-54.
 4. Sawair FA, Irwin CR, Gordon DJ, Leonard AG, Stephenson M, Napier SS. Invasive front grading: reliability and usefulness in the management of oral squamous cell carcinoma. J Oral Pathol Med. 2003 Jan; 32(1): 1-9.
 5. Victoria L et al. Malignant triton tumor of head and neck: A case report and review of literature. Head and neck. 1999; 21: 663-760.
 6. Gordin E, Lee TS, Ducic Y, Arnaoutakis D. Facial nerve trauma: evaluation and considerations in management. *Craniomaxillofac Trauma Reconstr.* 2015 Mar; 8(1): 1-13.
 7. Robey AB, Snyder MC. Reconstruction of the paralyzed face. *Ear Nose Throat J.* 2011 Jun; 90(6): 267-75.
 8. Lemound J et al. Modified technique for rehabilitation of facial paralysis using autologous fascia lata grafts. J Oral Maxillofac Surg. 2015 Jan; 73(1): 176-83.
 9. Dzwierzynski WW, Sanger JR, Larson DL. Use of Mitek suture anchors in head and neck reconstruction. *Ann Plast Surg.* 1997; 38(5): 449-454.
 10. Liu YM, Sherris DA. Static procedures for the management of the midface and lower face. *Facial Plast Surg.* 2008 May; 24(2): 211-215.
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