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Case Report

A modification of the Abbe Estlander flap for lip defect reconstruction near the angle of the mouth

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ABSTRACT

Lips play an essential role in aesthetics and in vital functions such as nutrition and speech. The complex anatomy of the lips-comprising three distinct layers of skin, muscle, and mucosa-makes surgical management of this region a therapeutic challenge. Excision of malignant tumors is the most frequent cause of tissue loss. The abundant blood supply of the lips allows the use of flaps for reconstruction of large defects with minimal risk of necrosis. Squamous cell carcinoma is the most common malignancy affecting the lips, and the lower lip is most frequently involved. This study was conducted at the Department of Surgical Oncology, Saurashtra Cancer Care Research and Institute, Rajkot.

Keywords: Local flaps, Lower lip, Reconstruction, Squamous cell carcinoma

INTRODUCTION

The lips are an important part of an individual's persona contributing to aesthetics as well as having an important functional role.[1] Loss of lower lip tissue is disfiguring and disabling to the mouth in its primary functions of eating and speaking. The lips seal the orifice during chewing to prevent leakage to initiate swallowing.[2] Various conditions like oncology excision, trauma, and congenital deformities are among the major aetiologies that result in lip deformities compromising the aesthetics as well as function, thus requiring lip reconstruction.[1] We do not have a satisfactory replacement for lower lip. When replaced by another tissue, lower lip acts only as a dam and the remaining native lip performs all other functions.[2] According to the defect location and size, various lip reconstruction methods have been described. ''V ''or ''W'' shaped excision and primary closure are sufficient for smaller than 30 % lower lip defects. In 35-70% of lower lip defects, the Karapandzic, Abbe Estlander, McGregor or Gillies' fan flaps, the Nakajima or Schuchardt flaps or their modifications can be used. For larger defects free flaps are useful.[3] In 1872 Estlander emphasized the importance of the flap. Abbe, in 1898, was the first to switch a lower lip flap into the upper lip for a cleft deformity. Although this technique was described more than a century ago, it is currently used in many cases due to its efficiency, safety, good hemostasis, functionality, and positive cosmetic results. The aim of this work is to report a case of surgical reconstruction of the lip defect using a modification of Abbe-Estlander flap composed of skin and mucosa.[4]

In this study we have done modification of Abbe Estlander flap for angle of mouth reconstruction which is one staged procedure whereas in transoral Abbe Estlander flap patient needs to undergo commissuroplasty after 3 weeks of surgery.

CASE REPORT

Case 1

A 37-year-old Indian male, a labourer by profession, has presented with an elliptical, friable, ulcerating lip nodule

over left angle of mouth, measuring 2×2 cm across its long and short axes. Patient had history of tobacco chewing since 7 years. The patient reported no other medical problem or family history of melanoma or non-melanoma skin cancer. A 4-mm punch biopsy was taken and the pathology report showed a moderately-differentiated squamous cell carcinoma.

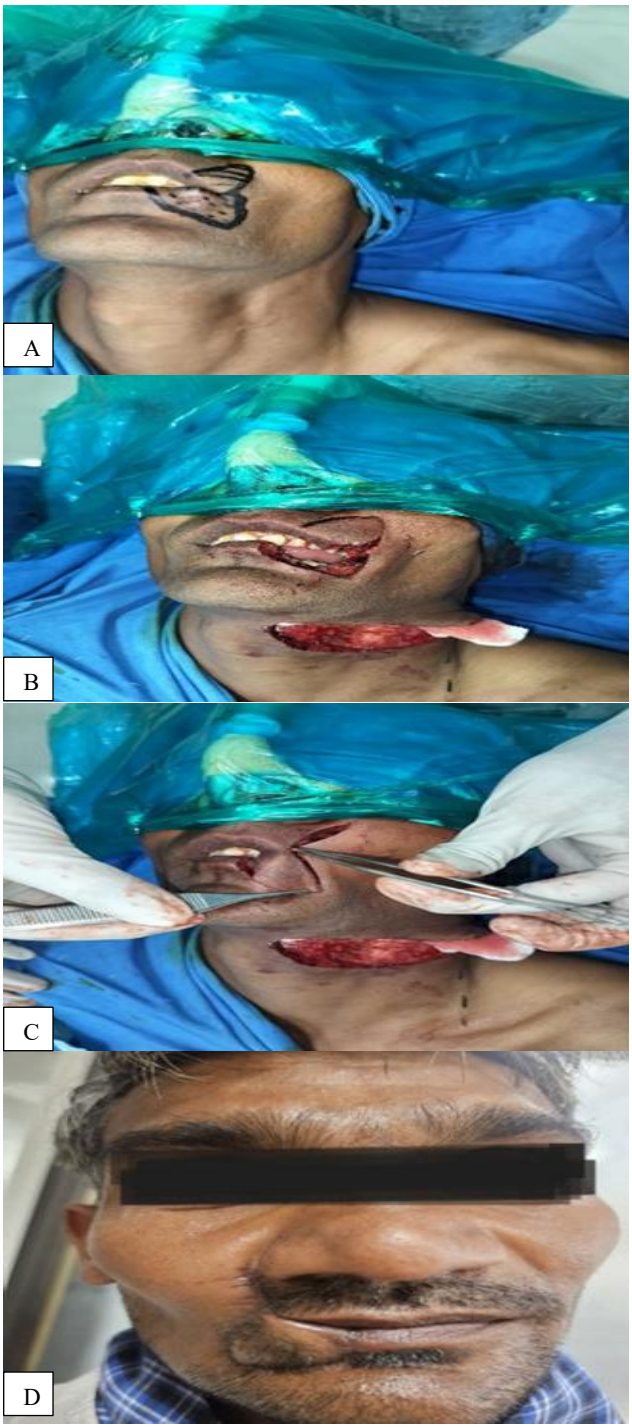

Figure 1 (A-D): Modification of Abbe Estlander flap was done for left lower angle of mouth defect. A-Before reconstruction. B-After removal of tumor, C-During reconstruction and D-Post operative follow up after 3 weeks.

Case 2

A 34-year-old Indian male, a labourer by profession, has presented with an ulcerating lip nodule over left angle of mouth, measuring 3×3 cm across its long and short axes. Patient had history of tobacco chewing in the last 10 years. The patient reported no other medical problem or family history. A 5-mm punch biopsy was taken and the pathology report showed early invasive squamous cell carcinoma.

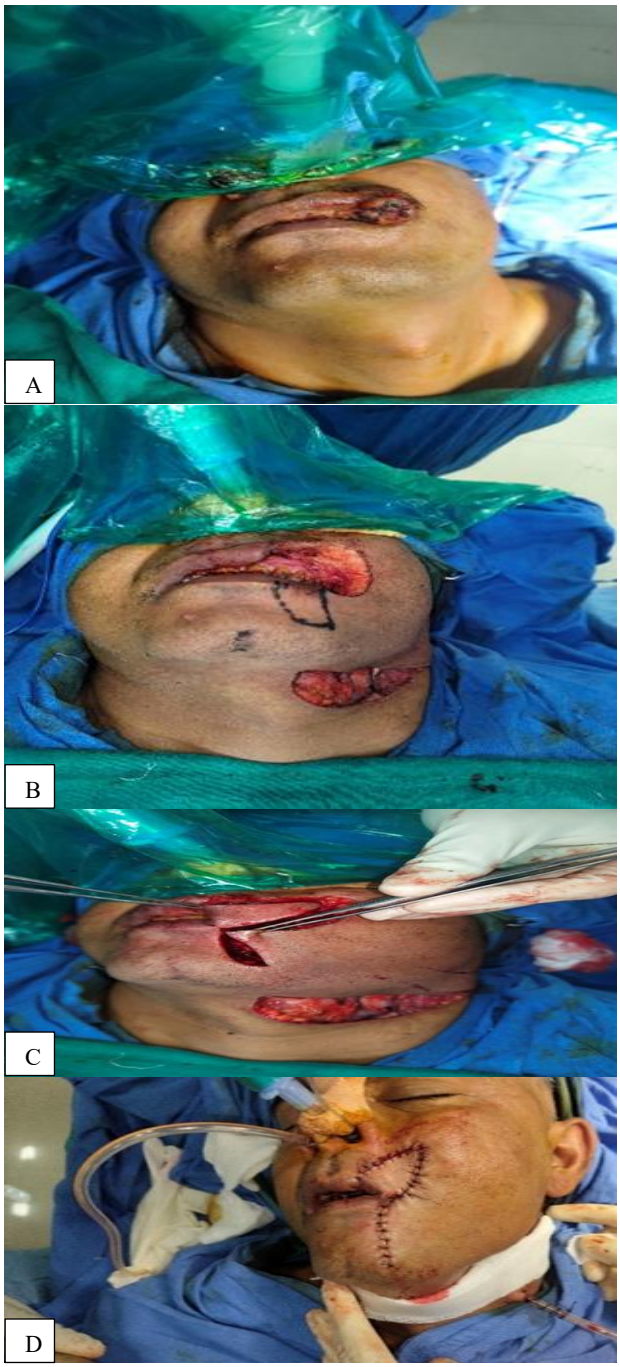

Figure 2 (A-D): Modification of Abbe Estlander flap was done for left upper angle of mouth defect. A-Before reconstruction, B-After removal of tumor. C-During reconstruction and D-After reconstruction.

Black arrow in (Figure 1 C and 2 C) mentions vascular supply being based on the circumoral labial arterial arcade (superior and inferior labial arteries). Pedicle sufficiency was confirmed intraoperatively by noting brisk capillary refill and active bleeding at the flap margins after temporary occlusion release.

We discussed different surgical options. After considering the size of the lesion and the risks and benefits of the different surgical techniques, we opted for wide local excision with modified neck dissection III followed by reconstruction with an Abbe-Estlander flap.

Preoperative workup included head and neck computed tomography, which revealed no infiltration of the tumor into the adjacent tissue or enlargement of local lymph nodes.

The procedure was performed under general anaesthesia. We used a scalpel with a #15 blade to remove the lesion with a 5 mm margin confirmed with frozen section. The flap was designed with parallel planes of skin and mucosa in a portion of the upper lip. The flap was then advanced and twisted following the wedge resection of the tumor to create a new oral commissure. Modified neck dissection type III was done in both the cases. The pathology report of case 1 provided the final diagnosis of moderately differentiated squamous cell carcinoma of the lip (pT2N0) and lymph nodes were not involved. The pathology report of case 2 provided the final diagnosis of early invasive squamous cell carcinoma of the lip (pT2N0). Post operative recovery was uneventful. Patient tolerates liquid diet on post operative day 1 and shifted to full diet afterwards. The patients reported that they hardly experienced weakening of orbicularis oris muscle strength or oral incontinence of solid or liquid content. The degree of microstomia, which is considered more or less inevitable with the lip switching flap procedures, was considered acceptable, given especially the size of the primary defect which eventually normalized functionally.

DISCUSSION

Lip reconstruction remains a challenging task due to multi-functional and high aesthetic requirements that have to be achieved for successful outcome. Despite the fact that numerous flaps and their modifications have been described over the past century, only a few valuable techniques and concepts withstood the test of time for sub-total lower lip defects, each having their own drawbacks. Ideal lower lip reconstruction should maintain adequate oral aperture, orbicularis muscle function and sensate skin and mucosal lining to allow speech, oral competence and facial expressions.[5] Lip defects can either be classified as partial defects that involve only skin or mucosa or full-thickness defects involving skin and muscle, with or without mucosal involvement.[6]

More often than not, the goal is to utilize a smaller sized flap of the upper lip to make up for a larger defect on the lower lip, where lip malignancies, mostly squamous cell carcinoma, occurs with a greater frequency.[7]

When properly executed and appropriate postoperative care is given, the Abbé-Estlander flap surgery is associated with minimal risk of flap failure. Our patient was free from any significant postoperative morbidity such as wound dehiscence or necrosis.[1] Our patient has not experienced any difficulty in phonation or lip incompetence up to three- month postoperative follow-up.

CONCLUSION

To author's knowledge, the effectiveness and long-term results of the Abbé-Estlander flap in Asian population have not been seriously looked into in previous literature, in the form of case reports or otherwise. We posit that even with the myriad of reconstructive options is at available today, the old Abbé-Estlander lip-switching flap is still the technique surgeons can fall back on for lower lip defect reconstruction in Asian surgical candidates.

To conclude, Abbe Estlander flap is a reasonable local flap that can be utilized for all age group of patients with minimal morbidity and failure rates with excellent cosmetic and functional outcomes.

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