Use of Combined PMMC and Nasolabial Flap for Reconstruction of Full Thickness Cheek Defect Involving Lip Commisure

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Abstract Head neck cancer constitute significant cancer burden and among it carcinoma of oral cavity involving buccal mucosa is most common entity in India. Very often it involves lip commisure. Radical surgery along with radiotherapy still remains treatment of choice. Reconstruction of composite defect of oral cavity following ablative surgery remains difficult task. Reconstruction of lip commisure defect after primary tumor excision is still a big challenge. Micro vascular technique primary repair is main modality of treatment which needs great surgical expertise in plastic surgery which is not possible in every institution. We propose a novel surgical reconstructive technique of use of combine pectoralis major myocutaneous flap (PMMC) with nasolabial flap for full thickness cheek defect involving large lip commisure. Both flaps having distinct advantage of relative ease in elevating flap and robust vascularity with acceptable aesthetic and functional outcome.

Keywords Oral cancer · Buccal mucosa · Lip commisure defect · PMMC · Nasolabial flap

Introduction

In India head neck cancer carries significant cancer burden and among it the gingival–buccal complex (alveolar ridge, gingival–buccal sulcus, buccal mucosa) forms the most common subsite for cancer of the oral cavity in contrast to cancer

of the tongue that is more common in the western world [1]. Quiet often it involves lip commisure and adjacent cheek skin. Radical surgery fallowed by radiotherapy remains treatment of choice for such lesion. Reconstruction of composite defect of oral cavity fallowing ablative surgery remains difficult task. Lip commisure carries significant contribution in maintaining structural integrity and competence of oral cavity. Repair of cheek along with moderate to large lip commisure defect as an aesthetic and functional unit is big challenge to surgeon after primary excision of tumor. Microsurgical technique is now main surgical protocol in major cancer centre but this requires great expertise and such intensive reconstruction cant offered to patient everywhere due to infrastructural constraints. Primary closure of such defect may lead to microstomia which compromise functional out come in did as well aesthetically. Pectoralis major myocutaneous flap (PMMC) with deltopectoral flap, Forehead flap lead to donor site morbidity. Bipedal Pectoralis major myocutaneous flap with lip commisure lead to oral incompetence. We here describe a novel surgical reconstructive technique of use of combine pectoralis major myocutaneous flap (PMMC) with nasolabial flap for full thickness cheek defect involving moderate to large lip commisure with acceptable aesthetic and functional outcome.

Surgical Technique

Composite Hemi-Mandibulectomy with Modified Radial Neck Dissection with PMMC and and Nasolabial Flap Reconstruction under General Anesthesia

After Modified Radical neck dissection sparing internal jugular vein and spinal accessory nerve T4 primary lesion involving mandible and lip commisure, composite resection of

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primary lesion with hemi-mandibulectomy done taking 2 cm margin of normal tissue. After resection of primary tumor size of mucosal defect is measured according to it skin paddle over pectoralis major muscle is marked. Pectoralis major myocutaneous flap (PMMC) flap is elevated in conventional manner and pulled in neck and inserted into defect sutured to remaining mucosa. For covering skin defect and commisure size of defect measured to harvest inferior based nasolabial flap and it rotated inferiorly and sutured so that superior margin of flap to lower lip defect and lateral margin to outer most margin of inserted PMMC flap. (Fig. 1) All patients do well with initial nasogastric tube feeding for 8 to 10 days followed by oral feeding. Post operatively patient had oral incompetence for 1–2 week like drooling of saliva and spillage of liquid diet which settled over 3–4 weeks of time. Final result is very acceptable in functionally, aesthetically and no microstomia (Fig. 2).

Discussion

Reconstruction of complex oral defect following radical excision of oral cancer is a great challenge to head neck surgeon. Various method have been described to reconstruct these defect including skin graft, fasciocutaneous flap, facial skin flap, myocutaneous flap and free flap [2]. Choice of method of reconstruction depends upon type of defect, expertise of surgeon and availability of microvascular surgery facility. These flap either used alone or combination sometime to reconstruct defect.

Since Stephan Ariyan first describe the use of pectoralis major myocutaneous flap in 1979 [2] in head and neck reconstruction it has become work horse of head and neck surgery with distinct advantage of ease of harvesting ,reliable blood supply, ability to provide bulk Pectoralis major myocutaneous flap became great choice among majority of head and neck surgeons. Skin paddle of PMMC supplied by perforating

Fig. 1 Intraoperative photograph

Fig. 2 Three month post operative photograph

vessel of thoraco-acromial artery. Various modifications of pectoralis major myocutaneous flap are described including unipaddle, bipaddle, osteocutaneous flap. In addition PMMC flap cover the carotid artery and restore the contour of neck following comprehensive neck dissection [3, 4]. It can use alone or with combination of other flap. There is minimal donor site morbidity as donor site defect can closed primarily.

Nasolabial flap is an arterialized local flap in head and neck region with axial blood supply provided either by facial artery, transverse facial artery (inferior based) or superficial temporal artery and infraorbital artery (superior based) [5]. First reported in end of 19 century [6]. Due to rich sub dermal plexus the flap can be used either a random flap based or as axial pattern flap. A subcutaneous pedicled flap can be also raised as laterally or inferiorly based [7]. It is reliable versatile and easy to raise flap for range of defect in orofacial region. The orientation of the pedicle is usually determined by the location of the defect and the requirement of rotation or advancement of appropriate tissues to the defect. The flap thickness is also determined by the needs of the defect as well as the thickness of the donor tissues. The flap can be as thin as deep to the sub dermal plexus, and as thick as superficial to the facial musculature with their nerve supply intact [5].

Flap dissected in supramasculary plane keeping base of flap as thick as possible. The flap can be superiorly based to reconstruct defects on the cheek, side wall or the dorsum of the nose, alae, collumula and the lower eye lid. Inferiorly based flaps can be used to reconstruct defects in the upper lip, anterior floor of the mouth and the lower lip. The flap can be turned over and used as a lining of the nose and the lip [8]. The proximity to the recipient defects, the best colour match and the satisfactory contour created from the relatively hairless areas utilized from the nasolabial fold are the other major advantages [9]. Again nasolabial flap can use alone or with combination of other flap.

In this present surgical technique combine use of pectoralis major myocutaneous flap and nasolabial flap to reconstruction of

cheek along with lip commissure defect after primary tumor excision is technically less demanding with good result. Even though primary closure of lip commissure is often advocated for competence of oral cavity after surgery it can lead to microstomia that can get progress over time and even more in coexistence with sub mucous fibrosis [10]. To avoid such problem we proposing novel technique of combine use of PMMC and Nasolabial flap to reconstruct full thickness cheek defect involving lip commissure which technically less demanding and get over with problem of microstomia post operatively. Result is also functionally and aesthetically acceptable.

Compliance with Ethical Standards

Conflict of Interest No

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