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A Case Report of Nasolabial Flap for Reconstruction of Buccal Mucosa in Verrucous Carcinoma

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Abstract

Verrucous carcinoma is a variant of squamous cell carcinoma. It most commonly affects the oral cavity with buccal mucosa being the commonest site affected. Clinically it has proliferative finger like projections or a cauliflower like appearance which is a significant factor in its diagnosis. It is more common in tobacco users who majority of the times are males.

Though verrucous carcinoma is described as a lesion with minimum aggressive potential but long-standing cases have shown transformation into squamous cell carcinoma. Therefore, early diagnosis and surgical excision of the lesion is the most appropriate treatment modality of verrucous carcinoma. In this paper we discuss a case of 35-year-old male with verrucous carcinoma of left buccal mucosa.

Keyword: *Verrucous carcinoma, Wide local excision, nasolabial flap, reconstruction.*

Introduction

Oral Verrucous Carcinoma (OVC), a variant of Squamous Cell carcinoma (SCC), was first described by Lauren V Ackermann in 1948 so it was known as 'Verrucous Carcinoma of Ackermann" or "Ackermann's Tumor". [1] Other names used in literature are Buschke-Loewenstein tumor, florid oral papillomatosis, epitheliomacuniculatum, and carcinoma cuniculatum. [2] The oral cavity is the most common site of occurrence. In addition, it is known to occur in the larynx, pyriform sinus, esophagus, nasal cavity and paranasal sinuses, external auditory meatus, lacrimal duct, skin, scrotum, penis, vulva, vagina, uterine cervix, perineum, and the leg.[3] OVC is more common in men in their sixth decade, has a sluggish growth rate, and can become locally invasive if not appropriately treated. But distant metastases is rare. Clinically, it presents as a plaque like lesion with finger like projections resembling cauliflower [4]. Tobacco in both smoking and smokeless form, alcohol and opportunist viral infections are the most associated etiologies with OVC. [4,5]. Most cancerous tumours of the head and neck cannot be adequately treated without surgical excision.

Head and neck cancer resection leads to complex defects that are difficult to reconstruct. In addition to the anatomical defect, the functional loss, cosmetic disfigurement and the accompanying psychosocial effects can be devastating to the patient. The various reconstructive options range from simple primary closure, skin grafts, locoregional flaps and pedicled flaps to more complex

microvascular free flaps. A combination of local and distant flaps is required to optimize the functional outcome after oral reconstruction.[6] Designed as a true myocutaneous flap pedicled on the facial artery, the nasolabial flap is a robust and versatile flap that is well suited to single-stage reconstruction of oral cavity defects or to staged reconstructions of facial defects [7].

We report a case of male patient with verrucous carcinoma of left buccal mucosa treated with wide local excision and reconstructed with nasolabial flap.

Figure 1: Exophytic growth

Case Report

A 35-year-old male patient reported to Goenka research institute of dental science with the chief complain of pain and abnormal growth in left cheek region since 4 months (Figure 1). Patient noticed a small, painless growth over the left buccal mucosa 4 months back which gradually grew to the present size of approximately 4*5 cm. Patient developed pain 4 months back which was initially mild and intermittent but has aggravated for 20 days. Patient had visited government hospital 2 weeks back with the same complain and was prescribed a course of antibiotic and analgesics. Patient had habit of chewing masala 5-7 packets per day since last 10 years. Patient gave no relevant medical or family history. On general examination patient had normal gait and posture and was well oriented, conscious and moderately built. Submandibular lymph node was palpable of approximately 1.5 cm by1 cm in size, ovoid in shape, tender on palpation, mobile and firm in consistency.

On local examination, on inspection: - intraorally there was presence of solitary proliferative growth over the left buccal mucosa (FIGURE 1). From 26 to 35 to the posterior aspect anterioposteriorly and

from upper gingivobuccal sulcus extending till lower gingivobuccal sulcus The lesion was approximately 4x5 cm in size, well defined with irregular margins. Surface of the lesion was irregular at the periphery with finger like projections in the center. Colour of the lesion shows mix red and white appearance but more likely white appearance is seen.

On palpation, inspectory findings of size, site, surface, shape were confirmed. Lesion was tender and elevated from adjacent mucosa with irregular and firm margins. Lesion has pedunculate base, with firm consistency and growth was adherent to the base. There was no bleeding or pus discharge from the lesion.

Based on the clinical examination a provisional diagnosis of carcinoma of left buccal mucosa was given. Differential diagnosis of verrucous leukoplakia of left buccal mucosa, verrucous hyperplasia, verrucous carcinoma was given.

Punch biopsy revealed acanthotic, hyperkeratotic and papillomatous squamous mucosa with blunt as well as irregular rete ridges. Moderate atypia is seen. Definite invasion is not seen.

CT scan revealed heterogeneously enhancing hypodense lesion with irregular margins in buccal mucosal space on left side.

Overall features and investigations gave final diagnosis of verrucous carcinoma of left buccal mucosa.

The best treatment modality of OVC is surgical resection of the carcinoma.[16]. So, based on histopathological, radiographic and clinical findings, the surgical procedure of SOHND, wide local excision followed by reconstruction by harvesting nasolabial flap was planned.

Pre-operatively, broad spectrum antibiotic coverage was given. Under general anaesthesia, first neck dissection was done depending on the level of neck nodes which was SOHND involving clearance of level 1a-submental, 1b- submandibular, level 2- upper jugular, level 3- midjugular lymph nodes and Internal Jugular Vein, Sternocleidomastoid muscle, Spinal Accessory Nerve was preserved. Facial vessel was ligated. (FIGURE 2)

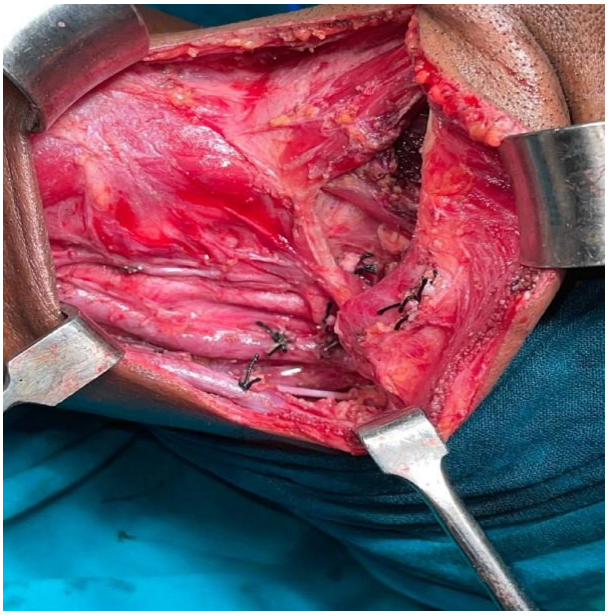

Figure 2: Ligation

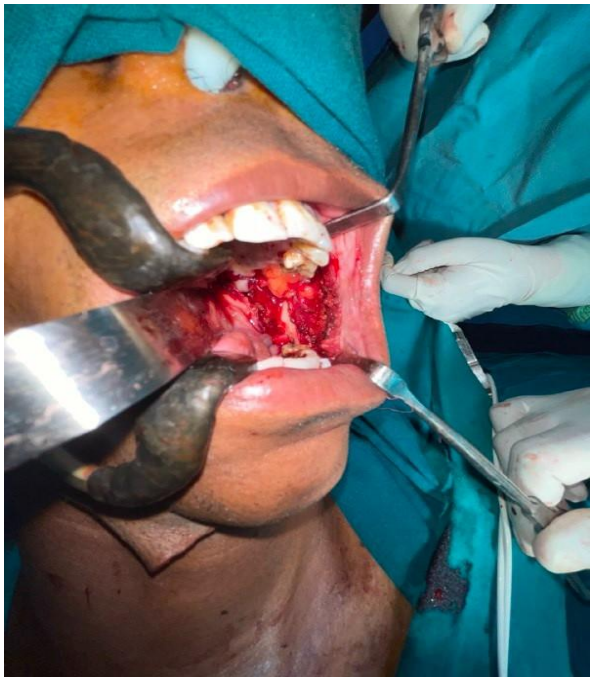

Figure 3: Wide local excision

Now, intraorally the defect on the left buccal mucosa was excised by wide local excision (FIGURE 3) leaving 1-2 cm healthy margins and multiple tooth extraction followed by reconstruction with nasolabial flap (FIGURE 4).

Figure 4: Nasolabial flap

For harvesting nasolabial, A fusiform-shaped flap is marked, ensuring that the medial border of the flap is on the nasofacial groove on the same side of the defect. An inferior based nasolabial flap was chosen. Flap dimensions were determined based on the size and location of defect.

Average flap dimensions are 2.5 cm in width and 6 cm in length. The superior border of the flap is inferior to the medial canthus along the nasofacial junction.

The skin incision is carried through the dermis and subcutaneous fat to the level of the underlying musculature. The artery lies in a plane deep to the facial musculature and in a medial position along the nasofacial groove. The flap is elevated in a superior-to-inferior fashion in a plane deep to the facial musculature, artery and vein, with the artery identified carefully by blunt dissection. Thus, a musculocutaneous flap is developed, pedicled on the facial artery. The flap is then tunnelled through the buccal space and repositioned over the intraoral defect. The donor site is irrigated with povidone iodine solution and normal saline. Donor site closure was done in layers with 4-0 Vicryl providing deep dermal closure (FIGURE 5) and 4-0 Ethilon to approximate the skin edges (FIGURE 6)

Figure 5: Intra oral closure

Figure 6: Donor site closure

Discussion

OVC traditionally occurs more commonly in older males, above the sixth decade. We observed similar demographics wherein the male patients were more preponderant and the mean age at presentation was between the fifth and sixth decade. Although there is a striking male preponderance to OVC, there are studies where equal sex distribution and female predominance has been demonstrated. Tobacco chewing is a significant etiologic factor for the development of OVC. Lesions often develop at the site where the tobacco was placed habitually.[25]

The strong association of OVC with smoking, alcohol, and HPV infections is well known. Oral SCC and OVC are known to be associated with poor dental hygiene, ill-fitting dentures, low socioeconomic status, tobacco chewing, snuff and alcohol use, and smoking.

Rajendran et al. recorded leukoplakia in association with OVC in 48% of their patients. The clinical association with leukoplakia and OVC is significant since untreated longstanding leukoplakia could progress to a verrucous cancer in time. [26]

OVC has a characteristic gross appearance. These lesions are almost always large, exophytic, soft, fungating, slow growing neoplasms with a pebbly mamillated surface. In general, OVC are locally aggressive, but have a low propensity for regional as well as distant metastasis. s. It must be noted that although it is a rare occurrence, metastasis from OVC has been reported.

To confirm the difficulty in the diagnosis of a VC on incisional biopsies.[1] Because it is cytologically benign, besides the focal basal cell nuclear hyperchromatism, distinction from VC and verrucous hyperplasia (VH) cannot be based only on cytologic features. [17,18] Differential diagnosis of verrucous carcinoma includes: (i) squamous cell carcinoma showing verrucoid features, (ii) Proliferative verrucous leukoplakia, (iii) epithelial hyperplasia, (iv) pseudoepitheliomatous hyperplasia, (v) verruca vulgaris, (vi) keratoacanthoma.[19]

The need for neck dissection is an important consideration in planning therapy for OVC. Studies, suggest that lymph node dissection in OVC should be confined to immediately adjacent lymph node groups only and in cases, where any possibility of increased morbidity or mortality may arise from inclusion of neck dissection with surgical excision, it could be omitted entirely. It is reasonable to consider a selective neck treatment such as a SOHND in situations where there is uncertainty regarding the pathological diagnosis in the face of clinically suspicious lymphadenopathy.

OVC have an excellent prognosis with surgical management. The significance of positive margins emphasizes the need for surgical resection with adequate margins followed by reconstruction.

Reconstructive options for small to moderate defects of the orofacial region range from skin grafts, local flaps, regional flap up to free tissue microvascular flaps with its optimum reconstructive impact especially in composite defects.

Even relatively small defects of the oral cavity and face often require reconstruction to avoid anatomic distortion and subsequent limitation of function.

Skin graft can undergo contraction and abnormal pigmentation, and there is higher risk of graft rejection. Microvascular free flap needs a significant surgical expertise, increases the operative time, makes hospital stay longer and consequently increases cost of the overall treatment.

Regional flaps can be used such as Radial Forearm flap, Anterolateral Thigh flap which can create another surgical site and can be chosen for large defects.

The nasolabial flap is widely used in oral and facial reconstruction, due to its accessibility, reliability and lesser operative time and because it is easy to master.

Pectoralis major myocutaneous flap is rather a bulky flap that makes it difficult to insert inside the defect and adds an extra soft tissue bulk in the neck. It cannot be used for small to-medium-size intraoral surgical defects.

The pedicled temporalis muscle flap has its role for craniofacial and intraoral reconstruction especially retromolar area and cheek resection defects., The commonest problem with this flap is postoperative trismus which can be prevented by performing coronoidectomy that increase the operative time and adds morbidity at the operative site.

The versatility and usefulness of the nasolabial flap is well known. The flap has a good vascular supply; hence, survival is high. An abundant blood supply allows for a length to breadth ratio of 3:1. The flap is good for small and intermediate (T1 to T3) intraoral defects. The blood supply of the nasolabial flap is attributed mainly to the facial artery. However, this artery was ligated in the neck dissection in our case without any adverse effect on the viability of the flap, indicating that it may not be the facial artery but is more probably the rich subdermal plexus that supplies the skin flap. [24]

Use of nasolabial flap is well-known for reconstruction of nasal, cheek, lower eyelid, tongue and buccal mucosa, floor of mouth, maxillary gingiva and lip defects. In a study by Singh et al., [26] patients with oral cancer underwent reconstruction of oral defects using nasolabial flaps. The site of the primary tumour was the buccal mucosa in 11 patients, the tongue in four patients, the lip with commissure

involvement in seven patients and the lower alveolus in four patients; 5 cases had buccal mucosa lesion, and 1 case had ala defect [27]

The nasolabial flap has traditionally been described as an axial flap that depends on the angular, infraorbital, transverse facial and dorsal nasal arteries of the face. However, the vast number of anastomoses and the rich subdermal vascular plexus also mean that it can be utilized as a random skin flap.

It is possible to create flaps based on a medial or lateral pedicle; an inferior pedicle, useful in the reconstruction of labial and oral cavity defects; or based on a superior pedicle, useful for defects affecting the tip or ala of the nose, cheek or lower eyelids. In a study by Lakawale et al., in 2016, 18 consecutive cases of oral cavity cancer underwent flap reconstruction with inferiorly based nasolabial flaps without any donor-site morbidity except a scar. [28]

Lazaridis et al. describe a study in which 9 patients underwent single-stage surgical interventions for the reconstruction of intraoral defects with nasolabial flaps, four of them involving a superior pedicle. In addition to a good aesthetic outcome, the incidence of postsurgical trismus is reduced due to the proximity of the donor region during the reconstruction, enabling a primary closure with little tension [29].

In a single-stage intervention, it is preferred to de-epithelialize the base of the flap, bringing about the primary closure of the donor region and omitting the need for a second intervention, thus avoiding further surgery, its associated cost and greater morbidity for the patient. It is possible to perform this reconstruction with a nasolabial flap as a two-stage surgical intervention. The procedure is similar to that of the single-stage intervention described, but after tunnelling the pedicle and suturing it intraorally, a further 1 to 3 weeks must elapse before the pedicle can then be dissected.

The disadvantage of this method of reconstruction is the need for a second-stage procedure in some of the cases, where a buccal tunnel is used for insetting the flap or a second-stage commissural correction is required. These procedures are minor and so can be done under local anaesthesia. There may be other problems, such as cheek biting or a bulky base of the flap passing over the alveolus, causing problems in those wearing dentures, especially when the flap is used to repair alveolar defects. Smoking is also associated with an increased risk of flap failure because smoking has deleterious effects on flap survival by aggravating hypoxemia and vasoconstriction.

Conclusion

Verrucous carcinoma presents as thick warty keratotic lesion which is more common in males and is usually painless or asymptomatic and surgically treated by wide local excision followed by reconstruction using various local and regional flap. The surgeon's choice of flap for reconstruction is nasolabial flap as it has various advantages over regional flaps. The nasolabial flap proves highly versatile in oral cavity and facial reconstructions. The nasolabial flap is a simple, effective and safe flap with a low complication rate. Nasolabial flap is associated with good aesthetic and functional results. It is easy to carry out and has a high success rate, making it the ideal surgical option for small-to-medium intraoral defects. As even small defects require reconstruction, the nasolabial flap has proven to be a useful and reliable alternative without causing much morbidity to the donor site.

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