Carcinoma buccal cavity: Late presentation and salvage, experience from a North Indian center

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Abstract Carcinoma buccal cavity, the most common oral cavity cancer was seen in our set up in more than 50% cases. Forty patients of carcinoma buccal cavity were studied at JN Medical College, Aligarh Muslim University, and Aligarh over a period of last 5 years (2003–2008). Mean age at presentation 36.5 years (30–55) years. Male: Female, 27:13. Most common association was with smoking and chewing tobacco and pan over a mean long period of 15 years (8–22 years). Most common location was lateral wall of buccal cavity over cheek area related to their typical chewing habit of keeping the tobacco over that area over a prolonged period. Most of them, more than 90% (36 cases) presented late involving both mucosa and skin and in 25% cases also involving the alveolus and mandible. Wide excision and modified radical neck dissection with or without mandibulectomy (marginal, partial or hemimandibulectomy) done in all cases. Reconstruction was done by pedicled pectoralis major (PM) and deltopectoral (DP), the workhorse flaps for head and neck reconstruction for mucosal lining and skin cover respectively in 25 cases. Five cases needed only lining done by PM flap. Ten cases were salvaged by pedicled forehead flap for both lining and cover. All the cases healed properly with acceptable results and good functional recovery. Two cases reported recurrence treated with postoperative radiotherapy. Poor socioeconomic status, smoking and chewing habit, poor

oral hygiene, malnutrition and moreover lack of awareness led to late presentation. However, an attempt was made for salvage at our center.

Keywords Carcinoma buccal cavity · Late presentation · Salvage

Introduction

Oral cavity cancer constitutes 80% of head and neck cancer with annual incidence of 31,000 Americans and 3,50,000 populations world-wide. It is the 6th most common cancer world-wide [1]. One patient dies from oral cancer every hour in the US. It has high mortality, 50% live <5 years following diagnosis. It is a disease of middle age and elderly males. Ninety-five percent present over the age of 40 years out of which 66% are males. Known risk factors for oral cavity cancer includes alcohol and tobacco apart from genetic predisposition and low socioeconomic status. Over the years, incidence of oral submucous fibrosis in the population has increased manifold especially among younger generation, possibly leading to a further increase in incidence of oral cancer related to rising trend of betel and tobacco chewing in the population. In the developing world, oral cavity is the fourth commonest site of carcinoma after lung, stomach and liver in males while in females it is the fifth commonest cancer after cervix, breast, stomach and lung [2].

Site-specific data from different parts provide various trends and give clues to the etiological factors responsible for these variations. Squamous cell carcinoma is the most common pathology in the buccal mucosa.

Relevant anatomical and functional aspects

The American Joint Commission on Cancer [3] defines the

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buccal mucosa as the membrane lining of the inner surface of the cheeks from the line of contact of the opposing lips anteriorly to the line of the pterygomandibular raphe (lateral to retromolar trigone) posteriorly. The medial boundary is the line of attachment of the buccal mucosa to the upper and

Fig. 1 Topography of oral cavity

lower alveolar ridges (Fig. 1).

The layers of the cheek from medial to lateral include the mucosa, pharyngobasilar fascia, buccinator muscle, buccinator fat pad, subcutaneous tissue and skin. Sensory innervation of the buccal mucosa and cheek skin is from the maxillary and mandibular branches of the trigeminal nerve. The buccinator muscle is innervated by the facial nerve. The parotid duct (Stenson duct) pierces the buccinator muscle and buccal mucosa opposite the maxillary second molar.

The buccal region lacks anatomic barriers beyond the buccinator muscle and its fascia to prevent the spread of cancer. Buccal cancer can spread laterally to extend through the skin of the cheek; medially to involve the alveoli, palate, tongue, and floor of the mouth; posteriorly to involve the retromolar trigone mucosa, the ascending ramus of the mandible, and the masseter and pterygoid muscles; and anteriorly to involve the oral commissure and lips.

The primary-echelon lymphatics of the buccal mucosa drain to the facial and submandibular lymph node basins prior to the upper jugular nodes. The lymphatics may occasionally drain to the upper jugular nodes via the parotid nodes.

As the orifice of the upper aerodigestive tract, the oral cavity plays a critical role in breathing, speech, and swallowing. The buccal region is particularly important in bolus formation, preventing food from spilling into the lateral oral gutters or extraorally during the oral preparatory phase of swallowing. Cancer of the buccal mucosa and subsequent treatment of the disease may interfere with these functions.

Material and methods

The present study was carried out in the Plastic Surgery Department of JN Medical College and Hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, India. A total number of 40 patients with buccal cavity carcinoma were studied between year 2003–2008. Patients were referred from ENT, General Surgery and Radiotherapy units of the hospital. All patients were assessed in terms of age, sex, genetic predisposition, risk factors, sites involved and involvement of adjacent structures including regional lymph nodes and staging of the tumors as per the American Joint Committee on Cancer (AJCC) staging system. Apart from routine investigations for fitness of these patients for undergoing surgery under general anesthesia, they underwent preoperative confirmation of diagnosis by histopathological examination, metastatic work up including orthopantomogram (OPG), CT scan of head and neck region and chest X-ray PA view. The patients were subjected to wide excision of the tumor, 1–1.5 cm from the palpable margin of the tumor with modified radical neck dissection followed by reconstruction. Patients were followed up in OPD after 1 month and then every 3rd month for evidence of local recurrence, mouth opening and assessment of other functional aspects. The patients were subjected to postoperative radiotherapy for prevention of local recurrence.

Results

Forty patients presented with carcinoma buccal cavity out of total seventy six patients of oral cavity constituting more than 50% of all oral cavity cancers between 2003–2008. Mean age at presentation was 36.5 years (25–55) years with male predominance (Male:Female = 27:13). Mean duration at presentation was 3 months. Most common association was with smoking and tobacco chewing (gutkha and pan masala) with mean duration of more than 15 years (range 8–22 years). Most common location of the tumor was lateral wall of the buccal cavity. Most of them, more than 90% (36 cases) presented late involving both mucosa and skin and in 25% cases also involving the alveolus and mandible. Wide excision and modified radical neck dissection with or without mandibulectomy (marginal, partial or hemimandibulectomy) done in all cases. Reconstruction was done by pedicled pectoralis major (PM) and deltopectoral (DP), the workhorse flaps for head and neck reconstruction for mucosal lining and skin cover respectively in 25 cases. Five cases needed only lining done by PM flap. Ten cases were salvaged by pedicled forehead flap for both lining and cover. All the cases healed properly with acceptable results and good functional recovery. Two cases reported recurrence, treated with postoperative radiotherapy.

Case studies

Case -1

This patient, a 35-year-old male presented to us with growth left cheek of size 5×4 cm which started as a non-healing ulcer left buccal mucosa of 3 months duration (Fig. 2). Preoperative biopsy revealed well differentiated

Fig. 2 35-year-old male with carcinoma left buccal cavity presenting as a fungating ulcer from left cheek

squamous cell carcinoma. OPG of the same patient showed involvement of left body of mandible. Patient underwent wide local excision of the tumor (1.5 cm from the palpable margin), modified radical neck dissection removing all fibro fatty tissue, lymphatics and lymphnodes preserving the sternocleidomastoid muscle, internal jugular vein and spinal accessory nerve, Segmental mandibulectomy left side followed by reconstruction with ipsilateral pedicled PM myocutaneous flap for mucosal lining tunneled subcutaneously above the clavicle through the neck to the defect area and DP flap for skin cover. Pedicled DP flap was detached after 3 weeks. Postoperative resected specimen revealed tumor free margin and no lymphnode metastasis. Patient was followed up at 6 months patient was followed up at 6 months with no recurrence of the tumor, adequate mouth opening and good survival of both the flaps (Fig. 3).

Case-2

A 55-year-male showing carcinoma right sided buccal cavity of 5 months duration involving right commissure of 5 months duration started initially as a non-healing ulcer non-responsive to conservative treatment with severe restriction

Fig. 3 Showing good lining and cover after DP flap detachment and inseting with adequate mouth opening

of mouth opening. There was history of chewing tobacco and gutkha for 25 years. Preoperative biopsy showed well-differentiated squamous cell carcinoma. OPG revealed involvement of right side body of mandible. Patient was treated with wide excision of tumor, modified radical neck dissection, right sided hemimandibulectomy and followed by reconstruction with ipsilateral PM myocutaneous flap for lining only as the skin over that side was preserved for cover. Postoperative recovery was good with well healed wound, good mouth opening and functions with biopsy revealing tumor free margin and no recurrence.

Case-3

A 32-year-old male showing non-healing ulcer of left buccal mucosa and presented as a growth of size 4×3 cm over left cheek (Fig. 4). Patient underwent wide excision of tumor, left segmental mandibulectomy neck dissection and followed by reconstruction. Postoperatively patient showed no recurrence and good healing (Fig. 5).

Discussion

Buccal cavity cancers form a major bulk of cancers among the oral cavity cancers. In our study they constituted more than 50% of oral cavity cancers. Data from Tata Memorial Hospital (TMH) registry (2001) shows buccal mucosa to be the commonest site among all oral cavity cancers [4, 5]. Mean age at presentation was 36.5 years. Oral cancers in young patients under 35 years constitute 2.8% of all cases of oral cancer seen at Regional Cancer Center, Trivandrum

Fig. 4 A 32-year-old male showing non-healing ulcer of left buccal cavity presented as a growth of size 4×3 cm over left cheek

Fig. 5 Showing detachment and inseting of the DP flap

in one series compared to 0.5% and 5% in western series [1, 6, 7]. There was male predominance of cancers related to their chewing habits which was in accordance to overall male predominance in all intra-oral subsites. Long history of tobacco smoking and chewing (gutkha and pan masala) was the most common association in our series which was also seen by the Kerala study group who opine that tobacco habits are a major determinant factor for buccal mucosa cancer compared to tongue cancer [1]. Most common loca-

tion was the lateral wall of the buccal cavity related to the typical chewing habits and the habit of storing the tobacco products in the buccal sulcus on lateral side of oral cavity. Most of the cases presented late i.e., stage 3 or stage 4 involving adjacent structures. They are definitely higher than those presented in earlier series [8]. More advanced stage lesions are seen with buccal mucosal cancer than tongue cancer. Late stage presentation might be due to prolonged tobacco chewing habits, maintenance of poor oral hygiene and moreover lack of awareness about the disease. Although they presented late, all were salvaged at our center with almost less recurrence emphasizing thereby the importance of complete tumor clearance with adequate modified radical neck dissection.

Choice of reconstructive options depends on various factors such as site, size of defect, type of tissue required, functional and cosmetic implications of the defect, associated co-morbidities and availability of resources. In most head and neck defects, there is often an ideal reconstructive option. This however needs to be selected depending on the factors related to the anatomical and functional defect and also based on the patient factors and the available expertise. The surgical treatment of malignant tumors of the cheek often involves extensive surgery. A full-thickness cheek defect is a reconstructive challenge technically, functionally, and cosmetically.

The concept of primary reconstruction of head and neck cancer surgery began with the advent of DP, forehead and PM myocutaneous flaps [9]. A number of options exist for the reconstruction of full-thickness cheek defects, such as folded forehead flap [10], folded trapezius flap [11], bipaddle PM myocutaneous flap [12], rectus abdominis free flap [13], distal forearm flaps, anterolateral thigh flap, and double flaps [14].

For years, PM myocutaneous flap has been the workhorse flap for reconstruction of a variety of defects in the head and neck region because of its good vascularity, ease of dissection and availability adjacent to the defect site.

Though the reliability and utility of free tissue transfer has been established in the head and neck cancer, the technique is not frequently adopted because of various reasons. Surgical expertise, the time factor and questionable benefit in advanced cases with poor prognosis are some of the factors to be considered in these types of patients. Free flaps are also associated with some drawbacks like the need for vigorous monitoring and re-exploration if required. Donor site morbidity limits its use in patients with co-morbidity. The cost-effectiveness of free flaps has also been reported as no worse than the pedicle flaps [9]. For posterior mandibular defects, PM myocutaneous flap is the preferred reconstructive option because of its reliability and ease of transfer [15].

Oromandibular function is generally impacted very little in marginal mandibulectomy, although commonly

in dentate patients, additional teeth must be removed to facilitate the creation of a boat shaped osteotomy so as not to compromise the biomechanical strength of the residual bone [15]. Again, even in a dentate and younger mandible, a posterior defect may not cause as much functional and aesthetic problems as with central mandibular defects. The dental malocclusion that follows the mandibular drift may be partially rectified by the use of prosthetic guiding flanges and the deformity that results may not be aesthetically and functionally as devastating as central mandibular defects. Hence the absolute indication for mandibular reconstruction remains a central symphyseal defect. As all of our patients have a posterior and lateral side defects, so they were functionally and aesthetically acceptable.

Conclusion

Carcinoma buccal cavity was the most common cancer among all the oral cavity cancers in our centre. Younger age group patients were predominantly affected and came with very late presentation. Poor socioeconomic status, smoking and chewing habit, poor oral hygiene, malnutrition and moreover lack of awareness led to late presentation. However, an attempt was made for salvage at our center. Wide excision of tumor with modified neck dissection and immediate reconstruction was done in all patients which led to less recurrence restoring form and function. High index of clinical suspicion in high incidence areas should lead to further investigation in order to identify the disease in early stage, which is perhaps the only way to ensure good prognosis.

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