Pectoralis Major Myocutaneous Flap for the Reconstruction of the Palatal Defect

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Abstract It is always a challenge for the soft tissue reconstruction of the palatal defects in advanced malignancies of the oral cavity because of the higher chance flap failure. PMMC flap can be successfully used in patients with advanced malignancies to repair the palatal defect without any significant postoperative complication. In the present case, we have presented a case of malignant melanoma of gingivobuccal complex, involving the hard palate where the palatal defect was successfully reconstructed by the PMMC flap.

Keywords Malignant melanoma · Pectoralis major myocutaneous flap · Palatal reconstruction

Introduction

Oral cavity cancer is the most common among the malignancies affecting the head and neck region and later is considered as the leading cause of death in India. About 7% of the death in male and 4% death in female are reported because of the oral cancers annually [1, 2]. It could be due to addiction of the tobacco specially in chewing/keeping it in the gingivobuccal sulcus. Being an apex center in the eastern zone of India, most of the cancer patients present at an advanced stage of the disease which later becomes a surgical challenge for the soft tissue reconstruction. The low economic condition, nutritional

status of the patients, and the preexisting comorbidities are the main determining factors for the mode of the soft tissue reconstruction in these patients. Although free flaps have been used predominantly in the past decades for the soft tissue reconstruction, still pedicle flaps can be a reliable option for oral malignancies, especially for the patients with low socioeconomic corridor with the coexisting chronic comorbidities [3–5]. Again, the reconstruction of the free flaps is always a lengthy procedure as compared to the pedicle flaps which makes it difficult to overcome the huge patient load of oral malignancies.

It is always a challenge for the soft tissue reconstruction in cases of stage IV disease of buccal mucosa especially involving the hard palate because of the high chance flap failure. Later could be due to the gravitational pull of the PMMC flap due to the bulkier flap leading to failure of the flap. A contrast to the conventional belief, PMMC flap can be successfully utilized for oral cancers involving the hard palate without crossing the midline. In the present case we have documented a case of malignant melanoma of gingivobuccal complex with extending to the both hard and soft palates where the PMMC flap was effectively utilized to manage the large palatal defect.

Case Summary

A 35-year male presented with a pigmented lesion in the left side of the oral cavity for 6 months and occasional history of paroral bleeding for the past 3 months. On physical examination, a pigmented proliferative mass was found involving the gingival surface of the retromolar trigon extending laterally to involve the buccal mucosa and gingivobuccal sulcus, superiorly to involve the alveolar process and part of hard and soft palate (Fig. 1). There was

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Fig. 1 Tumour was found to involve the retromolar trigon (left), extending laterally to involve the buccal mucosa and gingivobuccal sulcus, superiorly to involve the alveolar process and the hard and soft palate

no palpable cervical lymphadenopathy detected in the patient. Contrast-enhanced CT scan revealed a soft tissue mass in the left RMT space involving the maxillary alveolus and palate without erosion of the palatal bone (Fig. 2). All routine hematological and biochemical investigations were found normal. Incision biopsy of the lesion showed spindle shaped tumor cells with prominent nucleoli, containing melanin pigment which was suggestive of malignant melanoma (Fig. 3). The contrast enhanced CT scan of the whole abdomen and chest were found normal. After a written and informed consent, patient was planned for definitive surgical intervention. Wide local excision (2.5 cm healthy margin) along with left segmental mandibulectomy and infrastructural maxillectomy was performed. The defect was reconstructed with pectoralis major myocutaneous flap (Fig. 4) spreading from the palatal margin to the floor of the mouth. The tumour was $7.2 \times 5.5 \times 4.9$ cm in size and weighing 72.2 g (Fig. 4). The patient was started on Ryle's feeding after 24 h of surgery and was discharged after 7 days after the stitch removal. Histopathological section was suggestive of malignant melanoma with tumour free resected margin without any lymphatic metastasis or the cortical bone of mandible. Patient is on regular follow-up in the oncology

Fig. 2 Contrast-enhanced CT scan revealed a soft tissue mass in the left RMT involving the upper alveolus and palate without erosion of the palatal bone

Fig. 3 Shows the harvest of the pectoralis major myocutaneous flap (left)

clinic for the past 6 months with well healed PMMC flap without any recurrence of the disease (Fig. 5).

Discussion

Although PMMC flap reconstruction has been described a long time ago by Ariyan [6], its role cannot be denied in spite of the universal use of the free flaps in the past decade [7–9]. It's because of the ease of harvesting the flap with the abundant availability of both the skin and soft tissue for the reconstruction of a large defect in the oral cavity

Fig. 4 Histopathological examination showed spindle shaped tumor cells with prominent nucleoli, containing melanin pigment (H&E 40X)

Fig. 5 Complete closure of the palatal defect with PMMC flap after 6 weeks in the postoperative period

[10–13]. Again, due to its close proximity to the primary tumour site and a definitive vascular pedicle, PMMC flap can be a standard pedicle flap for head, neck malignancies. Being bulky, it can be preferred in advanced oral cancers where there requires larger tissue transfer to reconstruct a defect. As described in the present case, PMMC flap was successfully utilized to reconstruct the mandible along with the palatal defect, especially in advanced oral cavity cancers. With respect of the flap survival, PMMC flap is found to be associated with nearly 100% flap uptake rate especially in mandibular reconstruction, but its role in the palatal repair is not well defined in the literature [14]. Because of the gravitational pull of the flap, PMMC it is not often used to repair the palatal defect. Keeping in mind the above facts, we have taken extra precaution to measure the exact length of the pedicle required and generously big

skin island was harvested to cover the whole defect. There was no major complication detected in the patient, although a small palatal fistula was detected in the after 2 weeks in the postoperative period, which was successfully get healed after 6 weeks. Hair growth in the oral cavity can be a problem in the postoperative period in the patient undergoing PMMC flap reconstruction, although mucosalization occurs in the course of time especially with postoperative radiotherapy in the majority of the patients. In the present case, the patient had no significant morbidity related to the hair growth in the oral cavity. Dysphagia was well managed with proper counseling of the patient and swallowing therapy.

Summary

It is always a challenge for the soft tissue reconstruction of the palatal defects in advanced malignancies of the oral cavity because of the higher chance flap failure. PMMC flap can be successfully used in patients with advanced malignancies to repair the palatal defect without any significant post operative complication. In the present case, we have presented a case of malignant melanoma of gingivobuccal complex, involving the hard palate where the palatal defect was successfully reconstructed by the PMMC flap.

Compliance with Ethical Standards

Conflicts of interest There is no conflict of interest among the authors.

Human and Animal Rights All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Written informed consent has been taken from each patient prior to the surgery and same has been informed to the institute reviewer board. No part of the body has been demonstrated in the case report without the permission of the concerned patient.

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