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Prosthodontic rehabilitation of a patient with multimodality therapy for the management of oral melanoma: A case report

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ABSTRACT

Malignant melanoma of the oral cavity is a very rare condition, comprising approximately 0.2–8% of all the malignant melanomas. It is easy to diagnose these lesions clinically because they are pigmented; however, they are asymptomatic in the majority of cases and might only be detected after ulceration of the overlying epithelium or hemorrhage. Treatment of head and neck cancer involves surgery, radiotherapy, chemotherapy, or a combination of the these modalities. However, surgery is the first choice for oral cancers, which is supplemented with radiotherapy in advanced cases. In addition, radiotherapy might give rise to some complications, including oral mucositis, loss of taste, erythema, xerostomia, radiation-induced caries, trismus, glossitis, TMJ disorders, muscle fibrosis, and osteoradionecrosis The most important complications reported by patients in terms of QOL are masticatory, articulation and swallowing problems, as well as problems with appearance. Prosthodontic rehabilitation of these patients is difficult, due to the technical challenges of fabricating prosthetic appliances, repeated prosthetic adjustments or replacements, and management of the patients' psychological problems. This paper summarizes the pre- and postsurgical prosthodontic steps in oral rehabilitation of patients undergoing maxillectomy.

Key words: Melanoma, Oral rehabilitation, Radiotherapy, Maxillectomy, Obturator.

Introduction

Treatment of head and neck cancer involves surgery, radiotherapy, chemotherapy, or a combination of the above modalities. However, surgery is the first choice for oral cancers, which is supplemented with radiotherapy in advanced cases [1]. The complications of radical surgery consist of changes in the oral anatomy, loss of teeth and anatomical structures, bulky flaps, scarring, loss or alteration of sensation, and trismus [2]. In addition, radiotherapy might give rise to some complications, including oral mucositis, loss of taste, erythema, xerostomia, radiation-induced caries, trismus, glossitis, TMJ disorders, muscle fibrosis, and osteoradionecrosis (ORN) [2]. Rogers et al3 reported that after successful treatment of oral cancers, the most important complications reported by patients in terms of Quality of Life (QOL) were masticatory, articulation and swallowing problems, as well as problems with appearance, particularly in females.

Recently, survival rates have improved, increasing the attention to improving the quality of life of cancer patients [4,5]. Patients come to grips with several challenges due to complications of ablative cancer therapy [6,7]. Prosthodontic rehabilitation of these patients is difficult, due to the technical challenges of fabricating prosthetic appliances, repeated prosthetic adjustments or replacements, and management of the patients' psychological problems [2]. Malignant melanoma of the oral cavity is a very rare condition, comprising approximately 0.2–8% of all the

asymptomatic in the majority of cases and might only be detected after ulceration of the overlying epithelium or hemorrhage. Delayed diagnosis might be responsible for poor prognosis of oral malignant melanoma, with 15—38% of 5-year survival rate [8-12]. This paper summarizes the role of maxillofacial prosthodontics in the oral rehabilitation of patients undergoing maxillectomy.

Case Report

A 51-year-old woman presented to the Department of Head and Neck Surgery, School of Dentistry, Tehran University of Medical Sciences (TUMS), complaining of a black lesion in the buccal mucosa of the anterior maxilla (Figure 1), which appeared 1 month before as a little black spot; then it enlarged into a big lesion. Her medical history was non-contributory. The lesion was biopsied by her maxillofacial surgeon and a diagnosis of malignant melanoma of the maxilla was established.

Consultation with carried out with various services at TUMS, including head and neck surgery, head and neck medical oncology, radiation oncology, oral oncology, plastic surgery, and maxillofacial prosthodontics. The multimodality planning group recommended surgical resection and postoperative intensity-modulated radiation therapy, and the patient was examined at the oral oncology service before surgery. All the aspects of treatment, i.e. the surgical, interim and definitive phases, were explained to the patient in detail by the oral oncology team. The timeline for prosthetic rehabilitation was also explained to the patient in detail. She realized that she would have to wear a surgical obturator for 1 week after surgery and then be transitioned to an interim obturator. The importance of having realistic expectations about the esthetics and function with the obturator was explained to her, as well as the potential for pain, discomfort and loss of weight.

Maxillary and mandibular impressions were made with irreversible hydrocolloid to facilitate the fabrication of a surgical obturator. Surgical resection involved a premaxillectomy, bilateral subtotal hard palatectomy, partial resection of the base of the nasal septum, partial bilateral resection of the floor of the nose, partial resection of the inferior turbinates. Bilateral maxillary second molars, bilateral maxillary first molars, bilateral maxillary second premolars, bilateral maxillary first premolars, bilateral maxillary canines, bilateral maxillary lateral incisors and bilateral maxillary central incisors were removed as part of the surgical resection of the tumor. The maxillofacial prosthodontic team then inserted a customized surgical obturator to hold the occlusive petrolatum gauze in the surgical defect. The surgical obturator was fabricated with heat-cured acrylic resin (Lucitone 199; Dentsply Intl) and wrought clasps for retention around the 2 remaining maxillary third molars (Figure 2).

Ten days after surgery, the surgical obturator and the pack were removed from the patient's oral cavity and the surgical defect. The patient was informed that the surgical obturator would be replaced with an interim obturator to restore her function and speech. The surgical defect was examined thoroughly to detect bleeding soft tissue. The maxillary third molars were preserved bilaterally. Tissue conditioning material (Trusoft; The Harry J. Bosworth Co) was used to reline the surgical obturator by tracing the borders of the surgical defect. Upon completion of this relining procedure, the patient exhibited competence in swallowing water without nasal regurgitation and was able to speak without hypernasality. She also demonstrated competence in placing and removing the prosthetic appliance. She was asked to remove the interim obturator only for cleaning and not to leave the prosthetic appliance out of her mouth for a long time to prevent collapse of the maxillary soft tissue that would result in a poor-fitting prosthetic appliance. Two weeks after the delivery of the interim obturator, the patient was recalled to the Department of Prosthodontics for fabrication of a new dentate interim obturator. An impression was taken with irreversible hydrocolloid impression material (Jeltrate; Dentsply Caulk). A cast was poured in Type III dental stone (Microstone; Whip Mix Corp) and a special acrylic resin tray was fabricated. Border molding was carried out using modeling plastic impression compound (Impression Compound Type I; Kerr Corp, Orange, Calif.) and a final impression was taken with a vinyl polysiloxane (VPS) regular body impression material (Figure 3).

Subsequently, her oncologist referred her to the Department of Radiotherapy. Then she completed 5 weeks of radiotherapy with the interim obturator serving as a radiation bolus stent to assist in the homogenous distribution of radiation in the maxillary defect with a total of 60 Gy in 30 sessions. During the external beam radiotherapy, she experienced mucositis, dehydration, neck erythema, trismus, skin rash, xerostomia, depression and weight loss due to dysphagia and mucositis. She presented to the Department of Prosthodontics after approximately 4 weeks. The patient was evaluated and found to have substantial skin erythema and lip

retraction. She also exhibited mucositis at the time of presentation. The dentate interim obturator had also undergone substantial changes, with poor occlusion and retention (Figure 5). This was adjusted by regular relining of the obturator, and refining the occlusion to provide good bilateral contact.

The interim phase continued for approximately 6 months after radiotherapy. The patient again presented to the Department of Prosthodontics for fabrication of the definitive obturator. The surgical defect had substantially healed, with no signs of mucositis (Figure 6).

The clinical steps for fabrication of the definitive obturator included:

1. A preliminary impression was taken of the mandible and maxillary arch with the defect, after blocking out undesirable undercuts, using an irreversible hydrocolloid impression material (Jeltrate; DentsplyIntl, York, Pa) and a stock tray for the fabrication of a custom tray (Figure 7).

2. The primary models were surveyed to determine undercuts of the teeth, which revealed insufficient undercuts on teeth #33 and #45. Composites were used on the teeth to improve the undercuts for better retention.

3. Rest positions were prepared on the teeth, the custom trays were border molded using modeling plastic impression compound (Impression Compound Type I; Kerr Corp, Orange, Calif) and definitive impressions were made with a vinyl polysiloxane (VPS) light body impression material (Figure 8).

4. The master casts were surveyed, frameworks were waxed up, refractory models were cast and the Co-Cr RPD was then finished in the conventional method (Figure 9).

5. The frameworks were tried in, and physiologic adjustments were made (Figure 10).

6. Undercuts within the defect were blocked out on the cast with base plate wax. The resin was molded to the framework, and record blocks were constructed on the edentulous areas for bite registration. A smaller tooth mold was selected for the fabrication of the new definitive obturator than for the previous interim obturator because of the significant challenge of lip retraction (Figure 11).

7. The new definitive obturator was delivered to the patient (Figures 12 and 13). She was given care and maintenance instructions and followed-ups were scheduled as needed.

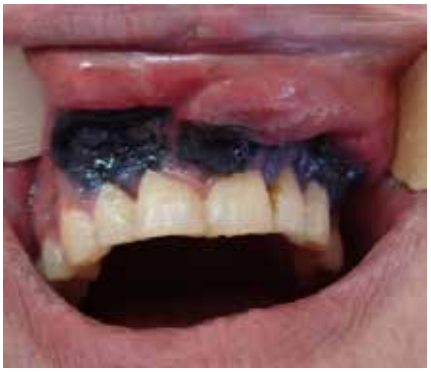


Fig 1.

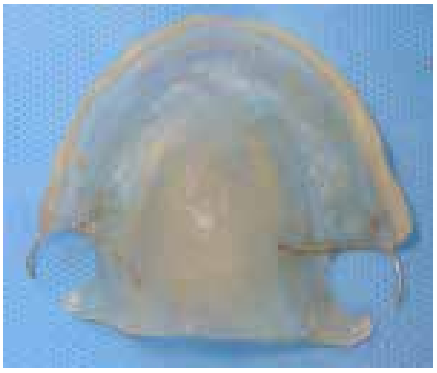
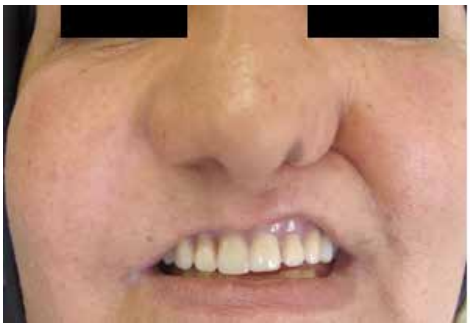


Fig 2.

Fig 3.



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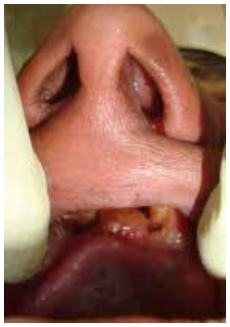
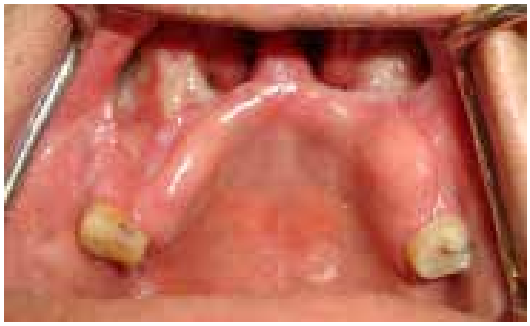
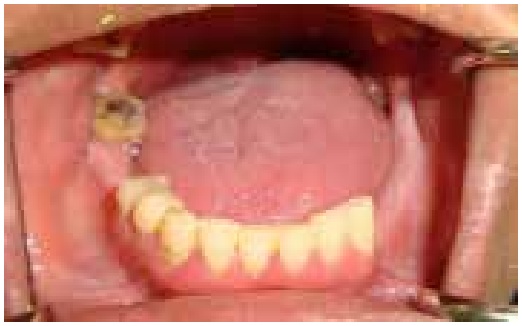


Fig 5.





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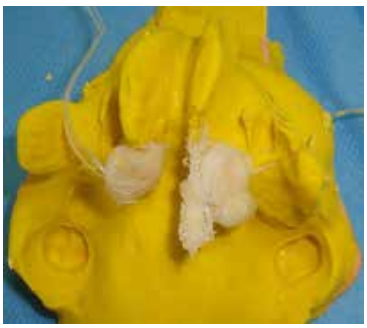

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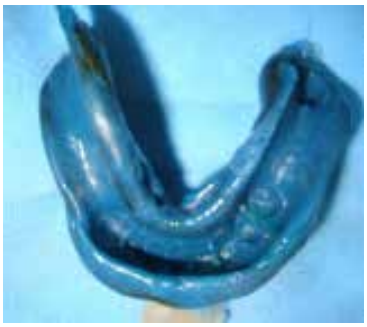

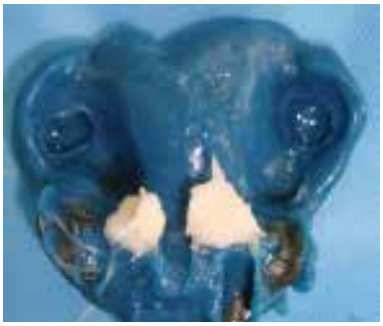

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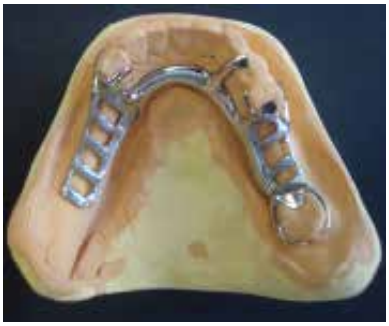

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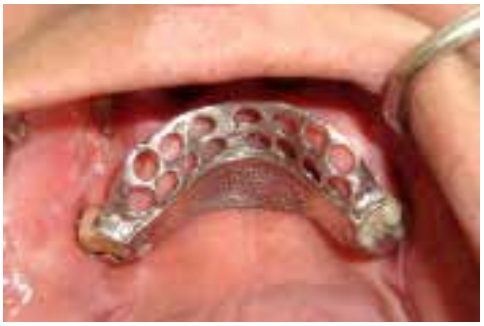

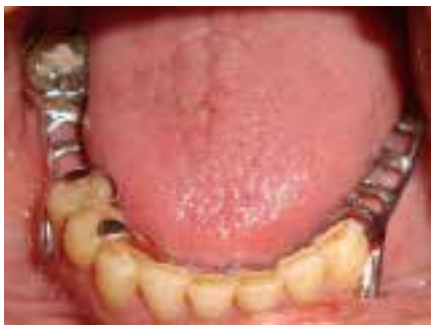

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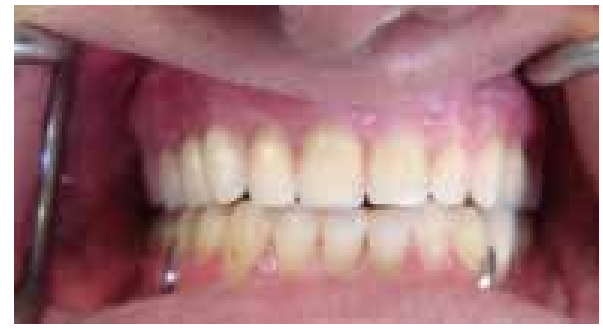


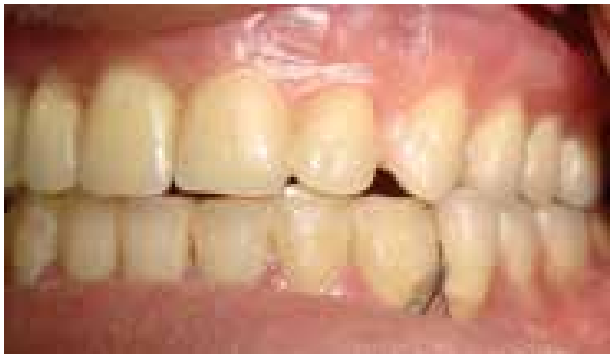
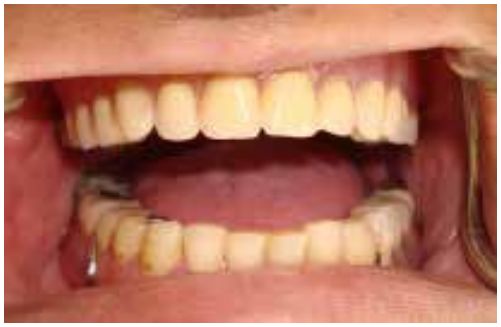


Fig 11.

Fig 12.



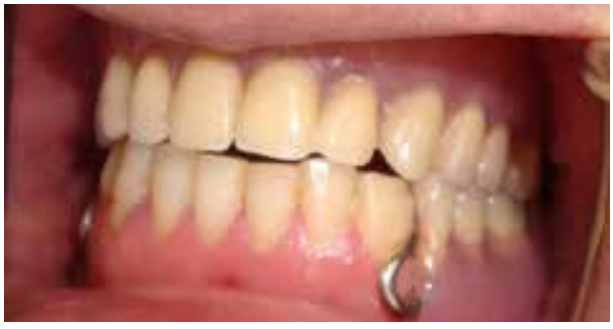


Fig 13.

Conclusion

Patients face many challenges during and after treatment for maxillary cancers, including radio- and chemotherapy, and maxillofacial prosthodontists have to deal with these problems and overcome them. These patients require lifelong prosthodontic care to ensure continued success with the function and esthetics of their prosthetic appliances.

Conflict of Interest

There is no conflict of interest to declare.

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