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Authors' Affiliation:
Department of Prosthodontics, JSS Dental College & Hospital, Constituent College of JSS Academy of Higher Education & Research, Mysore, Karnataka, India

*Corresponding Author
Department of Prosthodontics, JSS Dental College & Hospital, Constituent College of JSS Academy of Higher Education & Research, Mysore, Karnataka,
India
Email: dr.nandithakumarm@jssuni.edu.in

Contact List

Mayank Chhabra	chhabramayank961@gmail.com
Nanditha Kumar M	dr.nandithakumarm@jssuni.edu.in
Ganesh S	dr.ganeshs@jssuni.edu.in
Sowmya S	sowmya.neelan@gmail.com

ORCID List

Mayank Chhabra	0000-0001-7118-3447
Nanditha Kumar M	0000-0002-5355-2840
Ganesh S	0000-0002-0109-5860
Sowmya S	0000-0001-5037-4981

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Adenoid Cystic Carcinoma of the hard palate -rehabilitation with a modified surgical obturator: A case report

Mayank Chhabra, Nanditha Kumar M*, Ganesh S, Sowmya S

ABSTRACT

Background: Carcinomas of the oral cavity can be debilitating, making post-surgical rehabilitation crucial for maintaining the patient's quality of life. Adenoid cystic carcinomas (ACC) represent 3% to 5% of all malignant neoplasms in the head and neck region. *Case presentation:* This report presents a case of adenoid cystic carcinoma of the hard palate. The patient reported swelling in the hard palate, as well as externally on the right nasolabial fold and infra-orbital region. A preliminary diagnosis of a minor salivary gland tumor was made. No distant organ metastasis had occurred. Incisional biopsy reported the swelling as adenoid cystic carcinoma of a solid pattern. A subtotal maxillectomy with radial free flap reconstruction was planned. Due to the failure of the flap reconstruction, a surgical obturator became necessary. *Conclusion:* The surgical obturator enhanced the patient's quality of life after surgery by incorporating teeth, a feature not found in conventional obturators. This allowed the patient to consume a soft diet more easily.

Keywords: Adenoid cystic carcinoma, obturator, Hard palate

1. INTRODUCTION

Composite oral and maxillofacial defects frequently result in communication between the oral cavity, nasal cavity, and maxillary sinus, necessitating a comprehensive treatment plan for optimal rehabilitation (Yao et al., 2020). Adenoid cystic carcinoma (ACC) represents one such cause of such defects. Adenoid cystic carcinoma (ACC) tends to grow slowly and has a tendency to metastasize during the fifth and sixth decades of life (Ellington et al., 2012; Yaga et al., 2016). Such malignancies are generally treated through surgical intervention combined with flap reconstruction and, or prosthodontic

rehabilitation. A case report of ACC in the right half of the palate in a 39-year-old woman has been presented here.

2. CASE REPORT

The Prosthodontics Department, JSS Dental College and Hospital, Mysore received a referral for a 39-year-old female patient. The patient complained of swelling on the hard palate on the right side for 2½ months. The history revealed that the swelling had started insidiously in the hard palate and gradually increased. Medical, surgical, dental, family, and personal histories did not indicate any risk factors. The extra oral examination revealed a hard, non-mobile and non-tender swelling on right nasolabial fold and infra-orbital region. Regional lymphadenopathy was not detected. The intraoral examination revealed a lesion with well-defined margins, involving the right anterior, posterior, and lateral areas of the hard palate.

It extended 1cm away from the incisors and involved teeth 13, 14, 15, 16, 17, crossing the mid-palatine raphe and measuring approximately 2×3 cm. The surface of the swelling was smooth, and the overlying mucosa presented two ulcers (Figure 1). The swelling was solitary, firm in consistency and mildly tender on palpation. Labially swelling extended into the vestibule of 22, 21, 11, 12, 13, 14, and 15. The teeth on the involved side were not carious and periodontally sound. A provisional diagnosis of a minor salivary gland tumor was established. The CT Head and Neck scan showed a heterogeneously enhanced soft tissue mass in the oral cavity, affecting the hard palate and alveolar rim of the right maxilla.

Figure 1 Intra oral view of the lesion

It also revealed erosion of underlying bones and extension superiorly into the right nasolabial region. Additionally, the mass extended medially into the nasal cavity, abutting the right inferior turbinate and involving the vomer and left nasal cavity. No distant organ metastasis was detected. Incisional biopsy reported the lesion as adenoid cystic carcinoma of solid pattern. A subtotal maxillectomy with radial free flap reconstruction was planned. The patient was referred to the Department of Prosthodontics to have a surgical obturator fabricated.

Fabrication of Obturator

A pre-surgical impression of the maxillary arch was taken with irreversible hydrocolloid and poured to obtain a working cast. The anticipated resection line was drawn with a marking pencil on the cast following a discussion with E.N.T. and plastic surgeons. The area (of the lesion) was modified on the cast to obtain normal anatomical contours. A heat - polymerized prosthetic base made of acrylic resin with the clasps was fabricated. The prosthetic base was reseated on the maxillary cast. An over-impression of the entire cast (along with the seated processed prosthetic base) was created using polyvinyl-siloxane putty in a perforated stock metal tray to form a putty impression index.

The impression and the cast were separated from each other. The prosthetic base was reseated on the impression. The teeth 14, 15, 16, 17, and 18 on the separated cast were scraped out along with modification of the cast according to the anticipated resection line. The impression (along with the processed prosthetic base) was reseated onto the remaining cast portion. Prosthetic teeth were crafted using the sprinkle-on technique, which involved gradually applying tooth-coloured auto-polymerizing acrylic resin to the impression areas of the teeth. The facial flange was created with the pink-colored auto-polymerizing acrylic resin, which was added uniformly (approx. 2-3 mm in width) (Figure 2).

Figure 2 Fabrication of the prosthesis

After the auto-polymerizing resin had set, the impression, along with the prosthesis, was removed from the cast, and then the impression was separated from the prosthesis. The prosthesis was then finished and polished. To avoid any tissue injury occlusal surfaces of the posterior teeth were trimmed off by approximately 2 mm to place them out of occlusion (Patil, 2013). The patient underwent a right subtotal maxillectomy with flap reconstruction under general anesthesia. The defect was closed intraorally using a radial free flap. A delayed surgical obturator was inserted on the 9th day after the operation. Interdental wiring was performed along the remaining natural teeth to ensure good retention and stability of the obturator in the patient's oral cavity.

3. DISCUSSION

The main symptoms of ACC typically involve pain, swelling, and occasionally paresthesia. Other characteristic features encompass late onset, gradual growth, insidious destruction of surrounding tissues, perineural invasion, and distant metastasis (Li et al., 2008; Al-Sukhun et al., 2006; Deshpande et al., 2013). In the current case report, the presentation was swelling with involvement of the right maxilla and palate. Most of maxillectomy cases are treated with two significant lines of treatment post ablative surgery - flap closure of the defect or placement of obturator prosthesis. In this instance, both methods were utilized, with priority given to flap reconstruction due to the classification of the defect as a Brown's class 2b defect (Brown et al., 2000). The osteocutaneous radial forearm (OCRF) flap was used for reconstruction of the defect. The graft became unhealthy and was subsequently removed, a possibility as explained by Cordeiro and Santamaria, (2000) in a research paper.

They noted that systemic complications were reported in 11.7% of the patients, with 9.1% requiring re-exploration due to compromised vessels of the free flap, resulting in partial necrosis in 1.8% (Cordeiro and Santamaria, 2000). Due to the removal of the graft, the patient required obturator prosthesis. During the treatment planning, it was decided to involve teeth and flange all throughout the defect side. The support the obturator provides to soft tissues after surgery is of utmost importance for healing and is also beneficial against scar contracture and disfigurement (Türkaslan et al., 2009). Interdental wirings were removed once the obturator was observed to be stable with the help of retentive clasps and growing soft tissue. The patient could consume a soft diet, another benefit of having teeth in the prosthesis.

4. CONCLUSION

The modified obturator provides support to the soft tissues, reduces scar contracture, thereby preserving facial contour and aesthetics, which helps patients feel psychologically better prepared for rehabilitation.

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Authors Contributions

Mayank Chhabra: Concept, literature search, manuscript preparation
Nanditha Kumar M: Manuscript preparation, manuscript editing and manuscript review.
Ganesh S: Concept, literature search, manuscript preparation
Sowmya S: Manuscript editing and manuscript review.

Informed Consent

Written and Oral informed consent was obtained from participant included in the study.

Ethical Approval

Not applicable.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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