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CASE REPORT

An Implant-Supported Obturator for Hemi-maxillectomy Patient: A Case Report

Gökhan Gürses¹, Fulya İdil Ömeroğlu Akkoç¹, Necla Demir², Aslı Ataseven¹, Ahmet Aktı¹, Abdullah Kalaycı¹

¹Selçuk University Faculty of Dentistry Department of Oral and Maxillofacial Surgery, Konya

²Selçuk University Faculty of Dentistry Department of Prosthodontics, Konya

ABSTRACT

Objective: Adenoid cystic carcinoma is 1% among all head and neck malignancies, 10% among all salivary gland malignancies, the most common in the 6-7th decades. It is seen in women more frequently and often in the head and neck parts. Nowadays, the main treatment of ACC is surgery. This case report presents the rehabilitation of a patient with an implant-supported obturator following maxillary hemi-section due to adenoid cystic carcinoma (ACC).

Case: The 67-year-old female patient applied to our clinic for prosthetic rehabilitation. The patient had previously undergone right hemi-maxillectomy for adenoid cystic carcinoma in another center. Implant supported obturator treatment was planned for the patient. A total of six implants were placed, four in the maxilla and two in the mandible. After the implant osseointegration was completed, an obturator which was supported by the dental implants was applied. The patient has been followed up for four year. During this period, implants failed many times. New implants were placed instead of them. The obturator has not been completely renewed, it has been adjusted twice by making changes in it. The patient still uses her implant supported obturator even after four years.

Conclusion: Implant supported obturators are a good option for the treatment of resective surgeries of the jaws.. They rehabilitate the patient's lost functions such as speech and chewing well.

Keywords: Adenoid cystic carcinoma, hemi-maxillectomy, obturator

INTRODUCTION

Adenoid cystic carcinoma (ACC) is a malignant tumor originating from the salivary glands in the head and neck region. This type of tumor was first described as a benign lesion by Billroth in 1856¹. Approximately 10-15% of salivary gland tumors are ACCs². ACC is most common in the minor salivary glands³. It is more common in women than in men and is seen in the 5th decade². ACC is rare in the head and neck region and is most commonly seen on the hard plate¹.

The effective treatment method in ACC cases is radical surgery. There were reports which indicate that only radiotherapy can provide successful treatment⁴. However, it is reported

that the application of radiotherapy after radical surgery eliminates local and regional recurrence and increases the 10-year survival rate of patients to 57%⁵. After the surgery, the relationship between the mouth and nose is generally impaired in patients. Hard and soft palate loss occurs due to radical surgery. Apart from oncological conditions, these losses can also be due to congenital cleft palate or trauma.

Maxillary defects caused by tumor resection cause high levels of psychological and physical trauma for patients. These patients have problems including aesthetics, speech, breathing, swallowing, and air-liquid passage.

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Corresponding author: Fulya İdil Ömeroğlu Akkoç

Address: Güzeloba Mah.2272. Sk. no:80/1 Muratpaşa/Antalya

Phone: 0539 278 18 61

Email: fulyaidil1@gmail.com

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The size of the area and anatomical difficulties complicate the treatment both surgically and prosthetically. In defect repair, fibula, ilium, soft tissue, free tissue, free vascularized flaps, and similar grafts can be used for grafting⁶. Many patients do not want to undergo surgical reconstruction due to local donor site morbidity, anatomical complexity, systemic radiation therapy, and the possibility of tumor recurrence⁷. Implant-supported or conventional obturator prosthesis treatments are among the frequently used treatment options⁷. Implant-supported obturators also have advantages over conventional obturators, such as additional support and aid in retention⁸. The overall survival rate of implants supporting maxillofacial prostheses is as high as 96.1%⁸.

CASE REPORT

A 64-year-old female patient who applied to our clinic in 2019 had previously undergone hemi-maxillectomy due to adenoid cystic carcinoma in another center (Figure 1). The patient



Figure 1. Orthopantomogram before implant placements

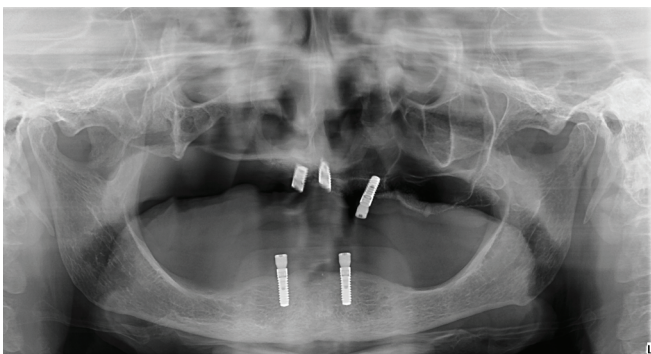


Figure 2. Orthopantomogram after implant placements



Figure 3. External view of the obturator



Figure 4. Intra-oral view of the obturator

applied to our clinic for rehabilitation treatment. Due to limited residual ridge and insufficient bone support, a conventional obturator full denture was thought not to provide adequate function and comfort. Thus, implant treatment was decided. Our clinic placed four implants under local anesthesia in regions 11, 12, 21, and 23 (3.3 mm diameter, 10 mm length - Straumann), which is shown in Figure 2. After four months, the implant platforms were exposed, and the healing caps were placed under local anesthesia. Two implants placed in regions 11 and 12 were close to each other, and the implant placed in number 11 was left in the bone without loading. The prosthetic procedure started approximately two weeks after the abutment connection. Then, the patient's prosthesis treatment was completed with an implant-supported obturator (Figure 3-4).



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In the 1st year follow-up of the patient, the implant placed at number 21 failed. The implant was placed again in the same place, and the patient continued to use the prosthesis. In the 2nd year follow-up of the patient, the implant was placed at number 12, which is close to the defect failure. Before the new implant was made, the top of the implant left in the bone was opened and used, and the patient's obturator was adjusted by making changes. The failure was reencountered in the 3rd year follow-up of the patient. The implant placed in number 11 has failed. Instead, a new implant was placed at number 12. Again, the obturator was adjusted on a total of 3 implants. At the end of the 3rd year, the only remaining implant on the right was lost. The obturator has yet to be completely renewed; it has been adjusted by changing it. The patient still uses her implant-supported obturator even after four years.

DISCUSSION

Adenoid cystic carcinoma most commonly occurs in the minor salivary glands⁴. Foote and Frazel were the first to describe that ACC was located in the major and minor salivary glands. They suggested that a relatively conservative surgical approach leads to high failure rates and advocated a more radical surgical treatment. This tumor is generally has very aggressive character⁹. In treating tumors formed in the maxilla, the maxilla is resected to prevent malignant change. Despite the lack of clarity in the data, patients with intermediate or high-grade ACC or any grade tumor with positive surgical margins are recommended to have postoperative radiation treatment to 60 Gy or more. Patients with an irresectable tumor are generally offered radiation therapy with or without systemic treatment but have poorer outcomes¹⁰. Reconstruction is challenging in maxillary resections as in other resections. The choice of the method that provides the appropriate rehabilitation for the patients and the type of obturator gains importance in terms of function. The size and extent of the defect area formed after maxillectomy, the number of remaining teeth, and the quality of the remaining alveolar bone are essential factors in determining the reconstruction method. Obturators are prosthetic appliances applied for occlusion of defects that cannot be fully closed with surgical procedures, which can cause some complications as a result of the fusion of the oral and nasal cavities, which occur with partial or total removal of the maxilla as a result of benign and malignant tumor resections, congenital deformities and

traumatic reasons¹¹. Satisfactory functional and cosmetic results have been reported as a result of rehabilitation using obturator prostheses. For example, in their study, Sharma and Beumer, in the rehabilitation treatment of defects involving the hard palate, reported that obturator prostheses are the most effective method in restoring speech, swallowing and chewing functions and facial aesthetics¹¹. After radical treatments such as resection, rapid and adequate prosthetic rehabilitation is vital for maintaining and restoring quality of life. In our present case, the patient's speech, chewing, swallowing, and hypernasality disorders were almost entirely resolved after the obturator prosthesis was inserted. A pleasing aesthetic is provided to the patient.

CONCLUSION

Rehabilitation of maxillary defects with an implant-supported obturator prosthesis is a good option for rehabilitating patients. The patient regains swallowing, chewing, and speaking functions quickly and can participate in a normal social life.

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