



PROSTHETIC TREATMENT OF A PATIENT WITH A MAXILLARY RESECTION AND ENUCLEATION

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ABSTRACT

Introduction: Surgical treatment of tumours in the oral cavity is often associated with damage on the face soft tissues, which makes prosthetic treatment difficult.

Aim: The purpose of the clinical case is to investigate the possibility of prosthetic treatment in patients with combined maxillofacial defects. The main goal was to assess the effect of prosthodontics in this case for restoring masticatory and speech function.

Materials and methods: The prosthetic treatment of a 68-year-old man with maxilla resection and enucleation is described. The impressions of the two jaws were taken with an irreversible hydrocolloid impression material. The height of the occlusion and the centric relation of the mandible were fixed with wax rims. A buccal flange obturator was made which was held by wire clasps to the retained natural teeth. To ensure optimal sealing, the edges of the obturator part were functionally formed with a wax material which, after moulding, was substituted with acrylic resin.

Results: The applied prosthetic treatment allowed good retention and stability of the denture and natural restoration of nutrition, speech and breathing of the patient, as well.

Conclusion: The application of special approaches of prosthodontics in patients with combined maxillofacial defects enables normalization of impaired functions.

Keywords: enucleation, maxillary resection, maxillary defect, obturator, post-resection denture

INTRODUCTION

The maxillofacial damages caused by maxillary resection provoke serious functional and aesthetic problems [1, 2]. The most common are disturbances related to difficulty in eating, which decreases the quality of the patient's life [3]. This is why most authors [4, 5] determine the recovery of the masticatory function as the main goal of prosthetic treatment.

Researches demonstrate contradictory data on the factors that affect the effectiveness of prosthesis. According to Koyama et al. [6], the degree of masticating resto-

ration depends on the defect size and location and of the teeth presence as well. Data from some studies confirm the same [7]. Ono et al. [5] prove the leading role of following factors ranked by importance – free space length of the defect, condition of the distal mandible teeth, occlusal forces distribution, and the possibility of mouth opening. The authors believe that the analysis and assessment of these factors allow masticatory efficiency improvement after prosthetic treatment. According to Kreeft et al. [8] the length of the defect does not affect the masticatory function. The natural teeth presence favours it.

Depending on the stage of the tumour development, its type and localization, the postoperative maxilla defect may be prolonged to some facial areas - nose, cheek, eye [9, 10]. The soft tissues damage requires specific prosthetic methods of esthetical treatment application [11]. Some authors [12] prefer to use combined prosthetic treatment with an orbital prosthesis and an obturator in cases of a maxillary defect with enucleation. Others [13] recommend the usage of obturator retention and consider the necessity of orbital recovery.

There are different opinions about the application of soft relining materials in patients with maxillary defects. The main reasons for their restriction are the problem with bond stability to the acrylic [14] and their porous structure, which creates a predisposition of Candida development [15].

AIM

The purpose of the clinical case is to evaluate the availability of prosthetic treatment in patients with combined maxillofacial defects. The main goal is to assess the effect of prosthodontics for restoring masticatory and speech function.

MATERIALS AND METHODS

The prosthetic rehabilitation of a 68-year-old patient with an oncological maxillary disease is presented. The patient was diagnosed with maxillary carcinoma and left eye metastases, which led to enucleation [Fig 1]. Intraoral examination showed a large defect in the midline engaging the hard and soft palate [Fig. 2]. On the maxilla were re-

main teeth 12,13 and 14, while on the mandible we have been observed intact dental arch. A treatment plan was build, including the buccal flange obturator making with wire clasps. The preliminary impression of the upper jaw was taken with a standard metal tray and irreversible hydrocolloid impression material after gauze tamping of the defect. A modified impression technique was used to taking a functional impression. The custom tray from light-cured acrylic resin was fabricated and its borders were designed to enter circularly into the defect in depth of 5mm. This provided the ability of functional design of impression material in valve area and defect's border. For this purpose was used ISO Functional (GC) wax impression material, which was formed through active and passive tests. An additive silicone Elite HD Regular (Zhermack) was used for the final impression, after tamping the defect with gauze. A light-cured base plate and wax rims were made to register the mandible height and centric relation. After a successful trying, the artificial teeth were arranged, and finally, the obturator was made from heat-cured acrylic resin with a low quantity of residual monomer. A resin with a low quantity of residual monomer was used, due to its toxic action. To ensure its retention, a buccal flange replacement element was formed, the edges of which entered the nasal cavity. The length and localization of the defect required their additional functional forming with wax impression material in the area of the nose and soft palate. The formed replacement part was laboratory wrapped up, and the wax pattern was duplicated by a heat-cured acrylic resin. At the last clinical-stage, the obturator was adjusted in the patient mouth. The check-up examinations revealed some decubital wounds, which required minimal prosthetic correction.

Fig. 1. Extraoral facial view



Fig. 2. Intraoral patient's view



RESULTS

The results of the applied prosthetic treatment showed achievement of good obturator retention and stability [Fig. 3]. The Mihailov's method was used for simultaneous examination of the pressure in the oral and nasal cavity, and hermetization effectiveness was checked with "Oronasopneumotest" device. The received data revealed a satisfied level of defect hermetization, which point to the successful restoration of the border between the oral and nasal cavity. Normal vertical occlusal relationships have been restored, resulting in the normalization of the patient mastication, nutrition and swallowing. The defect sealing allowed normal fluid suction without leakage through the nasal cavity. Process of making the open obturator replacement part and selection of the wire clasps allow easy and seamlessly obturator placement in the defect. Certain discomfort was appeared caused by the edges of the replacement part located on the floor of the nasal cavity. These problems were more pronounced in the frontal and in the soft palate areas. After careful corrections by filing, the problems were eliminated, and the adaptation period went on normally. This was confirmed by he patient, and he regained his self-esteem. The restoration of damaged functions significantly improved his quality of life.

Fig. 3. Adjusted obturator



DISCUSSION

The main problems in the patient treatment with maxillary resection are the retention and stability of the obturator. This requires specific impression-taking techniques usage, as well as proper planning and design of the denture. In this case, the prosthetic treatment by buccal flange obturator provided the necessary retention and facilitated insertion into the defect. The presence of natural teeth has improved the treatment conditions and confirmed some authors [6] opinion that this is an important factor for the successful clinical result. Despite the defect length and location, optimal sealing was achieved. The masticatory function has been successfully restored, according to the thesis of some authors [8] that the size of the defect does not affect the masticatory efficiency but the presence of natural teeth facilitates eating. The extension of defect and enucleation further complicated the treatment but created retention zones in the area of the

nose and soft palate in which the obturator is positioned. This approach is also used successfully by other authors [11, 13] to improve prosthesis stability in eating and swallowing. The achieved results confirmed its effectiveness as well as the view that prosthetic rehabilitation significantly improves the quality of life [2, 8]. Soft relining materials were not used in this treatment, due to the necessity of supporting optimal oral hygiene and avoiding Candida development, as some authors recommend [15].

CONCLUSION

The patients' prosthetic treatment with combined facial and maxillofacial defects are accompanied by a number of difficulties and complications because of the involvement of surrounded soft tissues and organs. This requires the specific prosthetic methods to restore nutrition, speech and breathing usage.

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