



POSSIBILITIES FOR MODIFICATION OF SURGICAL OBTURATOR INTO TEMPORARY OBTURATOR

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ABSTRACT

Background: Maxillary resection causes different types of damages in the maxillofacial area, which are treated by surgical and prosthetic restorative methods.

Aim: The described clinical case follows up the initial stages of the prosthetic treatment, as well as the possible modification of surgical obturator into temporary obturator in a patient with maxillary resection.

Materials and methods: The prosthetic treatment of a 55-years-old female patient with a surgical operation of upper jaw cancer is described. The surgical obturator is developed a week after the resection. The preliminary impressions are taken with irreversible hydrocolloid impression material. The occlusion height and central relation are fixed by occlusion rims. The surgical obturator was fabricated by heat cured acrylic resin with a low amount of residual monomer. Moreover, metal clasps were used for retention and stability. The borders of the obturating part were covered with a thin layer of relining silicone material after the adjustment. The surgical obturator was modified into a temporary one directly in the patient's mouth after two months by applying the same rebasing material and designing a silicone hollow-bulb obturating part.

Results: The treatment results revealed a successful restoration of the patient's speaking, feeding, and swallowing abilities. The application of silicone material inhibited the appearance of decubitus ulcers and facilitated the normal healing process. The direct design of hollow-bulb silicone obturating part significantly improved the retention and stability of the obturator.

Conclusion: The application of prosthetic treatment methods in the first days after the maxillary resection allows for restoration of speaking and feeding.

Keywords: maxillary resection, maxillary defect, obturator.

BACKGROUND

The main goal of the prosthetic treatment in patients with maxillary resection is the creation of a border between oral and nasal cavity which facilitates the restoration of one's feeding and speaking abilities [1]. Ensuring tight sealing of the defect zone is very important for the ability to swallow and ingest fluid [2].

The main difficulties in the treatment during the first weeks after the resection originate from the limited mouth opening and the changes in the surrounding tissues [3, 4]. This inhibits the permanent defect hermetization and requires a gradual fabrication of a surgical, temporary and definitive obturator [5, 6]. Most authors [7, 8] view the treatment by surgical obturator as a leading method for ensuring the life quality of patients. According to Huryn [9], surgical obturator should be considered as a key standard for achieving predictable and successful treatment outcomes among patients. It is suggested that immediate prosthetic treatment provides easier adaptation to the denture during the first weeks after the resection [10]. Rebasing or fabricating of a temporary obturator is commonly required due to the occurred changes in the soft tissues [11]. The prosthetic treatment after maxillary resection with temporary obturator is considered as an intermediate stage in the patients' rehabilitation process. Furthermore, it also confirms the achieved results from the surgical obturator and contributes to consistent life quality [12]. There are different opinions regarding the treatment duration with temporary obturator, which vary from several weeks and months up to a year [11, 13].

The prosthetic treatment with definitive obturator is the final stage of the complex prosthetic treatment of patients with maxillary resection, which begins after the final completion of the healing process in the defect [13]. Oh WS and Roumanas E. [14] claim that the specifications in maxillofacial damages require the application of specific techniques and treatment methods. The use of modern technologies and materials enhances the fabrication of different types of obturators which significantly improves patients' life quality [15, 16, 17].

AIM

The described clinical case follows up the initial stages of the prosthetic treatment, as well as the possible modification of surgical obturator into temporary obturator in a patient with maxillary resection.

MATERIALS AND METHODS

The prosthetic treatment of a 55-year-old female patient with upper jaw cancer is studied. Left-sided defect occurred on the border of the midline, and soft palate after

surgical treatment but teeth were preserved (Figure 1). The operative treatment was conducted seven days ago, leading to the development of trismus by the patient. The defect was tamped with gauze, and the impression was taken with standard tray and alginate. After the casting of the stone model, dentures borders were outlined, and the retentive devices were planned. Metal clasps on teeth 16 and 26 were used. The baseplate was developed in order to achieve 5 mm penetration of the defect zone. The occlusion height and centric relation were fixed on the next appointment. After the successful trial denture, the surgical obturator was fabricated by heat-cured acrylic resin with a low quantity of residual monomer. The adjustment was very difficult because of the trismus. It was also painful for the patient as a result of the healing process in the defect zone. The denture borders were canted by a thin layer of silicone relining material in order to reduce the pain and facilitate the adjustment (Figure 2). This approach provided effective hermetization and better adaptation to the denture. The direct rebasing facilitated the non-traumatic distribution of the masticatory forces, as well as the enhancement of the healing process. After two months, the patient complained from disturbed hermetization, difficulties in swallowing and leakage of liquids through the nose. The examination results confirmed the problem and revealed a change in defect shape and size (Figure 3). This led to correction and modification of the surgical obturator into a temporary one. The obturating hollow-bulb part was deepened and re-designed in order to align with defect changes. For this purpose, the inner part was filled into the edge with putty silicone material. After the silicone set, the borders were rebased, so that buccal flange obturator was developed (Figure 4, 5). The modification imposed additional adjustment of the obturator and the contact points. Good hermetization was achieved contributing to normalised drinking of liquids. The checkup appointments every two weeks did not show any difficulties with feeding, speaking and swallowing. Additional relining in the vestibulum area and soft palate was performed after two months in order to restore and preserve the hermetization until the healing process was completely finished.

Fig. 1. Intraoral patient's view 7 days after surgery



Fig. 2. Surgical obturator



Fig. 3. Intraoral patient's view 30 days after surgery



Fig. 4. Temporary obturator - palatal view



Fig. 5. Temporary obturator - occlusal view



RESULTS

The results of the complex prosthetic treatment showed successful restoration of patient's speaking, feeding and swallowing functions. As initially expected, the necessary hermetization was not achieved during the first treatment stage with the surgical obturator. Additional direct rebasing onto the borders of the obturating part was necessary, especially in the A-line area by applying silicone material. As a result, it was possible to normalise swallowing and drinking of liquids. This correction allowed a non-traumatic distribution of the masticatory pressure and easy insertion of the denture into the defect by the patient. The application of silicone material limited the appearance of decubitus ulcers and facilitated the normal healing process progression. The follow-up appointments expectedly showed changes in the prosthetic field and re-hermetization, which violated fluid intake process but had no impact on patient's speaking and feeding abilities. The problem was solved by modification of the surgical obturator into temporary buccal flange obturator. The direct design of silicone hollow-bulb part improved obturator's retention and stability (Figure 6). The results from the checkup appointments showed a good level of hermetization, as well as acceptable feeding and speaking abilities given patients' specifics. In alignment with expectations, some corrections of the silicone part, which helped for the shaping of the surrounding soft tissues, were conducted during the healing process.

Fig. 6. Adjusted obturator



DISCUSSION

The main problems during the first treatment stage were related to difficult mouth opening and taking exact impressions. These difficulties are very common in all patients with maxillary resection since they are reported in many publications [3, 4]. Sometimes, the treatment has to be postponed, and a special system of masticatory exercises has to be applied to solve the issues. In this case, the problem was solved, and the impressions were taken successfully, which in turn allowed for the casting of a gypsum model for additional defect analysis. The main goal of the prosthetic treatment was the fabrication of stable denture. Metal clasps were used for retention and stability. After its adjustment, the necessary hermetization was achieved with silicone relining material. The created border between the oral and nasal cavity allowed for restoration of the damaged functions, which is considered as the main aim of the treatment by the majority of authors [3, 4]. The normalisation of patient's feeding and speaking contributed to improved life quality which is evidence for a well-conducted treatment [7, 8]. The achieved results confirmed the initial propositions by Huryn [9] suggesting the role of surgical obturator as a standard for patients' care, as well as for predictable and successful treatment results. The application of silicone materials enhances the adaptation to the denture easier and indicates its applicability without the use of immediate methods, as suggested by some authors [10].

The occurred changes in the defect, as a result of the healing process, required the fabrication of temporary obturator which is commonly viewed as an important stage in the complex treatment of patients with maxillary resection [11, 12, 13]. In this case, the presence of teeth and defect location allowed successful modification of the surgical obturator into a temporary one. Hollow-bulb obturating part, which improved the retention and stability, was fabricated.

The described methodology shows that there is no universal protocol for the treatment of patients with maxillary resection. Therefore, every stage has to be adapted to the specific characteristics of individual clinical cases. In alignment with a wide-spread opinion, the checkup appointments proved the need for periodic rebasing of the temporary obturator [11]. With the aim of achieving maximum life quality, the conducted treatment demonstrated the significant importance of prosthetic treatment in the first months after the resection [12].

CONCLUSION

The application of prosthetic treatment methods in the first days after the maxillary resection allows for restoration of speaking and feeding. The correct planning of the denture is an important condition, as it has to take into consideration the size and location of a defect. The presence of teeth facilitates treatment and the patient's adaptation to the obturator.

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