PROSTHETIC TREATMENT OF PATIENT AFTER MAXILLARY RESECTION BY CLOSED DEFINITIVE OBTURATOR

Ivan Gerdzhikov
Department of Prosthetic dentistry, Faculty of Dental Medicine, Medical University of Sofia, Bulgaria.
ivan_ger1971@abv.bg
Rosen Tsolov
Clinic of Maxillofacial Surgery, "St. George" University Hospital, Plovdiv, Bulgaria.
dr.rosentsolov@abv.bg

Abstract: Introduction: Hard palate resection causes significant disturbances in function as nutrition, speech and fluid intake. The problems after maxillary resection are often exacerbated by concomitant radiotherapy, and leads to dry mouth, difficulty swallowing and impaired speech intelligibility. This is the reason for seriously destroyed patients live capacity.
Prosthetic treatment methods take main role in rehabilitation of patients with maxillary resection. The most commonly used is the three stages treatment with surgical, temporary and definitive obturator. The success of prosthetic treatment in patients with maxillary resection depends on many factors. The main factors are the size of the defect and presence of preserved teeth.
Aim: The main goal of this clinical research is to investigate the treatment development in one clinical case for demonstration of closed obturator prosthetic treatment effectiveness and role for restoration of the functional damages in oral cavity.
Materials and methods: Patient 56 years old suffered from maxillary carcinoma, has been under the prosthetic treatment. Maxillary resection has been made in ride side of the patient hard palate. Size and defect location required closed obturator application. The first step has been defect gauze tamponade. Next step involved impression in alginate. What is followed: master cast has been filled using silicon material in the defect area in depth approximately of 7 mm under the anatomical palate shape. Finally, closed definitive obturator has been prepared with wire clasp retained on second upper left molar. Acrylics clasp also has been applied and retained on the upper right canine.
Results: Application of closed obturator in described clinical case has been very good clinical decision allowing us to achieve successful sealing. Because of small defect size and its favorable location masticatory function and speech has been immediately restored. Closed shape of the replacement part has been provided definitive obturator retention and stabilization
Conclusion: The prosthetic treatment of patients with hard palate resection provides the ability of normal feeding, speaking and swallowing. Prosthetic treatment by closed definitive obturator allows good defect sealing. In this way treatment helps and supported successful damage functions restoration. So that, we recommended this kind of treatment in cases of small defects on hard palate area.
Keywords: maxillary resection, maxillary defect, obturator, post resection denture.

1. INTRODUCTION

Surgical treatment of maxilla cancer caused different in volume and location defects, which destroyed patient's mastication, speech and swallowing (Flores-Ruiz, R. et al., 2017). Prosthetic approaches and means are the most often used treatment for restoration of damaged functions. This treatment allows improving of the life quality (Mittal, M. et al., 2018). Various methods of prosthetic restorations are applied depending of the defects size and location (Ali, M.M. et al., 2018).
Contemporary literature do not recomend exactly clinical protocol for prosthetic renewal of patients after maxillary resection. Therefore, the most authors accept prosthetic treatment in tree steps: surgical, temporary and definitive recovery, which allow achieving of optimum clinical results (Huryn, J. M. et Piro, J.,1989; King, G. E. et Martin, J., 1996). Every stage is characterized by a special features. According to them it can be applied in a special step from the treatment (Chen, C. et al.,2016; Lin, F. H. et Wang, T., 2011). Many investigations described this approach as successful for improving the mastication and patient swallowing (Depprich, R. et al., 2011).
More authors state that prosthetic methods should be applied according to prosthetic principals and individual patents characteristic (Keyf, F., 2001). It is necessary to randomize all factors acting on retention and stability of the obturators applied (Parr, G. R. et Gardner, L., 2003).

Several methods of obturators making are used different materials and techniques. The opinion about successful usage of opened cup – chapped obturators prevails (Kulkarni, P. et al., 2017; Oh, W.S. et Roumanas, E., 2008). The basic benefits of them are reduced weight and volume which allow improving of retention and stability (Mani, U., et al., 2019). As a major disadvantage, it is rubbed difficult cleaning and possibilities of infection and inflammatory (Asher, E. S. et al., 2001). Pointing out this problems, another authors suggested treatment by closed obturators only (Patil, P. G. et Patil, S. N., 2018).

Cardelli et al. (2015) are thinking that determining choosing of the treatment method should allow renovation of destroyed functions, comfort and patients aesthetics. Development of technologies and new materials production allow the new methods application (Tasopoulos, T. et al., 2017; Mawani, D. P. et al., 2018).

2. AIM

The main goal of this clinical research is to investigate the treatment development in one clinical case for demonstration of closed obturator prosthetic treatment effectiveness and role for restoration of the functional damages in oral cavity.

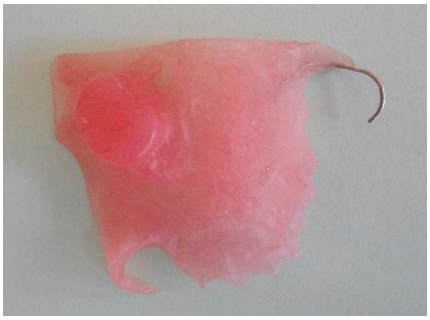
3. MATERIALS AND METHODS

Object Patient 56 years old after resection of maxillary carcinoma. Prosthetic treatment is applied.

Subject Patient inspection shows defect on the right side of palate bone. Alveolar ridge after tooth 13 is resected. All the teeth outside area of resection are available (Fig. 1). The patient is mainly suffered from impossibility of fluid consummation and difficult mastication.

Fig. 1. Intraoral patient's view

Fig. 2. Completed obturator-palatal view



For prosthetic treatment goal impressions in alginate are taken after the previous defect gauze tamponade. Analyzing and assessment of prosthetic field are prepared after master cast molding. Missing alveolar ridge and remain natural teeth on the ride side of the upper jaw made the treatment difficult. Location and size of the defect on another side created benefit conditions for prosthetic restoration. This is the reason for closed obturator usage. Wire clasp on tooth 27 and acrylic retainer on tooth 13 assured obturator retention. Master cast with occlusal rims has been made for definition of the occlusal height and central mandibular position. Next step was occlusal checking of arranged artificial acrylic teeth. After this successful procedure, master cast defect has been filled with doughy impressive silicone in 7 mm depth under anatomical shape of palate. This allowed overcoming of retentive areas of the defect and defined height of the replacement part of the definitive closed obturator. Shaped in this way prosthetic construction has been finished by heat acrylic polymerization (Fig. 2, 3). In the final treatment stage adjustment has been made accompanying by the ordinary treatment problems allowed and assured tightly, no traumatic putting in the defect. Patient has been informed about obturator care and oral hygiene maintaining.

4. RESULTS

Results confirmed the successful solving of the problem with liquid consummation. Tightly defect obturation without runny nose has been achieved. Replacement part incoming in depth of 7 mm in the defect provided good retention and obturator stabilization (Fig. 4). As a result patient eating, speech and swallowing has been normalized. Good adjustment allowed easy and non-traumatic putting in the defect. Some decubital ulcers has been observed during randomized control trials. It was founded that patient has been correct and has been complied rules for prosthesis cleaning and oral hygiene maintaining.

Fig. 3. Completed obturator-occlusal view

Fig. 4. Adjusted obturator

5. DISCUSSION

Various opinions on optimal prosthetic treatment approaches are discussed in cases of patients with maxillary resection. In this specific case the small size and defect location in hard palate area only developed decision for closed obturator making. This choice was referring to the basic patient suffering as impossibility for fluid input. Results achieved did not confirmed many authors statement about benefits of opened obturators (Kulkarni, P. et al., 2017; Oh, W.S. et Roumanas, E., 2008). Closed definitive obturators usage provided optimal seal by tightly defect obturation. Independent of the big prostheses volume retention and stability has been successfully achieved versus opinion that this can be reached by hollow obturators (Mani, U., et al., 2019).

This treatment approach require strict diagnosis of periodontal statement of remain natural teeth and oral hygiene maintaining. Polished replacement part allowed easy cleaning of the obturator. Obturator cleaning and care was similar than removable partial denture caring. This confirmed some authors statement referred to the closed obturator applying. It is accepted that closed obturators are optimal means for treatment of the patients with maxilla ectomy (Patil, P. G. et Patil, S. N., 2018).

6. CONCLUSION

Prosthetic treatment with closed obturator allows good sealing of the defect helping fast restoration of mastication, speech and fluid input. Small defects and location in hard palate area are indications for close obturators usage.

REFERENCES

Flores-Ruiz, R., Castellanos-Cosano, L., Serrera-Figallo, M. A., Gutiérrez-Corrales, A., Gonzalez-Martin, M., Gutiérrez-Pérez, J. L., et al. (2017). Evolution of oral cancer treatment in an andalusian population sample: Rehabilitation with prosthetic obturation and removable partial prosthesis. J Clin Exp Dent., 9(8), 1008-14.

Mittal, M., Sharma, R., Kalra, A., Sharma, P. (2018). Form, Function, and Esthetics in Prosthetically Rehabilitated Maxillary Defects. J Craniofac Surg., 29(1), 8-12.

Ali, M. M., Khalifa, N., Alhajj, M. N. (2018). Quality of life and problems associated with obturators of patients with maxillectomies. Head Face Med., 14(1), 2.

Huryn, J. M., & Piro, J. (1989). The maxillary imediate surgical obturator prosthesis. J Prosthet Dent., 61(3), 343-7.

King, G. E., & Martin, J. (1996). Complete dentures for the obturator patient. Dent Clin North Am., 40(1), 217-37.

Chen, C., Ren, W. H., Huang, R. Z., Gao, L., Hu, Z.P., Zhang, L. M., et al.(2016). Quality of Life in Patients After Maxillectomy and Placement of Prosthetic Obturator. Int J Prosthodont., 29(4), 363-8.

Lin, F. H., & Wang, T. (2011). Prosthodontic rehabilitation for edentulous patients with palatal defect: report of two cases. J Formos Med Assoc., 110(2), 120-4.

Depprich, R., Naujoks, C., Lind, D., Ommerborn, M., Meyer, U., Kübler, N. et al. (2011). Evaluation of the quality of life of patients with maxillofacial defects after prosthodontic therapy with obturator prostheses. Int J Oral Maxillofac Surg., 40(1), 71-9.

Keyf, F. (2001). Obturator prostheses for hemimaxillectomy patients. J Oral Rehabil., 28(9), 821-9.

Parr, G. R., & Gardner, L. (2003). The evolution of the obturator framework design. J Prosthet Dent., 89(6), 608-10.

Kulkarni, P., Kulkarni, R., Shah, R., & Maru, K. (2017). Prosthetic Rehabilitation of a Partially Edentulous Patient With Maxillary Acquired Defect by a Two-Piece Hollow Bulb Obturator (Using a Dentogenic Concept). J Coll Physicians Surg Pak., 27(8), 514-6.

Oh, W. S., & Roumanas, E. (2008). Optimization of maxillary obturator thickness using a double-processing technique. J Prosthodont., 17(1), 60-3.

Mani, U., Mohamed, K., Kumar, A., & Inbarajan, A. (2019). A Modified Technique to Fabricate a Complete Hollow Obturator for Bilateral Maxillectomy in a Patient With mucormycosis-A Technical Case Report. Spec Care Dentist., 39(6), 610-6.

Asher, E. S., Psillakis, J., Piro, J., & Wright, R. (2001). Technique for quick conversion of an obturator into a hollow bulb. J Prosthet Dent., 85(4), 419-20.

Patil, P. G., & Patil, S. N. (2018). Lost Wax-Bolus Technique to Process Closed Hollow Obturator with Uniform Wall Thickness Using Single Flasking Procedure. J Prosthet Dent., 120(1), 144-6.

Cardelli, P., Bigelli, E., Vertucci, V., Balestra, F., Montani, M., DE Carli, S., et al. (2015). Palatal obturators in patients after maxillectomy. Oral Implantol. (Rome), 7(3), 86-92.

Tasopoulos, T., Kouveliotis, G., Polyzois, G., & Karathanasi, V. (2017). Fabrication of a 3D Printing Definitive Obturator Prosthesis: a Clinical Report. Acta Stomatol Croat., 51(1), 53-8.

Mawani, D. P., Muddugangadhar, B. C., Das, A., & Kothari, V. (2018). Flasking technique with alum crystals for fabricating definitive hollow bulb obturators. J Prosthet Dent., 120(1), 144-6.