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Prosthetic Rehabilitation of Mucormycosis Patient By Cast Partial Denture: A Case Report

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ABSTRACT
This case report describes the utilization of removable prosthesis (removable cast partial denture) where implant supported fixed prosthesis is not possible. It is a case of Kennedy's Class III partially edentulous condition, resulted from maxillectomy, which was done as the surgical treatment of mucormycosis. After failure of zygomatic implant within 1 month, the patient was prosthodontically rehabilitated with removable cast partial denture.
Key words: *Mucormycosis, Cast Partial Denture, Zygomatic implants.*

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INTRODUCTION

No doubt that zygomatic implants have come up as boon for such patients wherein there is deficiency of the maxillary bone, however in certain situations we are unable to use them like underlying systemic conditions, financial constrains or in cases where previous implants have failed. In such situations, the only resort left is removable prosthesis. The occurrence of mucormycosis as a super infection is quite common with COVID−19. Two factors could be responsible as causative elements for this. Out of those factors, decreased level of oxygen saturation is the first one, which could increase the occurrence of super infection. Another one could be the presence of systemic conditions, involving diabetic ketoacidosis, glucose at high level and intake of steroid in large amount as a therapy[1]

Candidiasis and Aspergillosis are the most common opportunistic infections. Then comes, Mucormycosis, which is the third most[2] According to WHO; Mucormycosis could be life-threatening infection as it is aggressive. Patients suffering from comorbidities like diabetes mellitus are at high risk of post – COVID infections. It also includes those patients, which are on corticosteroids. Opportunistic mucormycosis is a pathological condition that primarily affects immunosuppressed people. As a result of inhaling fungus spores, the illness starts in the nose and paranasal sinuses [3-5]

Brown and Shaw classified maxillectomy defects in to horizontal and vertical components. The vertical component categorized in to 6 main categories, in which category I to IV denotes the extent of unilateral defect. On the other hand, horizontal component categorized in to 4 categories, a to d, describing the extent of defect in to the palate and alveolus[6].A number of reports have been published on different designs of cast partial denture, showing the comfort provided to the patient wearing removable partial denture.In this case report, we have presented a case of maxillary defect due to a post-surgical treatment of mucormycosis. The patient came with Brown et al. Class II b maxillary defect, who has been prosthetically rehabilitated with the cast partial denture.

CASE REPORT

A 24 year old male, named Rahul reported to the Department of Prosthodontics, SGT university after surgical resection with a history of mucormycosis and was referred from the department of oral and maxillofacial surgery. Post resection lead to a unilateral maxillary defect, having communication between maxillary sinus and oral cavity.

Extra oral examination revealed mild loss of lip support, poor facial aesthetics, and minor impairment in speech (figure 1). Intraoral examination showed unilateral loss of maxillary alveolus, maxillary teeth, oro-antral, and oro-nasal communication. Teeth absent as a result of resection were 11, 12, 13, 14, 15, 16. Teeth present were 21, 22, 23, 25, 26, 27, and 28

Figure 1: Extra and intra oral examination

Zygomatic implant supported fixed prosthesis was planned for rehabilitation. Implant surgery was done successfully, but within 1 month after the procedure, patient felt pain and numbness in the zygomatic region. After examination, it was decided to remove the implant. Due to the failure of the implant, only one option remained, which was of removable prosthesis as cast partial denture.

So, removable cast partial denture was planned for rehabilitation. After taking the diagnostic impression, primary cast was made. Surveying of the cast was done, followed by required block outs and relief. Cast partial design was planned. Rest seats were prepared in patient's mouth. After preparations intraorally, putty light body impression was taken in customized tray (figure 2). Impression was sent to the lab for the fabrication of metal framework by CAD- CAM process. Metal framework tried inside the patient's mouth with the wax bite block (figure 3). Bite of the patient was recorded. After teeth arrangement, trial was done inside the patient's mouth. After curing of the cast partial denture, it was fitted inside the patient's mouth.

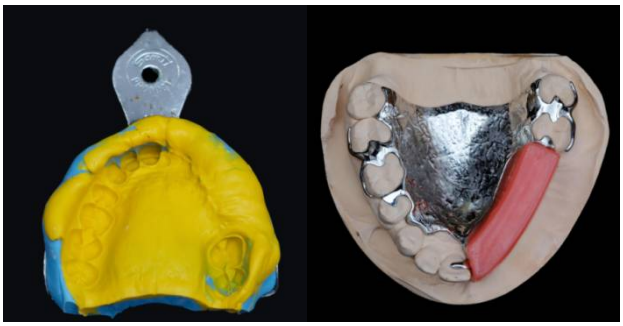

Figure 2. Primary Cast partial design

Figure 3 Metal framework and bite recording

As compared to congenital defects, acquired defects results in some cosmetic and physiologic changes and most of the times pathological also if not treated prosthetically. These patients undergo functional, emotional and social impacts depending upon the quantity of tissue, which has been resected. Reconstruction of maxillectomy defects is done with soft tissue flaps and prosthetic obturators[7-8]Different treatment options are available of prosthetic rehabilitation with various reconstruction and prosthetic rehabilitation options are available with their own limitations and advantages. Surgical procedures have unpredictable outcomes. In addition, they are associated with postoperative morbidity and multiple revision surgeries. Thus, in the end to restore the function they still warrant the removable prosthesis[9-11]. The cast partial denture procedure explained for the rehabilitation of this patient of maxillary defect after surgical resection is an innovative approach of partial edentulous arch as zygomatic implant also had been failed in this case. Also this is the case of a young patient, where masticatory efficiency is high. Cast partial denture contains alloys with acrylic resins, due to which it has high impact strength, compressive strength as compared to the non-metallic acrylic denture. Dietary intervention

should be provided to the patient, in the absence of which patients are unaware to change their dietary habits. Therefore, patients who are requiring dental prosthesis, they should receive dietary advice[12-13]

CONCLUSION

There is no doubt in this that the cast partial denture or removable prosthesis is a ray of hope for patients where fixed prosthesis supported by implants is not possible due to certain reasons. It fulfils not only esthetic demands of such patients, functional needs like masticatory functions could also met by removable prosthesis. In patients of maxillectomy defect after surgery due to mucormycosis, which is very common after COVID infection, cast partial denture is not less than a boon, who could not undergo fixed treatment.

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