Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(5), 1241-1245 | ISSN:2251-6727

Maxillofacial prosthesis: A case report

Dr. Ashish Choudhary [a], Dr. Vanshika singh [b*], Dr. Shairy Vashisht [c]

[a] Head of department, Department of Prosthodontics and crown &Bridge, School of dental Sciences, Sharda University, Knowledge Park 3, 201310, Greater Noida, Uttar Pradesh, India

[b*] Postgraduate, Department of Prosthodontics and crown &Bridge, School of dental Sciences, Sharda University, Knowledge Park 3, 201310, Greater Noida, Uttar Pradesh, India;

[c] Assistant professor, Department of Prosthodontics and crown &Bridge, School of dental Sciences, Sharda University, Knowledge Park 3, 201310, Greater Noida, Uttar Pradesh, India

(Received: 11 June 2024 Revised: 16 July 2024 Accepted: 10 August 2024)

KEYWORDS
Mucormycosis

Maxillofacial defects

Maxillofacial rehabilitation

Obturators

Conservative Prosthodontics

ABSTRACT:

Mucormycosis is an acute opportunistic infection caused by saprophytic fungus that can be found in soil, bread moulds, and food waste. Infection in the paranasal sinuses or nasal cavity can cause involvement of the oral cavity, which typically manifests as palatal ulceration or necrosis. Once the maxilla is affected, substantial maxillary deformities may occur from surgical resection and exfoliation of the necrosed areas. In addition to replacing missing teeth, the dentist must also replace damaged soft tissue and bone, including the hard palate and alveolar ridges. This paper describes the prosthodontic rehabilitation of maxillary necrosis secondary to mucormycosis case in partially edentulous arch.

31 year old man reported to The Department of Prosthodontics and Crown & Bridge, for prosthodontic rehabilitation of acquired maxillary defect secondary to mucormycosis. Extra orally patient's middle third face appeared collapsed on the affected side. Surgical history revealed temporal flap being raised to close the oroantral communication. Intraoral examination showed partially edentulous maxillary arch and absence of half of the hard palate. A combination of fixed and removable prosthesis was planned.

Aesthetics and phonetics of the patient was restored. Facial appearance was also improved to an extent. Maxillofacial rehabilitation is a multidisciplinary task. Definitive prosthodontic treatment is one of the final therapies which are instituted and attempts to alleviate any anatomical and functional deficiencies. Obturators, magnets inserted after surgery or zygomatic implants may be used in rehabilitation.

In this case we took a different approach by combining fixed and removable prosthesis which gave satisfactory results.

1. Introduction

Mucormycosis is an acute opportunistic infection caused by a saprophytic fungus commonly found in soil, bread moulds, and food waste. It is a term that most physicians are familiar with, referring to a group of distinctive mycoses caused by one of the ubiquitous, saprophytic fungi of the order Mucorales. The Mucorales are not fastidious organisms and can grow at a range of temperatures from 25°C to 55°C, with the optimal temperature for growth of clinically important species being 28°C to 30°C.

The black fungal disease has become widespread due to the recent COVID outbreak, mainly due to the high doses of corticosteroids given to patients. The disease can present in various clinical forms, including rhinocerebral, pulmonary, gastrointestinal, cutaneous, and disseminated. Infection in the paranasal sinuses or nasal cavity can lead to involvement of the oral cavity, which typically manifests as palatal ulceration or necrosis. The defects can range from minor intraoral to major midfacial defects.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(5), 1241-1245 | ISSN:2251-6727

Resection of the maxilla due to carcinoma or infection can result in numerous complications, including facial deformity and speech difficulties characterized by hypernasality. These issues can significantly affect a patient's quality of life.

Mucormycosis , a fungal infection, has had a devastating impact on patients in the post-COVID era. This opportunistic infection primarily affects individuals with weakened immune systems. Long-term use of corticosteroids in susceptible patients, combined with high levels of fungal spores in the hospital environment, creates a favorable environment for fungal infections. These infections usually begin in the nose and paranasal sinuses as a result of inhaling fungal spores but can spread to orbital and intracranial structures either through direct invasion or via the bloodstream. The fungus invades arteries, which can cause thrombosis and subsequent necrosis of hard and soft tissue.

Surgical resection and debridement of the affected areas in the maxilla can result in significant defects. These defects can take the form of a small opening that connects the oral cavity with the maxillary sinus, or it can be more extensive, involving the hard and soft palate, alveolar ridge, and the floor of the nasal cavity. Patients who undergo extensive maxilla removal may experience facial disfigurement, hyper nasal speech, masticatory difficulties, fluid leakage through the nose, and acute/chronic sinusitis.

2. Case report

31-year-old man reported to The Department of Prosthodontics and Crown & Bridge, with chief complaint of poor aesthetics and missing right upper jaw since 6 months. The patient has a medical history of rhino cerebral mucormycosis infection and Eye surgery. Patient underwent right partial maxillectomy followed by temporal flap closure 6 months back. The patient has poor aesthetics with an asymmetrical face, w- vision and collapsed musculature on the right side of the face. Intraoral examination showed loss of teeth and palate, soft palpable tissue on the resected area, no vestibular area and firm intraoral musculature.(Figure 1-6)

The final diagnosis of the patient was partial maxillary arch following Kennedy classification 2 and according to Armany's classification class IV.

Since the patient was not willing for any other surgery and the remaining teeth were compromised many of the options for the treatment were removed. We planned for a more conservative approach and the prosthesis fabricated was short arch and out of occlusion. We planned prosthesis which was a combination of fixed and removable prosthesis, where metal framework server as fixed component and denture as removable component.

Firstly, proximal stripping was done to create space between the teeth for the metal ring part of the fixed component. After stripping impression were made and diagnostic cast were obtained. To connect the removable component with the fixed component we incorporated the structure of locator attachment by duplicating it. A wax pattern was fabricated and duplicated locator attachments were placed such that they provide adequate retention.(Figure 7-8)

Investing and casting of wax pattern was done, and metal framework was obtained, finished and polished. Finished metal framework was checked in patient's mouth and a pickup impression was made with metal framework and cast was obtained.(Figure 9-10)

On the obtained cast denture base and was fabricated and jaw relation was done which was then mounted. Teeth arrangement was done free of occlusion and trial was done. (Figure 11-14)

Flasking of the denture was done.(Figure 15-17) Salt loss technique was used to fabricate hollow prosthesis. Denture obtained was finished polished and checked in the patient's mouth. Lastly, cementation of the metal framework was done, and prosthesis was attached to the metal framework with the help of duplicated locator attachments.(Figure 18-19)

3. Discussion

The restoration of patients with acquired maxillary defects post-surgical resection falls under the purview of a maxillofacial prosthodontist, tasked with reconstructing an artificial barrier to restore speech, mastication, and swallowing functionality. However, when confronted with significant maxillary resections and flap coverage, the likelihood of success b ecomes questionable.

With each surgical resection comes a corresponding loss of support, resulting in unfavorable forces acting upon the remaining teeth. In this case, the patient refused any further surgical interventions, rendering many treatment options obsolete. Instead, we opted for a more conservative approach, fabricating a short arch prosthesis that is out of occlusion, considering the compromised state of the remaining teeth.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(5), 1241-1245 | ISSN:2251-6727

4. Summary

The fundamental aspect of managing prosthetic care lies in the meticulous planning and design of the prosthesis. In the realm of conventional management of defects, it holds a significant role in establishing the patient's overall function. In contrast to other conditions, surgical planning for prosthetic options is limited in the case of mucormycosis. The selection of prosthetic options ranges from simple removable prostheses to more advanced implant options. Following complete recovery from the infection, rehabilitation treatment is initiated.

The assessment of tissue stability is crucial in determining the appropriate design for the prosthesis, considering the functional requirements. It is important to note that the majority of defect areas consist of nonkeratinized mucosa, which can add complexity to postoperative care and retention of the prosthesis. In some cases, the use of skin grafts or protection of raw tissues with keratinized mucosa can provide valuable support. Carefully implementing fundamental principles in the use of implants and other options can greatly improve patients' quality of life.

Refrences

1. Skiada A, Lass-Floerl C, Klimko N, Ibrahim A, Roilides E, Petrikkos G. Challenges in the diagnosis and treatment of mucormycosis. Medical mycology. 2018 Apr 1;56(suppl_1):S93-101.
2. Sugar AM. Mucormycosis. Clinical infectious diseases. 1992 Mar 1;14(Supplement_1):S126-9.
3. Chincholikar S, Lalwani G. Rehabilitation of post Covid mucormycosis maxillectomy defect with hollow obturator: a case series. IP Ann prosthodont restor dent. 2022;8:38-41.
4. Soman R, Sunavala A. Post COVID-19 mucormycosis-from the frying pan into the fire. The Journal of the Association of Physicians of India. 2021 Jan;69(1):13-4.
5. Hsu LY, Chia PY, Lim JF. The novel coronavirus (SARS-CoV-2) pandemic. Ann Acad Med Singap. 2020 Mar 16;49(3):105-7.
6. Bidra AS, Jacob RF, Taylor TD. Classification of maxillectomy defects: a systematic review and criteria necessary for a universal description. The Journal of prosthetic dentistry. 2012 Apr 1;107(4):261-70.
7. Desjardins RP. Obturator prosthesis design for acquired maxillary defects. The Journal of Prosthetic Dentistry. 1978 Apr 1;39(4):424-35.
8. Chen C, Ren W, Gao L, Cheng Z, Zhang L, Li S, Zhi PK. Function of obturator prosthesis after maxillectomy and prosthetic obturator rehabilitation. Brazilian journal of otorhinolaryngology. 2016 Mar;82:177-83.
9. Mittal M, Sharma R, Kalra A, Sharma P. Form, function, and esthetics in prosthetically rehabilitated maxillary defects. Journal of Craniofacial Surgery. 2018 Jan 1;29(1):e8-12.

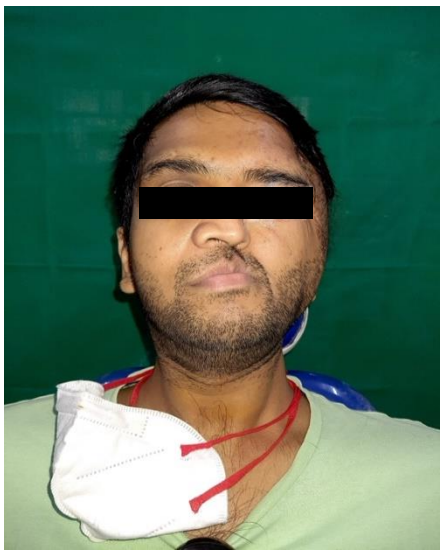

Figure – 1

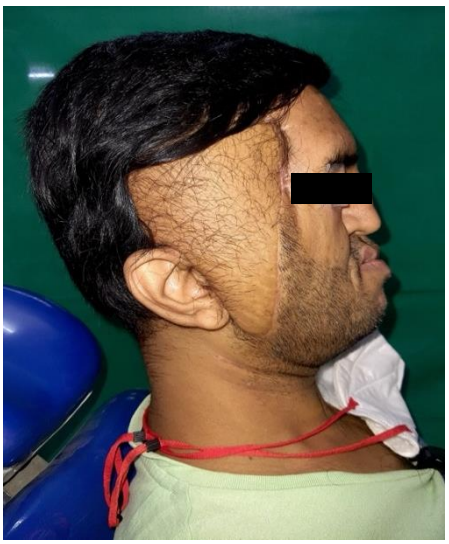

Figure – 2

Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(5), 1241-1245 | ISSN:2251-6727

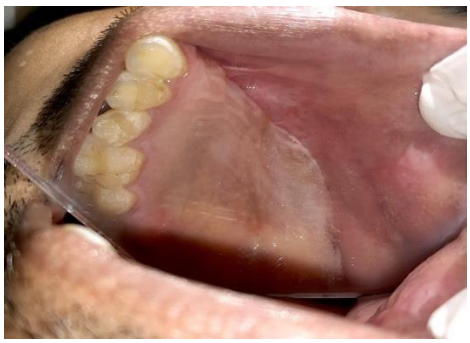

Figure – 3

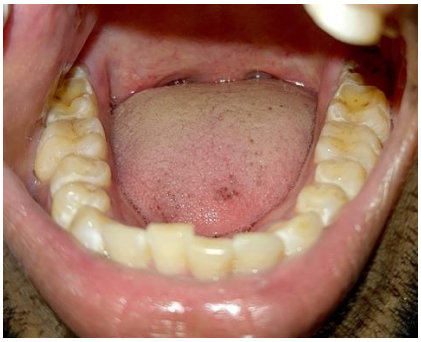

Figure – 4

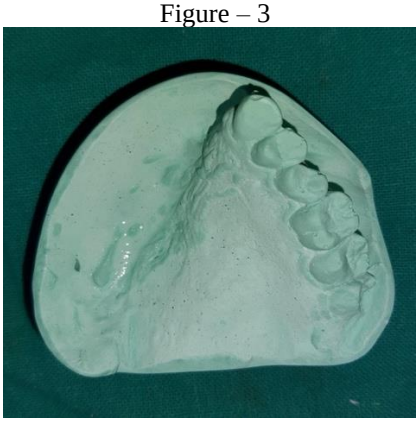

Figure – 5

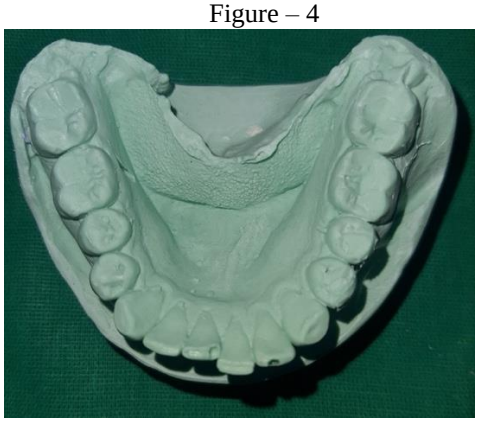

Figure – 6

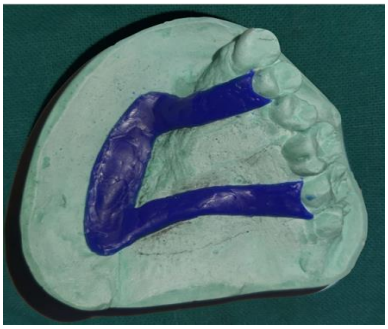

Figure – 7

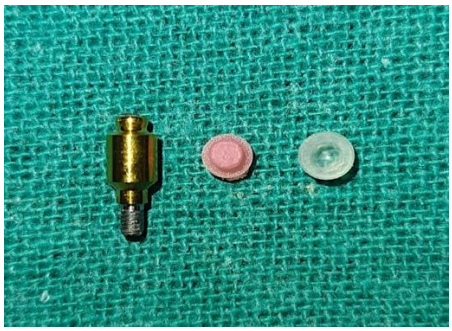

Figure – 8

Figure – 9

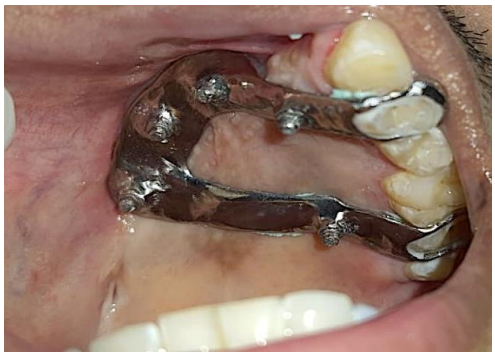

Figure – 10

Journal of Chemical Health Risks

www.jchr.org

JCHR (2024) 14(5), 1241-1245 | ISSN:2251-6727

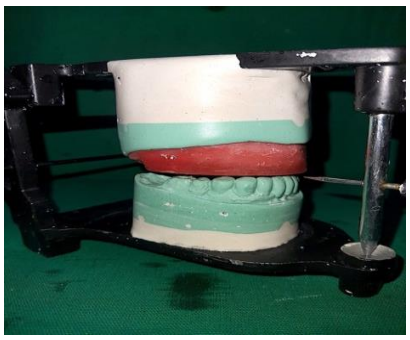

Figure – 11

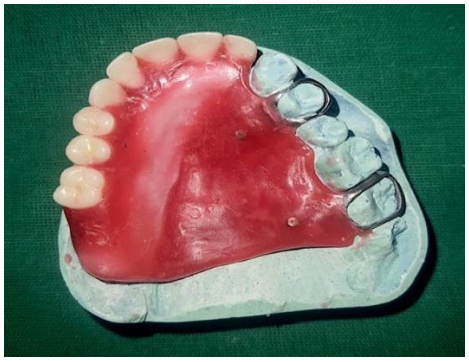

Figure – 12

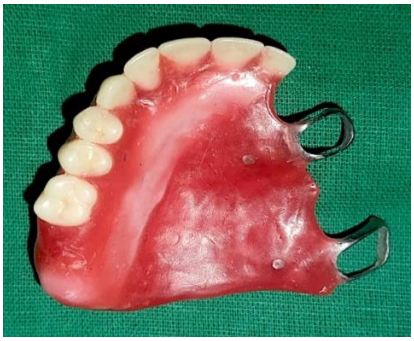

Figure – 13

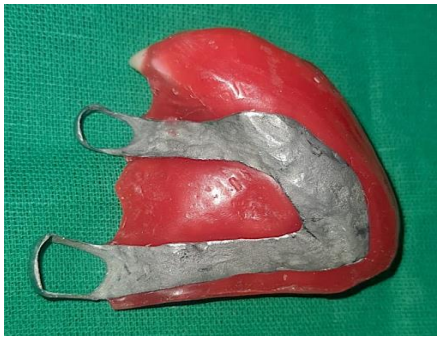

Figure – 14

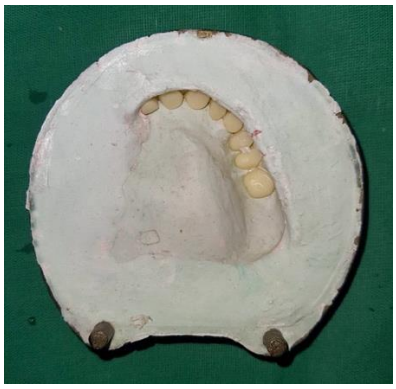

Figure – 15

Figure – 16

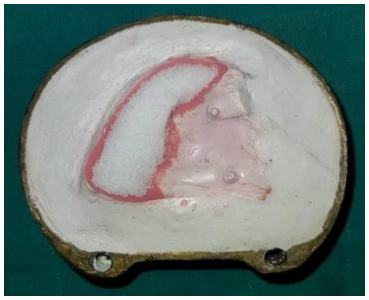

Figure – 17

Figure – 18

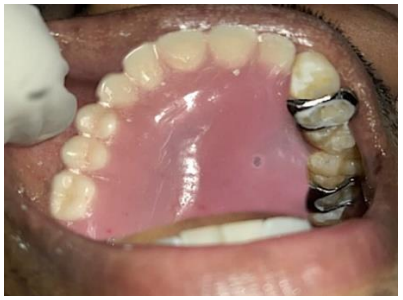

Figure – 19