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Prosthetic Management of Mucormycosis with Palatal Perforation: A Case Report

Dr. Manu Rathee — Senior Professor and Head, Department of Prosthodontics, Post Graduate Institute of Dental Sciences, Pt. B.D Sharma University of Health Sciences Rohtak, Haryana, India.

Dr. Mahesh Goel — Associate Professor, Department of Oral and Maxillofacial Surgery, Post Graduate Institute of Dental Sciences, Pt. B.D Sharma University of Health Sciences, Rohtak, Haryana, India.

Dr. Renu Kundu — Post Graduate Student, Department of Prosthodontics, Post Graduate Institute of Dental Sciences, Pt. B.D Sharma University of Health Science, Rohtak, Haryana, India.

ABSTRACT

Mucormycosis is caused by fungi Phycomycetes and is one of the fulminant and fatal mycotic infections known to affect human beings with a high mortality rate. The main form of mucormycosis are pulmonary and rhinocerebral. In Rhinocerebral mycormycosis, invasion of surrounding tissue can cause necrotizing ulceration of palate with a blackish slough and exposure of bone. It is commonly reported in immunocompromised patients such as poorly controlled diabetes mellitus. This paper presents a case report of rhinocerebral mucormycosis in an uncontrolled diabetic patient with deep palatal perforation. The patient was treated by surgical debridement, systemic antifungal administration and prosthetic management using surgical obturator.

INTRODUCTION

Fungal pathogens are subdivided into those that remain superficial (i.e restricted to the epithelial surface) and those that invade deep organs and tissues (deep fungi).[1] Most of the species are considered opportunistic (infecting only immunocompromised hosts) and others truly pathogenic (i.e capable of infecting normal persons). Mucormycosis is an opportunistic deep fungal infection caused by "bread mold fungi" of the genera Mucor, Absidia, Rhizopus and Cunninghamella, also collectively known as Phycomycetes or Zygomycetes.[2] The main form of mucormycosis are pulmonary and rhinocerebral. Rhinocerebral mycormycosis typically starts in the maxillary antrum, particularly in poorly controlled diabetics.[3] Mucormycosis is characterized by its unrelenting progression towards vital organs with marked propensity towards arterial wall by direct extension producing vascular thrombosis leading to ischaemic necrosis.[4] The maxilla rarely undergoes necrosis because of its rich vascularity. Invasion of surrounding tissue can cause necrotizing ulceration of palate with a blackish slough and exposure of bone.

CASE REPORT

A 78-year-old male patient reported with the chief complaint of nasal regurgitation of food, associated with a purulent discharge from the nasal cavity for the past 25 days. Past medical history revealed the patient to be a diabetic with history of poor drug compliance. He had not been on any antidiabetic medication over the previous three years. Diagnostic investigations were done and the patient was found to be a case of Mucormycosis. On extraoral examination patient had skin overgrowth & irregular, pigmented mass present bilaterally on cheek prominences (Frog face). (Fig.1)



Fig 1. Extraoral pre-operative view.

On intra-oral examination, patient's maxillary arch was edentulous and mandibular arch was partially edentulous. Palatal perforation was present on right side of palate with a blackish slough and exposure of bone. (Fig.2)



Fig 2. Intraoral pre-operative view.

OBTURATOR FABRICATION:

1. Patient's diagnostic impressions were made with irreversible hydrocolloid impression material in stainless steel stock trays for edentulous ridges.
2. The impressions were poured in dental stone to make diagnostic cast and after duplicating the diagnostic maxillary cast, a working cast was made in Plaster of Paris. (Fig.3)



Fig 3. Working maxillary cast made with Plaster of Paris.

3. The arbitrary scraping of working cast was done with scalpel to remove the defect and for fabrication of surgical obturator. The obturator fabricated was soft tissue supported retained with peripheral seal.
4. The surgical obturator was fabricated in clear auto polymerizing acrylic resin to cover the maxillary defect postoperatively. (Fig.4)

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Fig 4. Surgical obturator fabricated using clear auto polymerizing acrylic resin.

5. Patient was operated under general anaesthesia and surgical obturator was inserted immediately to protect the defect and to provide a nasomaxillary seal to prevent regurgitation of food & fluid. (Fig.5)



Fig 5. Surgical obturator in place postoperatively.

6. Post insertion instructions were given to the patient regarding hygiene maintenance in the oral cavity.
7. Surgical obturator created a protective seal over the surgical wound and protected it from the frictional contact of tongue and food, so enhanced healing.

DISCUSSION

Platauf is credited with the first description of Zygomycosis in his paper entitled- 'Mycosis mucorina'.[5] The class 'Zygomycetes' is subdivided into two orders, which contain the agents of human Zygomycosis, the Mucorales and the Entomophthorales.[4,6] The hallmarks of disease with these organisms are angio-invasion, thrombosis, infarction and necrosis of the involved tissue. Mucormycosis infection in humans is usually acquired through airborne fungal spores, contamination of traumatized tissue, ingestion and direct inoculation.[7] The predisposing factors for mucormycosis includes: Diabetes - the single most common predisposing factor especially when associated with ketoacidosis, other immunocompromised conditions. The major clinical forms are Rhinocerebral and Pulmonary forms. Though mucormycosis has been reported in otherwise healthy individuals; a predisposing medical condition is virtually always present. The patient in this case report also had uncontrolled diabetes which is a well-known predisposing factor for mucormycosis. Uncontrolled diabetes mellitus can alter the normal immunologic response of patients to infections. Such patients have decreased granulocyte phagocytic ability with altered polymorphonuclear leukocyte response.

Mucormycosis is a rapidly progressive disease with a fulminant course and fatal outcome unless diagnosed early and treated rapidly. Prognosis is dependent on multiple factors and early initiation of treatment. A multi-disciplinary approach is critical in successful management of a patient with mucormycosis.

CONCLUSION

This clinical report describes the fabrication of surgical obturator. The old diabetic patient with mucormycosis was managed by surgical debridement, systemic antifungal administration and prosthetic adjunctive therapy using surgical obturator.

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