

# Zygomatic Implant - Newer Way for Rehabilitation of Post Maxillectomy Case: A Case Report

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## Abstract

A fungal disease known as mucormycosis spreads swiftly and is associated with a high rate of morbidity and mortality from molds belonging to the Mucorales order. The sinuses are the most often involved site when it comes to mucormycosis infection. Treatment options include systemic or local anti-fungal medications, surgical excision, and debridement. In order to restore function and aesthetics, a 52-year-old man with a history of uncontrolled diabetes mellitus spanning six to eight years, as well as treatment for mucormycosis that had been previously received elsewhere, presented to the oral surgery department. Quad zygomatic implants were planned for the purpose of rehabilitation. A three-dimensional (3D) computed tomography (CT) scan of the face showed that the maxilla was significantly atrophic, and the damaged areas were surgically removed. The CBCT scan was used to finish the implant planning process. After all haematological examinations were completed, the patient was scheduled for surgery and a maxillary prosthesis based on quad zygomatic implants was planned.

## Introduction

Mucormycosis, sometimes known as "mucor" informally, is a fungal illness that spreads quickly and is linked to a high rate of morbidity and death from molds in the Mucorales order.[1] Immunocompromised people are the main victims of mucormycosis infections in wealthy nations like the United States. In addition, one significant risk factor is uncontrolled diabetes mellitus.[2]

The most common site of involvement for mucormycosis infection and clinical presentation is the sinuses. Symptoms can vary from nonspecific signs and symptoms like fever and headache to more specific ones like dark nasal or palatine mucosal eschar, orbital invasion, and brain involvement. Due to the fungus's potential for angioinvasion and brain involvement, even though the disease is uncommon, it is a surgical

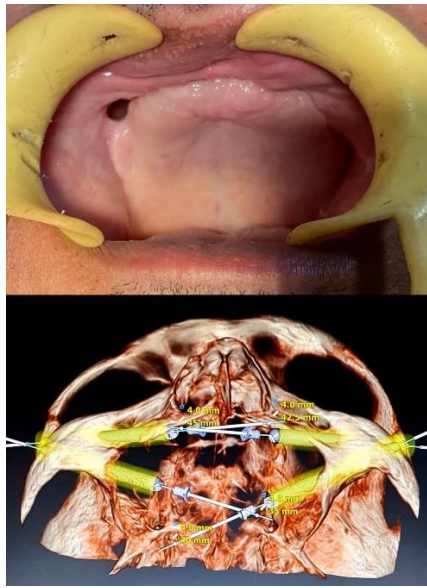
and medical emergency. Mucormycosis is a fulminant, quickly progressing, potentially fatal illness. Diabetic patients and patients who have a history of COVID 19 infections were seen to be vulnerable for mucormycosis. Clinically, the condition is defined by a progressive necrosis brought on by the organisms' invasion of the blood vessels, which causes thrombosis and tissue infarction/necrosis. There is also a partial loss of brain function. The likelihood of death may rise if the illness worsens and affects the skull. Surgical debridement, surgical excision, and systemic or local antifungal medicines are used as treatments. Defects from maxillectomy are treated with either surgical correction or implant-based rehabilitation. The place, size, etiology, severity, age, and patient preferences all play a role in the choice to adopt one of the alternatives.

In order to treat patients who appear with inadequate bone height in the anterior and posterior maxilla, the "quad zygoma" concept entails the insertion of four zygomatic implants with appropriate anteroposterior spread and proper inclination for the distribution of stresses. In cases of severe alveolar atrophy, non-alveolar zygomatic patients with implants provide a reliable substitute for bone augmentation procedures.[3] In patients with severe maxillary atrophies, other options, including as bone grafting treatments, have drawbacks related to the process and patient waiting times. For these reasons, patients may find it more difficult to choose alternatives such as dental implants.[4] Dental implants can be used to restore masticatory function in the complete or partially edentulous maxilla with a high degree of predictability and satisfactory long-term outcomes. In order to guarantee satisfactory success rates for conventional dental implants in the absence of bone augmentation techniques, the maxilla's posterior portion must have a minimum bone height of 10 mm.

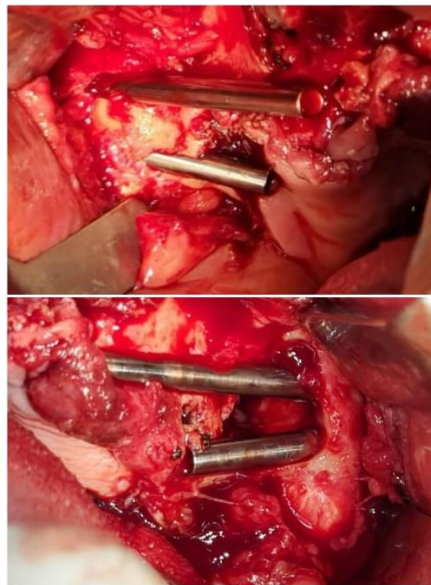
### **Case Report**

A 52-year-old man who had been diagnosed with mucormycosis and had previously received treatment elsewhere, as well as a history of uncontrolled diabetes mellitus spanning six to eight years, presented to the department of OMFS in order to receive restoration of function and aesthetics, quad zygomatic implants for the purpose of rehabilitation was planned.

Three dimensional (3D) Cone Beam Computed Tomography (CBCT) of the face revealed severely atrophic maxilla, with surgical resection of the defective sites noted. Implant planning was completed using the CBCT. Following analysis, a maxillary prosthesis based on quad zygomatic implants was planned, and the patient was scheduled for surgery following all haematological investigations. [Figure 1]

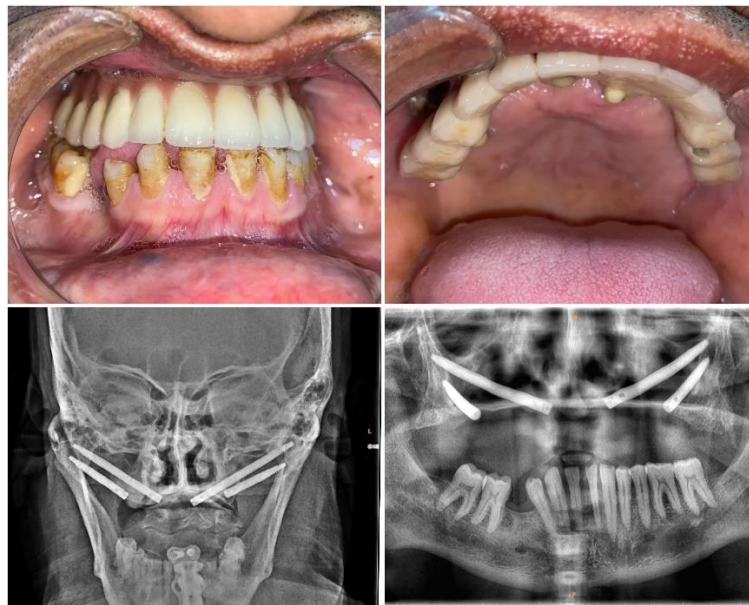


**Figure 1: Pre Operative image and Quad zygoma implant planning**



**Figure 2: Intra Operative images implant planning**

To reveal the zygomatic bone, a full thickness mucoperiosteal flap was elevated and subperiosteal dissection was performed labially and palatally. Following osteotomy, four zygomatic implants measuring 42.5 x 4 mm (1) and 35 x 4 mm (1) were positioned on the left side, and 45 x 4 mm (1) and 40 x 4 mm (1) were positioned at a 45-degree angle on the right side. Vicryl 3-0 was administered intraorally to produce hemostasis and closure. [Figure 2] For a duration of one week, analgesics and antibiotics were provided. One and two weeks following surgery, postoperative follow-up appointments were set. A one-month follow-up showed that the soft tissues had healed optimally.[Figure 3]



**Figure 3: Post Operative image of the prosthesis and radiographic view of the implants**

### Discussion

Mucormycosis is an opportunistic and invasive fungal infection. Depending on the underlying etiology of the illness and its location, the death rate might range from 40% to 80%. [5] Patients commonly show up with symptoms of head ache, periorbital pain, oedema in eyelids, and eventually the disease's characteristic black necrotic eschar. This is specific to rhino-orbital cerebral presentation, which starts when the fungus is inhaled into the paranasal sinuses. [6] When it comes to the oral cavity, mucormycosis affects the maxilla, which may need to be surgically resected.

It is necessary to replace missing teeth and bone with prosthesis in order to return both function and appearance to normal. Soft tissue flaps can be used in a variety of ways to cover maxillary deficiencies; however, as soft tissue flaps are unable to support implants or enable bone restoration for maxillary defects, quad zygoma represents a potential therapeutic option for maxillary defects. In our case report, quad zygomatic implants were used to provide a prosthesis in a comparable instance of mucormycosis that had previously been treated.

The zygomatic implants were placed using an extra sinus approach made possible by the anatomical arrangement of the maxilla and zygoma. [7] After being placed into the zygoma, zygomatic implants can be loaded with a temporary prosthesis right away, and then, four to six months later, a permanent prosthesis. Given the zygomatic implants strong primary stability of more than 45 N cm, a rapid restoration using a temporary prosthesis was possible to be carried out. The prosthesis's splinting also stopped from causing the micro movements in implants. The patient's function and appearance are promptly restored. Because zygoma implants gain bicortical stability through the malar bone, their design permits surgeons to place them even in cases where there is a complete deficiency in the maxillary bone. [8]

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