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Complete Rhino-orbital Communication as a Sequela of Mucormycosis

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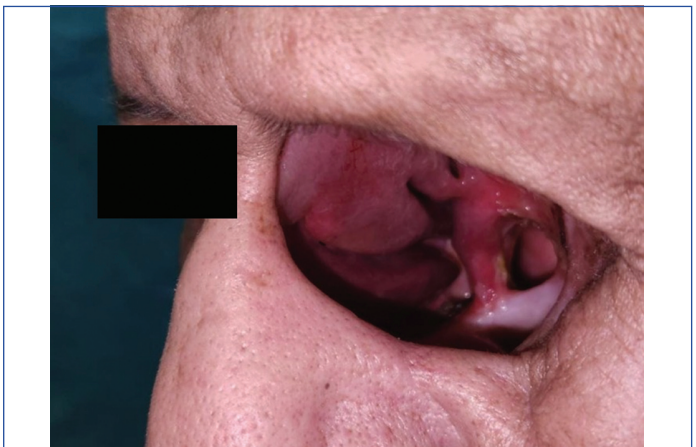
A 65-year-old male presented to the Department of Prosthodontics and Crown and Bridge for rehabilitation of an enucleated left eye and a left maxillary defect involving the sinuses. The patient had undergone left maxillectomy four months ago due to rhino-orbital mucormycosis of the left maxilla and orbital region. He also had a history of Coronavirus Disease 2019 (COVID 2019) infection one year earlier and uncontrolled diabetes for seven years. The patient presented with exenteration of the left eye and excision of the left maxilla, with oroantral communication [Table/Fig-1,2]. Intraorally, it was classified as Aramany Class IV defect. Facial asymmetry was noted. Prosthetic rehabilitation was planned, with an obturator for the intraoral defect to close the oroantral communication and improve mastication, and an orbital prosthesis for the left eye. Due to recurrent infection in the left eye, wearing an orbital prosthesis was advised against, so planning for an orbital prosthesis was dropped. An obturator was provided to close the oroantral communication, improve mastication, and correct facial deformities caused by maxillectomy. The outcome of obturator therapy allowed the patient to eat properly, improved his speech, and enhanced his overall function. This severe anatomical disruption is a rare complication of mucormycosis, which causes angioinvasion, necrosis, and progressive tissue destruction [1]. Such defects often require multistage reconstructive surgery, including local or free flap reconstruction, to restore functional and aesthetic integrity [2]. The extensive orbital defect is characteristic of rhino-orbital mucormycosis, a rapidly progressive fungal infection caused by *Mucorales* species. This condition commonly affects immunocompromised individuals, particularly those with uncontrolled diabetes mellitus, post-COVID-19 infections, or haematological malignancies [3,4]. The destruction of the orbital and maxillary structures, as seen in this case, results from angioinvasion by fungal hyphae, leading to extensive necrosis, tissue infarction, and potential intracranial spread [5]. Surgical debridement remains the cornerstone of management, often requiring orbital exenteration alongside antifungal therapy (liposomal amphotericin B or posaconazole) [6]. Early recognition and appropriate surgical intervention are crucial for optimal outcomes [7]. In the case report by Deek AJ et al., the role of maxillofacial surgeons in orbital exenteration and reconstructive surgery with a myocutaneous flap drawn from the anterolateral thigh was discussed [8]. In current case, no surgical reconstruction was performed as the defect was not extensive; instead, an orbital prosthesis and an obturator were planned for rehabilitation. Complete rhino-orbital communication is a rare and severe sequela of mucormycosis, often seen postCOVID-19, requiring aggressive surgical and prosthetic rehabilitation. Early diagnosis and prompt surgical debridement combined with antifungal therapy are critical to prevent intracranial spread and improve patient outcomes.

[Table/Fig-1]: Extensive oro-antral communication in a postsurgical case of rhino-orbital mucormycosis, with the tongue visible through the orbital cavity.



[Table/Fig-2]: Extensive postsurgical defect in a case of rhino-orbital mucormycosis, revealing the maxillary sinus and surrounding necrotic tissue.

REFERENCES

[1] Cornely OA, Hoenigl M, Lass-Flörl C, Chen SCA, Kontoyiannis DP, Morrissey CO, et al. Defining breakthrough invasive fungal infection-Position paper of the mycoses study group education and research consortium and the European Confederation of Medical Mycology. Mycoses. 2019;62(9):716-29.

[2] Vashistha A, Goil P, Charan Pahari K, Garg P. Delayed maxillary reconstruction following mucormycosis: A comprehensive analysis of surgical strategies and outcomes. J Stomatol Oral Maxillofac Surg. 2024;126(3):102067.

[3] American Academy of Ophthalmology [Internet]. 2014 [cited 2025 Feb 8]. Diagnosis and Management of Orbital Mucormycosis. Available from: https://www.aao.org/eyenet/article/diagnosis-management-of-orbital-mucormycosis.

[4] Rajasekaran S, Thangavelu AA. Mucormycosis: A case series and review of the literature. J Acad Dent Educ. 2021;7(1):23-27.

[5] Bhat VK, Bongale KR, Basti SP, Gadag RP, Kizhakkilottu N, Sebastian E, et al. Risk factors for palatal and orbital involvement in mucormycosis epidemic–Report of a center in India. Am J Otolaryngol. 2022;43(2):103371.

[6] Smith C, Lee SC. Current treatments against mucormycosis and future directions. PLoS Pathog. 2022;18(10):e1010858. Doi: 10.1371/journal.ppat.1010858.

[7] Tewari S, David J, Nakhale S, David B. Mucormycosis: Post COVID-19 Fungal Infection. Int J Curr Microbiol Appl Sci. 2021;10(1):64-71.

[8] Deek AJ, Boukovalas S, Rathfoot CJ, Gotcher JE. Rhinocerebral mucormycosis as a sequelae of covid-19 treatment: A case report & literature review. Journal of Oral and Maxillofacial Surgery. 2022;80(2):333-40.

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