International Journal of Otorhinolaryngology and Head and Neck Surgery
Singh SK et al. Int J Otorhinolaryngol Head Neck Surg. 2021 Dec;7(12):1934-1936
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20214690

Case Report

Bilateral maxillectomy via mid-facial degloving approach in an extensive case of post-Coronavirus disease invasive fungal sinusitis

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Received: 22 October 2021
Revised: 16 November 2021
Accepted: 22 November 2021

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ABSTRACT

Coronavirus disease associated invasive fungal sinusitis has affected many and several have succumbed to the disease during the second wave of COVID-19 pandemic. Mucormycosis is a rare, opportunistic, fulminant, angioinvasive fungal infection caused by Rhizopus species of the order Mucorales. It mainly affects immunocompromised individuals, predisposed by diabetes mellitus, corticosteroids, immunosuppressive therapy, haematological malignancies and organ transplantation. We reported here a case of a 45 years old male with past history of Coronavirus disease, presenting with symptoms of invasive fungal sinusitis. With this case we emphasised on use of an alternate approach for bilateral total maxillectomy via midfacial degloving approach instead of a classical external Weber Ferguesen incision in extensive cases with several associated co-morbidities. Mid facial degloving approach is a combination of intraoral and intranasal incisions made to access the midface without any external incision. This approach is advantageous in comparatively having less complication rate, less morbidity and excellent cosmetic outcome.

Keywords: Mucormycosis, Invasive fungal sinusitis, Midfacial degloving approach, Maxillectomy, Coronavirus

INTRODUCTION

The global Coronavirus disease 2019 (COVID-19) pandemic has affected more than 30 million people in India till date and several have succumbed to the disease. As India continues to fight and gain stability over the existing scenario, another imminent threat has emerged as a challenge to India in the form of coronavirus disease associated invasive fungal sinusitis. Mucormycosis is a rare, opportunistic, fulminant, angioinvasive fungal infection caused by rhizopus species of the order mucorales and was first described by Paultauf in 1885. It mainly affects immunocompromised individuals, predisposed by diabetes mellitus, corticosteroids, immunosuppressive therapy, haematological malignancies and organ transplantation. Midfacial degloving approach was first reported by Casson in 1974.[1] Mid facial degloving approach is a combination of intraoral and intranasal incisions made to access the midface without any external incision. This approach is advantageous in comparatively having less complication rate, less morbidity and excellent cosmetic outcome.

CASE REPORT

A 44 years old diabetic man with past history of being treated for COVID-19 presented to our otolaryngology department with symptoms of severe headache, right sided facial pain, facial swelling and tooth pain since 20 days. On clinical examination, diffuse swelling of the right side of the face was seen. Bilateral vision and extra ocular movements were normal. On examination of the hard palate there was a central black necrotic scar (Figure 1B). Bilateral cranial nerve examination was within normal

limits other than the sensation of smell which was reduced. On diagnostic nasal endoscopy there was a classical black eschar seen over the middle turbinate, inferior turbinate and middle meatus bilaterally (Figure 1A). Magnetic resonance imaging (MRI) of the paranasal sinuses, brain and orbit showed features suggestive of invasive fungal rhino sinusitis involving all the sinuses, with inflammation and enhancement seen extending into the anterior and posterior aspect of bilateral maxillary sinus, bilateral pterygopalatine, infratemporal fossa and frontal sinuses area (Figure 1C and D). Bilateral globe was normal, however there was mild diffuse cerebral atrophy seen. High resolution computed tomography of the chest and recent RT-PCR was also done additionally.

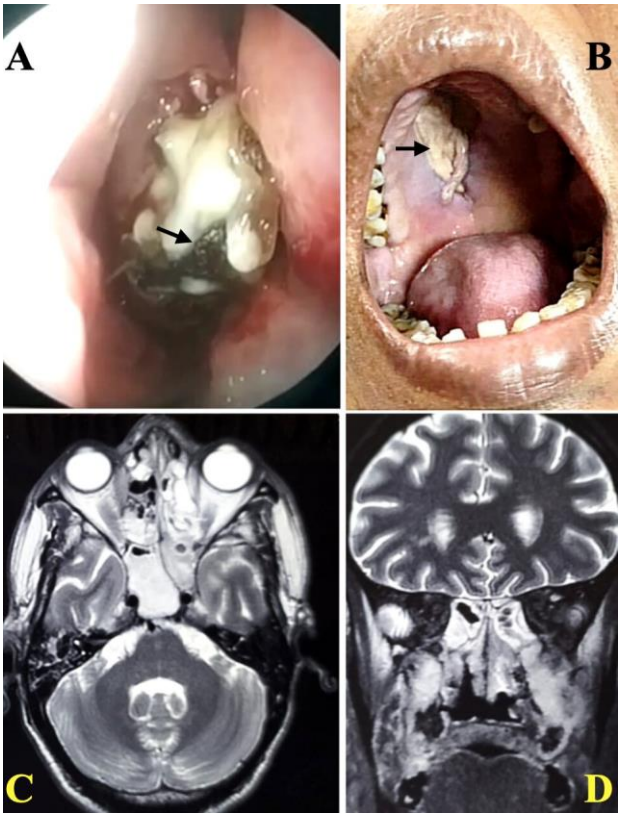

Figure 1: (A) Diagnostic nasal endoscopy image showing classical black eschar of the middle turbinate (black arrow); (B) necrotic tissue (black arrow) seen involving the hard palate; MRI of the brain with paranasal sinuses- (C) axial view; and (D) coronal view showing extensive involvement of the paranasal sinuses in a case of post coronavirus disease mucormycosis.

As the patients general condition was poor and with associated co-morbidities, to reduce the duration of surgery and decrease anaesthetic risks patient was planned for bilateral maxillectomy via midfacial degloving approach with endoscopic radical debridement of the fungal debris. Informed consent was obtained prior to the procedure. Under general anaesthesia, a sublabial gingivobuccal incision, a complete transfixion incision and an inter cartilaginous incision was preferred instead of an external lateral rhinotomy incision (Figure 2). The mucosa over the pyriform aperture was detached and the entire nasomaxillary skeleton along with zygoma was also detached adequately. Complete endoscopic debridement of the necrosed dead tissue along with fungal debris was removed completely. Anterolateral wall, posterior wall of the maxillary sinus and palate along with the alveolar margin was removed completely. Pterygopalatine fossa was identified, entered and fungal debris was removed from both pterygopalatine and infratemporal fossa bilaterally. After introducing the Ryles tube and placing a temporary obturator, nasal packing was done using bismuth iodoform paraffin paste pack. Haemostasis was attained. Post-operative period was uneventful. Patient was started on intravenous liposomal amphotericin and continued for 14 days. Patient was discharged on oral posoconazole.

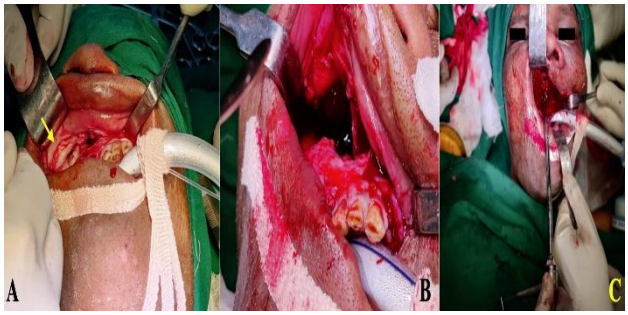

Figure 2: Intra-operative images showing steps of bilateral total maxillectomy via midfacial degloving approach using a sub-labial gingivobuccal incision (yellow arrow) without an external classical lateral rhinotomy incision.

DISCUSSION

Lateral rhinotomy with the classical external lip splitting Weber Fergueson incision are traditional approaches for the excision of tumors of the nasal cavity and paranasal sinuses. Midfacial degloving approach in recent times is commonly advocated for excision of tumors of anterior and middle cranial fossa, allowing adequate exposure of bilateral maxillary sinus and nasal cavity exposure without any external cosmetic scar. Midfacial degloving approach was first suggested by Portmann in 1927, but it was first reported by Casson et al.[1,2] Sachs et al and Price et al in 1979 suggested this technique for excision of neoplastic disease.[3,4] This approach has been used as a first option for medial maxillectomy, radical maxillectomy and non-complicated cranio-facial surgeries. It is also used in benign sinonasal conditions such as ameloblastoma, inverted papilloma, fibroosseous tumors, fractures of the facial skeleton, nasopharyngeal angiofibroma and more recently, exposing the bony structures of mid-face in benign tumours of pterygopalatine fossa and clivus.[5-7] This approach has become very popular because of its major advantage of avoiding facial incision and providing bilateral exposure of nasal cavity till skull base. Thus, cosmetically preferred as there is no visible scar, good

healing and reduced intraoperative bleed. In our case of extensive invasive fungal sinusitis, to avoid anaesthetic complications and increased blood loss related to prolonged duration of surgery, we have decided to perform bilateral matxillectomy using midfacial degloving approach as the general condition of the patients was poor due to post-COVID-19 status and associated co-morbidities. No technical problems or intraoperative complications related to the surgery were encountered during the procedure. Complete debridement of the diseased tissue was possible bilaterally within less duration with satisfactory cosmetic appearance.

CONCLUSION

Mid-facial degloving approach is an appropriate procedure to handle any kind of midface sinonasal tumours. Good surgical exposure is essential for aggressive debridement. We concluded by emphasising in extensive cases of invasive fungal sinusitis with poor general condition as in post coronavirus disease patients an alternate approach for bilateral total maxillectomy via midfacial degloving approach bears the advantage of broad surgical exposure, with less complication rate reducing morbidity with excellent cosmetic results.

ACKNOWLEDGEMENTS

Authors would like to gratefully acknowledge and thank the faculty, patient and attendants for accepting for publication.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Singh SK, Gayatri K, Yalaka MR. Bilateral maxillectomy via mid-facial degloving approach in an extensive case of post-Coronavirus disease invasive fungal sinusitis. Int J Otorhinolaryngol Head Neck Surg 2021;7:1934-6.