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A rare case of post COVID 19 osteonecrosis of mandible: A clinical rarity

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Abstract
We report an unusual case of post-COVID osteonecrosis of the mandible in a 35-year-old male patient without any known systemic disease 15 months after recovery from severe covid 19 symptoms.

Keywords: COVID 19, systemic disease, osteonecrosis

Introduction

The COVID-19 pandemic affected the lives of almost everyone. People affected by COVID-19 infection not only suffered from its symptoms but many of them also developed post-COVID complications which are still being reported. These complications affected almost every system of the body. The number of patients reporting osteonecrosis of the maxilla and mandible increased surprisingly in post-covid patients. Khan *et al* [2] recently published the largest unicentric study of 13 cases of post covid osteonecrosis of the jaw, purpose of this study was to ascertain the correlation between COVID-19 infection and jaw osteonecrosis, along with the identification of risk factors that could be associated with the development of the condition. They concluded that a triad of post-COVID coagulopathy, steroid administration, and a provocative dental treatment may contribute to jaw osteonecrosis which may be seen in patients without pre-existing systemic illness and may present as late as 21 months after COVID-19.

Case report

A 38-year-old diabetic male reported to OPD of our Department of Oral and Maxillofacial Surgery with a complaint of pain in the left lower teeth region for 6 months. Upon taking the history the pain first appeared 6 months back, the pain was accompanied by mobility in the left lower teeth. The patient consulted a local dentist where an extraction of 34 was carried out and medication was prescribed. The patient noticed swelling in the left mandibular region which increased with time. On extra oral examination, diffused swelling was present on the left mandibular region extending from the left commissure of the lip to the posterior border of the mandible ramus. Intra orally bone was exposed in the region of 32,33,34,35 was present extending from 31 to distal of 38. There was no pus discharge present. Mobility was present concerning 31,36,37,38 teeth. OPG was done which revealed a pathological fracture of the left condyle and destruction of the left mandibular body with missing teeth 32,33,34,35. Paraesthesia was present on the left lower lip. On enquiring patient had a history of COVID symptoms one and half years back for which he was admitted to the hospital for 15 days and treated with corticosteroids and broad-spectrum antibiotics. There was no history of radiation. For further evaluation, the CECT face was performed which was suggestive of a destructive lesion in the body and ramus of the left mandible extending to the right para symphysis with bony sequestration. A provisional diagnosis of chronic osteomyelitis of the mandible was made. An incisional biopsy was done which was suggestive of chronic osteomyelitis.

Surgical debridement and curettage were performed and the sample was sent for histopathological examination which later confirmed the initial diagnosis. A course of antibiotic Amoxicillin clavulanic acid -1.2gm was started thrice a day for a week to prevent any post-operative infection. Patient was kept on follow-up for 6 months to check for any recurrence. There was no recurrence.

Discussion

Cases of aseptic and bacterial osteonecrosis involving the hipbone, femur, and vertebrae were reported as early as within a few weeks of COVID-19 [3]. In the maxillofacial skeleton, such cases were reported as early as 8 days after COVID-19 [4]. Recently, Maharawy *et al* published a series of 12 cases of jaw osteonecrosis in COVID survivors and identified four main factors for this observation [1]: the viral infection-induced hyperinflammatory and hypercoagulable state, drugs used for the treatment of the hyperinflammatory syndrome and cytokine storm (steroids and Tocilizumab), bacterial or fungal co-infections and diabetes. Also, all the cases in the series by Maharawy *et al* involved maxilla, the cause of which was attributed to the high concentration of ACE-2 receptors in the oral and nasal mucosal epithelium which were directly downregulated by the virus. However, our patient had the lesion in the mandible and we are in agreement with the hypothesis put forward by Khan *et al* [2] that covid 19 associated coagulopathy resulted in increased susceptibility of mandibular bone to necrosis after tooth extraction following the pathogenetic process similar to that seen in osteoradionecrosis. Our patient was hospitalised for COVID-19 15 months back and was diagnosed as diabetic during the treatment of COVID-19. In affirmation with the observation by Khan *et al*, we think that diabetes may be a

complication of covid 19 just like osteonecrosis of the jaw rather than being the causative factor of osteonecrosis. Slavkova and Nedevska [5] also reported a similar case in a patient without any known comorbidities.

However, we agree with Maharawy *et al* that secondary infection may play a role in the progression of osteonecrosis but we believe that inoculation of the microorganism came from dental extraction in our patient.

Fig 1: pre-op extra oral photograph

Fig 2: pre-op intra oral photo

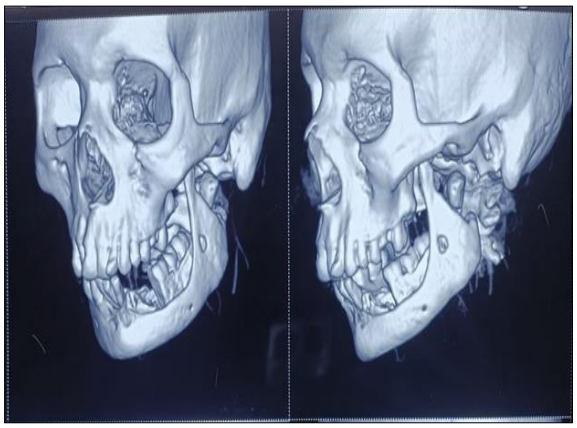

Fig 3: Showing 3D CT reconstruction

Fig 4: Showing orthopantogram of involved mandibular bone

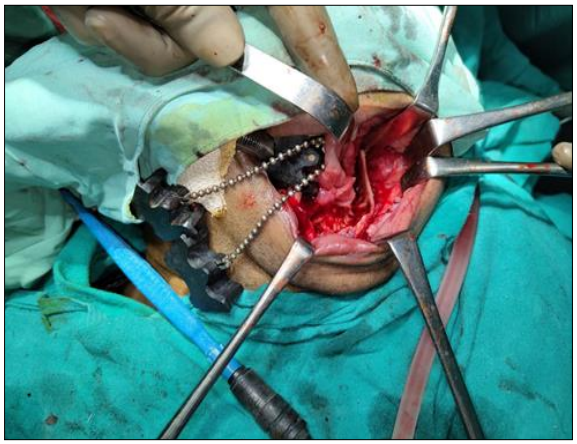

Fig 5: Intra-op Debridement of involved bone

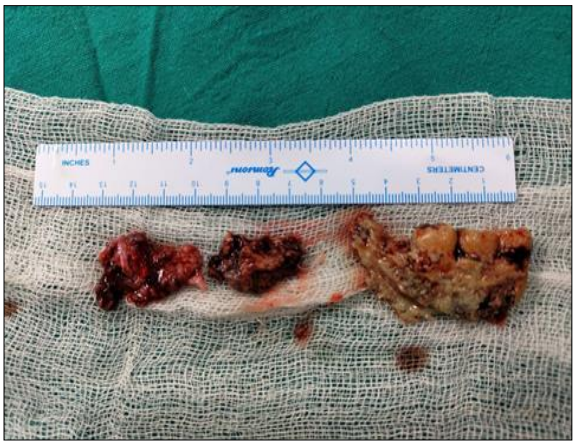

Fig 6: Necrosed bone

Conclusion

Based on the presentation of our case, we are inclined to concur with the hypothesis put forward by Khan *et al* that glucocorticoid administration, diabetes, COVID-19-induced coagulopathy and microbial coinfection may not be the only risk factors but a provocative event like dental extraction may additionally contribute to increased risk of osteonecrosis of the jaw in COVID survivors.

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