Prosthodontic Management and Treatment Considerations for an HIV-Positive Patient with a Nonhealing Lesion of the Maxilla: A Clinical Case History Report

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Osteonecrosis of the jaws has recently been associated with HIV infection and requires surgical and prosthetic intervention. The prosthetic management of an HIV patient with a maxillary lesion, as well as medical status–related treatment considerations, are discussed in this article. *Int J Prosthodont 2016;29:354–356. doi: 10.11607/ijp.4591*

HIV-related mortality has dramatically decreased due to highly active antiretroviral therapy (HAART), especially protease inhibitors (PIs).[1] As life expectancy of HIV patients increases, complications such as inflammatory lesions, trauma, and neoplasm in the head and neck area may arise. Osteonecrosis, or avascular necrosis of the bone, is an inflammatory condition associated with necrosis of the cellular elements of the bones and the jaws, and has recently been related to HIV infection and antiretroviral therapy.[2–4] Osteonecrosis has been associated with advanced HIV disease, the presence of antiphospholipid antibodies, increased levels of triglycerides, chronic treatment with steroids, and the use of alcohol and tobacco.[3] The incidence of osteonecrosis may be increasing since the introduction of HAART, and in particular PIs.[2,3,5] PIs can condition P450 cytochrome activity; interact with membrane receptors, modifying numerous metabolic pathways; and interfere with vitamin D metabolism and bone reorganization.[6]

The principal treatment option for osteonecrosis in the maxillofacial region is surgical resection and maxillofacial rehabilitation, depending on the location and the extent of the necrosis. There are no reports in the literature presenting the prosthetic rehabilitation of maxillary defects in HIV patients. This clinical case report presents the prosthetic management of an HIV management–associated bone necrosis of the maxilla.

Clinical Report

A 53-year-old man presented to the maxillofacial prosthetic clinic at the M.D. Anderson Cancer Center with a nonhealing lesion of the right maxilla. Biopsies revealed areas of necrotic bone and severe acute and chronic inflammation. His medical history was significant for HIV, controlled by HAART, and in particular two different nucleoside reverse transcriptase inhibitors (NRTI), Ziagen (ViiV Healthcare) and Videx (Bristol-Myers Squibb), and a combination of two protease inhibitors, Lopinavir/Ritonavir (Kaletra). His review of systems was unremarkable; he reported odynophagia and denied further head and neck symptoms. A baseline physical examination indicated a 2 × 2-cm lesion (Fig 1). On palpation, the bone appeared to be soft and irregular throughout the right maxilla and the anterior wall of the maxillary sinus. Oral examination revealed that the dentition was in fair condition and oral hygiene was appropriate, with no other lesions noted. Review of the panoramic radiograph revealed a radiolucent area in the maxilla that extended anteriorly to the right canine. The treatment plan included a right infrastructure maxillectomy followed by prosthodontic rehabilitation.

Preoperative maxillary and mandibular impressions using irreversible hydrocolloid material (Blueprint Xcreme, Dentsply) were made, and the obtained casts (Microstone, Whip Mix) were mounted on a semi-adjustable articulator (Whip Mix 2240, Whip Mix). Following communication with the surgeon regarding the extent of the anticipated defect, cast surgery was performed and a surgical obturator was fabricated. Specifically, the maxillary right lateral incisor, canine, second premolar, and first and second molars

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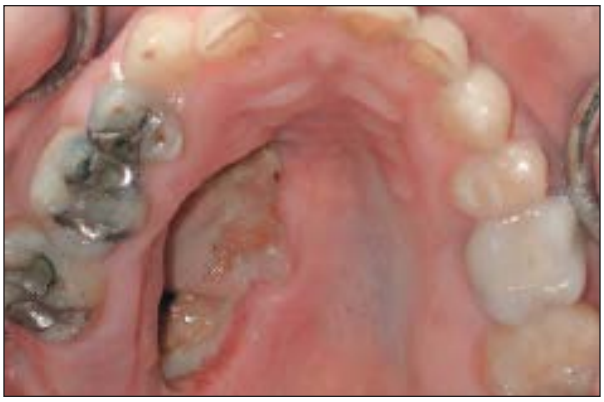

Fig 1 Osteonecrotic lesion of the right maxilla and hard palate.

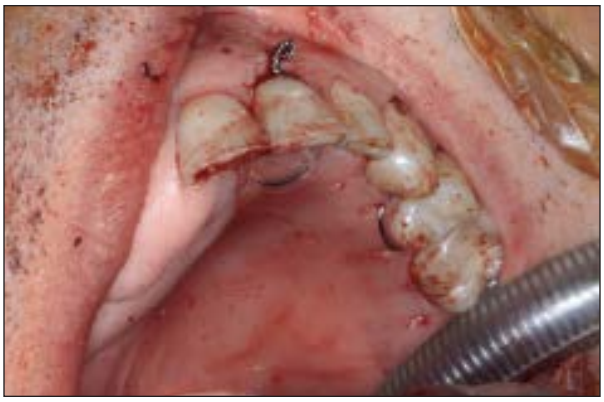

Fig 2 Surgical obturator fixated with 24-gauge stainless steel wire.

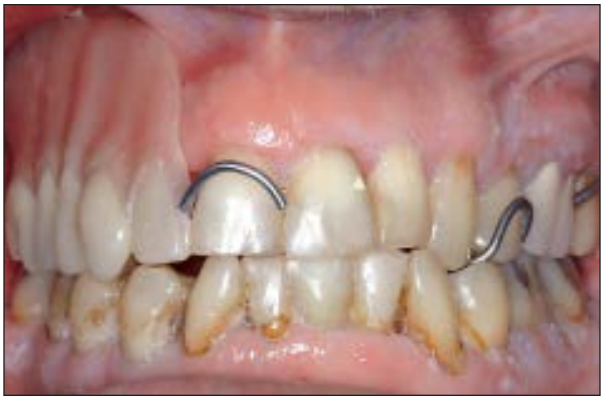

Fig 3 Intraoral view of the interim obturator prosthesis.

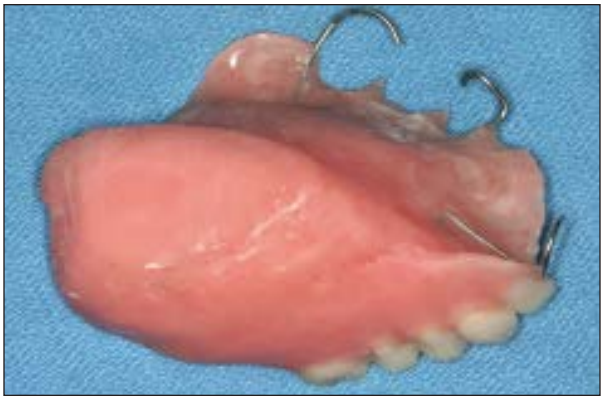

Fig 4 Hollow bulb interim obturator with a lid.

(the first premolar was missing) were in the area of the resection and were removed on the master cast. The surrounding alveolar ridge in the anticipated defect site was reduced approximately 2 mm to allow for adequate interocclusal space for the surgical obturator, whereas the palatal and buccal surfaces of the master cast were left intact. A wide surgical excision was made to identify healthy bone. The prosthetic rehabilitation was initiated in the operating room with the placement of the surgical obturator by the prosthodontist. The maxillary defect was not lined with a split-thickness skin graft (STSG), since the patient's medical status was associated with poor wound healing and possible bacterial colonization of the graft. Wire fixation was used to stabilize the surgical packing and initially retain the surgical obturator (Fig 2). The prosthesis reestablished the oral contours, and the patient was able to speak, swallow, and practice regular oral hygiene immediately, precluding the placement of nasogastric or percutaneous endoscopic gastronomy tube.

The surgical prosthesis and packing were removed 5 to 7 days postoperatively, a new hydrocolloid impression (Blueprint Xcreme) was made, and an interim obturator prosthesis was fabricated. During that stage, the patient was monitored and the prosthesis was modified to accommodate hard and soft tissue changes that occurred as a result of healing. A soft resilient resin acrylic denture reline material (Trusoft, Harry J. Bosworth) was used for the necessary relines of the obturator prosthesis. An average of 12 to 14 appointments over the 3 postoperative months following packing removal are expected in such procedures to adapt the interim obturator to the changes in the defect due to healing.[7] When adequate extension and adaptation were achieved, the prosthesis was jumped to heat polymerized acrylic resin (Lucitone 199, Dentsply) (Fig 3) and hollowed, and a lid was placed to make it easy to clean and prevent retention of secretions and bacteria. The polished smooth surface was also less abrasive to the remaining soft tissues (Fig 4).

The definitive phase was initiated after the surgical site was completely healed and stabilized. The definitive prosthesis resulted in maximum retention, stability, support, esthetics, and function and was fabricated following basic removable prosthodontic principles. After the necessary mouth preparation

was performed, the final impression for the nondefect portion of the prosthesis was made with a modeling plastic impression compound (Impression Compound, Kerr), stock tray, and irreversible hydrocolloid material (Blueprint Xcreme). The obtained master cast (Silky-Rock; Whip Mix) was used for the fabrication of the retaining and supporting portion of the cast metal framework, followed by verification and intraoral adjustment.

A visible light cure resin acrylic tray (Triad VLC, Dentsply) was attached to the framework so that it would extend into the surgical defect and serve as a custom impression tray for the obturator portion of the prosthesis. The custom tray was border molded (Impression Compound, Kerr), and a wash of the basal portion of the tray was made using an elastomeric material (Permlastic, Kerr). Thermoplastic corrective wax (Korecta Wax #4 Orange Extra Soft, D-R Miner) was used to capture the bulb portion of the impression functionally.

Discussion

In an effort to draw a comparison between HIV-related osteonecrosis and bisphosphonate-related osteonecrosis of the jaws, the nomenclature of which has recently been changed to medication-related osteonecrosis of the jaws (MRONJ), the authors identified certain similarities and differences between the two medical conditions in regard to their clinical presentation, behavior, and management. MRONJ has unique localization exclusively to the jaws, whereas HIV-related osteonecrosis can affect several skeletal sites, including the femoral head, the knee joint, and the humerus head. MRONJ is associated with antiresorptive and antiangiogenic medications. According to the 2009 American Academy of Oral and Maxillofacial Surgeons position paper (updated in 2014), patients may be considered to have MRONJ if all of the three following characteristics are present: current or previous treatment with the above-mentioned medications, exposed bone or bone that can be probed through a fistula persistent for more than 8 weeks, and no history of radiation therapy or metastatic disease of the jaws.[8] On the other hand, there are no specific diagnostic guidelines to determine HIV-related osteonecrosis in the maxillofacial region, which is mainly characterized by areas of exposed necrotic bone. Furthermore, HIV-related osteonecrosis is associated with HIV infection and the use of PIs in the HAART treatment scheme. The management for both medical conditions is similar and depends on their staging (clinical and radiographic findings and symptoms). Treatment strategies include antibiotic coverage and pain control, surgical debridement to relieve soft tissue irritation and infection control, or resection for long-term palliation of infection and pain.

Conclusions

Numerous complications related to immunologic status and/or antiretroviral therapy, such as poor wound healing, higher susceptibility to infections, and higher morbidity and death rate, could result following maxillectomy in HIV patients. Due to the risk of postoperative wound healing impairment, the prosthodontic treatment plan was modified and the decision was made not to place a STSG over the maxillectomy defect. Additional considerations include optimal oral hygiene, regular monitoring of medical status, screening for HIV-related oral lesions, evaluation of drug-related xerostomia, antibiotic coverage before routine dental procedures, and infection control following specific guidelines. As a result, coordinating oral treatment of HIV-positive patients requires a balancing act with the infectious disease service for correct antibiotic coverage, retroviral therapy, and reduction of viral loading with no oral candidiasis.

Acknowledgments

The authors reported no conflicts of interest related to this study.

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