Case Report
Volume 11:8, 2021

Journal of
Clinical Case Reports

ISSN: 2165-7920 Open Access

Soft Tissue Coverage with Submental Flap in Massive Medication-Related Osteonecrosis of the Mandible

Reza Tabrizi, Mehrdad Dehghanpour Barouj, Parsa Behnia and Pedram Bakhshaei*

Department of Oral and Maxillofacial Surgery, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abstract

Intravenous Bisphosphonates (BPs) are used to treat cancer-related conditions, including hyperkalemia of malignancy, Skeletal-Related Events (SREs) associated with bone, and for management of lytic lesions in the setting of multiple myeloma. Bisphosphonate-Related Osteonecrosis of the Jaw (BRONJ) is a severe complication of BPs, which affects the patient's quality of life. In the treatment of BRONJ, soft tissue coverage for coverage of the debrided bone is essential. In severe soft tissue deficiency, the use of local or distant soft tissue flap is necessary this case report; a massive BRONJ was described in which a submental flap was used to cover the mandibular bone.

Keywords: Bisphosphonate associated osteonecrosis of the jaw • Mandible • Osteonecrosis • Myocutaneous flap

Introduction

Intravenous Bisphosphonates (BPs) are used to treat cancer-related conditions, including hypercalcemia of malignancy, Skeletal-Related Events (SREs) associated with bone, and for management of lytic lesions in the setting of multiple myeloma [1]. Bisphosphonate-Related Osteonecrosis of the Jaw (BRONJ) is a serious complication of BPs, which affects patients' quality of life. The American Association of Oral and Maxillofacial Surgeons (AAOMS) modified the nomenclature of BRONJ into medication-related osteonecrosis of the jaw (MRONJ) in 2014, to cover the growing number of osteonecrosis cases involving the jaw associated with antiangiogenetic therapies and other antiresorptive (denosumab) [2]. It was suggested that soft tissue coverage is essential for the proper treatment of MRONJ [3]. Direct toxic effect of BPs on oral mucosa causes a breakdown or impaired healing of the natural barrier of mucosa [4]. In this article, a massive case of MRONJ of the mandible was described which soft tissue was restored with a submental flap.

Case Report

A 63-year-old female presented to the oral and maxillofacial surgery department of Shahid Beheshti University of Medical Sciences on September 1, 2017. She was a known case of multiple myeloma. She underwent chemotherapy (Bortezomib 1.3 mg/m^3, Doxorubicin 9 mg/m^3, and Dexamethasone 40 mg) daily in 2014. Also, She received five treatment courses of Zometa (Zoledronic acid) 4 mg intravenously over a minimum of 15 minutes in 4 weeks intervals in 2015. She had a history of non-surgical (without flapping) teeth removal in 2016. After teeth extractions, she had a massive exposed bone area in the mandible with pain (Figures 1 and 2). Initially, an incisional biopsy was conducted to rule out bone metastasis. Histological examination demonstrated bone necrosis without any malignancy invasion. Clinical examination showed stage II MRONJ.

Surgical technique

The patient underwent extensive debridement with removing necrotic bone to reach the perfused (bleeding) bone. To cover extensive exposed bone area, a submental flap was used. Doppler mapping was applied to identify the facial and submental arteries preoperatively. An elliptical skin paddle was marked based on the size of the defect. First, the ipsilateral lower border was incised, and the submandibular gland exposed. The upper border of the gland was skirted around to identify the submental and facial vessels. The ipsilateral anterior belly of the digastric was included in the flap. Next, the contralateral side of the flap was elevated as far as the midline in the subplatysmal plane. The skin incision in the upper margin of the flap was made 2 cm below the body of the mandible (Figure 3). The flap was rotated superiorly at the lateral of the mandible into the oral cavity

Figure 1. Massive necrotic exposed bone in the mandible.

Figure 2. Panoramic view shows a massive moth-eaten appearance in the mandible.

***Address for Correspondence:** Bakhshaei P, Department of Oral and Maxillofacial Surgery, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran, E-mail: bakhshaei.pedram@gmail.com*

***Received:** 26 June, 2021; **Accepted:** 20 August, 2021; **Published:** 27 August, 2021*

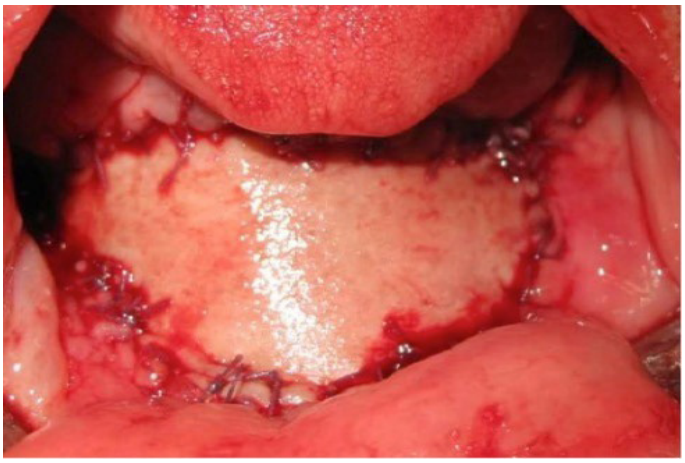

Figure 3. A submental flap is used to cover exposed bone after debridement and removal necrotic bone.

Figure 4. Intraoral view of the flap after placement.

and covered the extensive exposed area (Figure 4). In 1 year follow up, there was no sign of exposing bone, pain, or pus. Donor site healing was excellent, and the scar was well hidden.

Discussion

Debridement is a minimally invasive surgical procedure, which is mainly performed to manage stage II disease. This stage is characterized by exposed or necrotic bone with associated pain and soft tissue inflammation. Debridement can also be performed when there are thin sharp bone spicules [5]. Free bleeding edges in surgical intervention do not guarantee any relapse of the primary lesion. Therefore, a surgical intervention aimed at removing the infected tissue may instead result in wider bone exposure and exacerbate the symptoms [6]. The success of surgical intervention has been reported to be 59% to 90% [7]. After complete debridement of necrotic bone, a watertight defect closure is needed to minimize the risk of microbial contamination of the exposed bone. Soft tissue coverage of bone defect plays an important role in the success of treatments [8]. Furthermore, these patients may be immunosuppressed, which leads to having prolonged and complicated healing. The mylohyoid flap was used to cover the bone defect in BRONJ and reduced the relapse of the treatment [9,10]. The size of the mylohyoid flap limited use of it in extensive bone defects.

Conclusion

In our case, we used the submental flap to additional coverage of massive bone defects. The Submental island flap is a reliable flap for oral reconstruction defects. The advantages of submental flap consisted of rapid and straightforward harvesting and providing a large surface area (approx. 15 × 6 cm) with minimal donor site morbidity. Additionally, it has a reliable and predictable pedicle, and the large caliber of the vessels (approx. 2 mm). In conclusion, a submental flap is a reliable option for additional coverage of massive bone defects in MRONJ patients.

References

1. Salvatore L. Ruggiero, Thomas B. Dodson, John Fantasia and Reginald Goodday, et al. “American Association of Oral and Maxillofacial Surgeons Position Paper on Medication-Related Osteonecrosis of the Jaw-2014 Update.” *J Oral Maxillofacial Surg* 72 (2014): 1938-1956.
2. Piero Papi, Daniele Rosella, Rita Giardino and Emauele Cicalini, et al. “Medication-Related Osteonecrosis of the Jaw.” *Int J Contemp Dent Med Rev* 6 (2016): 97.
3. Mohammad Zandi, Arash Dehghan, Pejman Janbaz and Hamid Malekzadeh. “The Starting Point for Bisphosphonaterelated Osteonecrosis of the Jaw: Alveolar Bone or Oral Mucosa: A Randomized, Controlled Experimental Study.” *J Cranio-Maxillofacial Surg* 45 (2017): 157-161.
4. Louis, Touyz. “Bisphosphonate Osteonecrosis of the Jaws [BONJ], from Defective Function of Oral Epithelial Intercellular Junctions.” *Med Hypoth* 84 (2015): 474-476.
5. Mark A. Lerman, Wanling Xie, Nathaniel S. Treister and Paul G. Richardson, et al. “Conservative Management of Bisphosphonate-Related Osteonecrosis of the Jaws: Staging and Treatment Outcomes.” *Oral Oncol* 49 (2013): 977-983.
6. Rodriguez Lozano and Onate Sanchez. “Treatment of Osteonecrosis of the Jaw Related Bisphosphonates and Other Antiresorptive Agents.” *Med Oral Patol Oral Cir Bucal* 21 (2016): 595-600.
7. Hui Young Kim, Shin-Jae Lee, Soung Min Kim and Hoon Myoung, et al. “Extensive Surgical Procedures Result in Better Treatment Outcomes for Bisphosphonate-Related Osteonecrosis of the Jaw in Patients with Osteoporosis.” *J Oral Maxillofac Surg* 75 (2017): 1404-1413.
8. Charles Chuah, Barnes David and Kwok Marwan. “Zoledronate Inhibits Proliferation and Induces Apoptosis of Imatinib-Resistant Chronic Myeloid Leukaemia Cells.” *Leukem* 19 (2005): 1896.
9. Thomas Mücke, Steffen Koerdt, Maximilian Jung and David A Mitchell, et al. “The Role of Mylohyoid Flap in the Treatment of Bisphosphonate-Related Osteonecrosis of the Jaws.” *J Cranio-Maxillofac Surg* 44 (2016): 369-373.
10. Paul Sebastian, Shaji Thomas, Bipin T. Varghese and Elizabeth M. Iype, et al. “The Submental Island Flap for Reconstruction of Intraoral Defects in Oral Cancer Patients.” *Oral Oncol* 44 (2008): 1014-1018.

How to cite this article: Reza Tabrizi, Mehrdad Dehghanpour Barouj, Parsa Behnia, and Pedram Bakhshaei. “Soft Tissue Coverage with Submental Flap in Massive Medication-Related Osteonecrosis of the Mandible." *Clin Case Rep* 11 (2021): 1461.