Dentoalveolar Surgery in a Patient Under Bisphosphonate Therapy: A Case Report

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INTRODUCTION

Bisphosphonate therapy is central to **osteoporosis** management due to its inhibition of osteoclastic bone resorption and preservation of bone mineral density. Although effective in reducing fracture risk, this mechanism may impair bone remodeling and healing following invasive dental procedures, such as extractions and dentoalveolar surgery, which depend on normal osseous turnover.

In the oral and maxillofacial region, compromised bone healing is closely linked to **medication-related osteonecrosis of the jaw (MRONJ),** a serious condition characterized by exposed necrotic bone, delayed wound healing and secondary infection. MRONJ risk is influenced by therapy duration, cumulative dose, route of administration and procedure invasiveness, with even routine extractions posing risk in susceptible patients.

This case report describes the successful management of dentoalveolar surgery in a patient receiving long-term bisphosphonate therapy, highlighting the importance of meticulous planning, thorough risk assessmentand interdisciplinary care in achieving safe surgical outcomes and preventing complications.

CASE REPORT

A 56-year-old female patient presented with a medical history significant for osteoporosis and hypothyroidism. She was receiving levothyroxine 75µg daily and alendronic acid 70mg every 15 days, with irregular compliance. No history of malignancy, radiation therapy, or intravenous bisphosphonate use was reported.

Clinical Examination:
Generalized severe periodontitis with abundant supragingival and subgingival calculus deposits
Grade II–III tooth mobility
Bimaxillary partial edentulism classified as Kennedy Class I.
Teeth #21 - #29 were diagnosed with advanced periodontal involvement and deemed non-restorable, indicating the need for extraction.

Fig. 1. *Intraoral frontal view.*

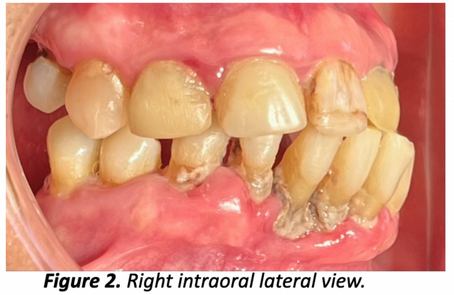

Figure 2. *Right intraoral lateral view.*

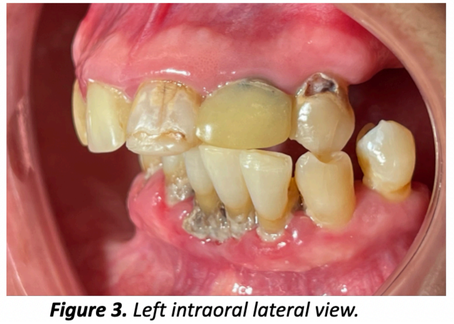

Figure 3. *Left intraoral lateral view.*

Figure 4. *Maxillary occlusal view (upper arch).*

Figure 5. *Mandibular occlusal view (lower arch).*

RADIOGRAPHIC FINDINGS

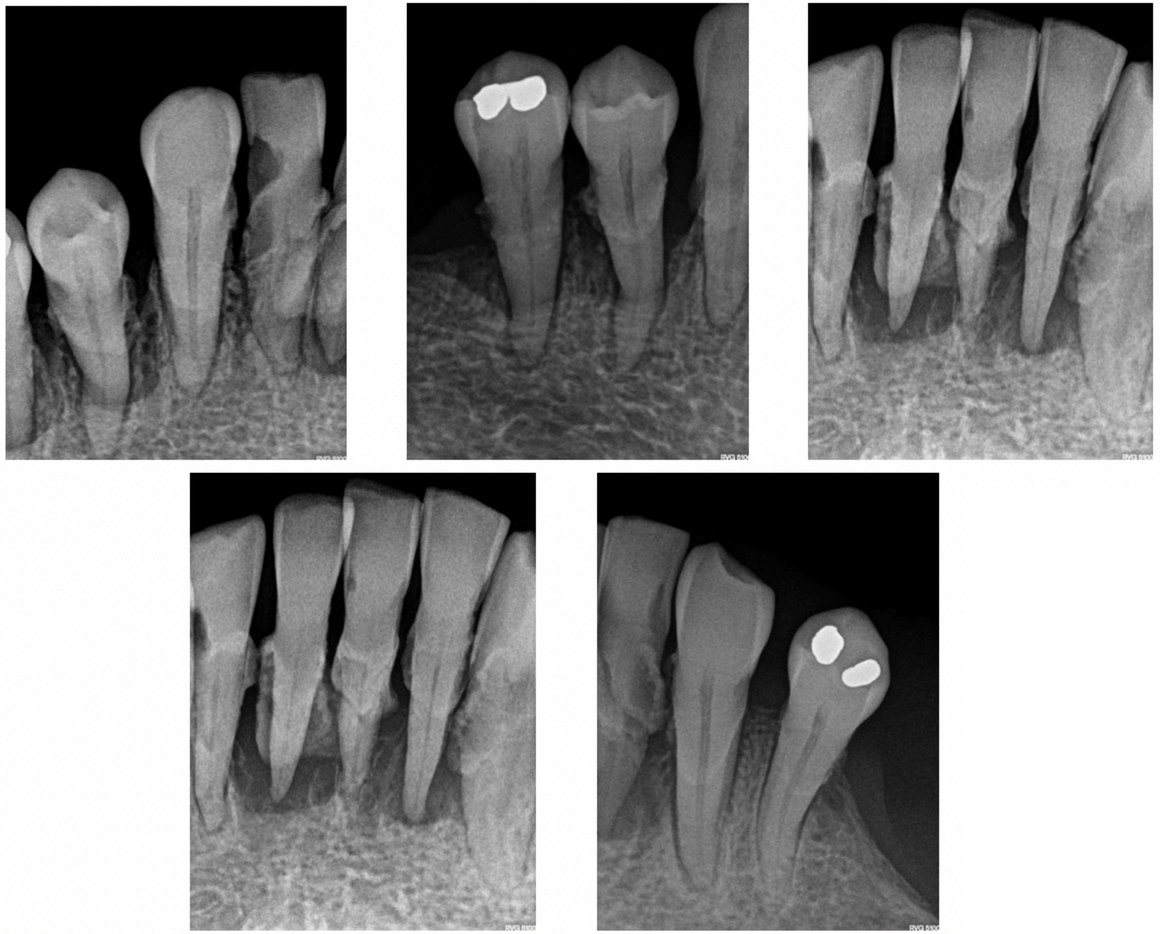

Figure 6. *Mandibular periapical radiograph series (right posterior, anterior, left posterior).*

DISCUSSION

Dental management of patients receiving long-term bisphosphonate therapy presents a unique challenge due to altered bone physiology and the potential for compromised wound healing. In this case, a detailed evaluation of the patient's medical history, medication duration and cumulative exposure informed a conservative surgical approach tailored to the patient's individual risk profile.

Meticulous surgical technique combined with atraumatic tissue handling and structured postoperative monitoring, played a critical role in achieving favorable healing. Continuous clinical surveillance allowed for early detection of adverse signs and reinforced patient compliance during the healing period. This case supports the concept that, while oral bisphosphonate therapy is associated with a lower incidence of MRONJ compared to intravenous administration, it remains a relevant risk factor requiring vigilant management.

PRE-OPERATIVE MANAGEMENT

Given the patient's history of bisphosphonate use, a comprehensive preoperative evaluation was performed. **Laboratory tests** included complete blood count, bleeding and clotting times and fasting glucose levels, all of which were within normal limits. An **interdisciplinary** approach was adopted, involving **Periodontics**, **Prosthodontics**, **Oral Surgery** and the **patient's primary care physician**. Potential risks, including MRONJ, were discussed in detail with the patient and informed consent was obtained.

SURGICAL MANAGEMENT

Extractions of teeth #21–#29 were performed using a conservative surgical protocol aimed at minimizing trauma and promoting primary healing. Following local anesthesia, full-thickness **mucoperiosteal flaps** were carefully elevated. Bone spicules were removed and the surgical sites were thoroughly irrigated with copious sterile saline. Primary closure was achieved using continuous **festooned sutures** to ensure adequate soft tissue adaptation and reduce the risk of bone exposure.

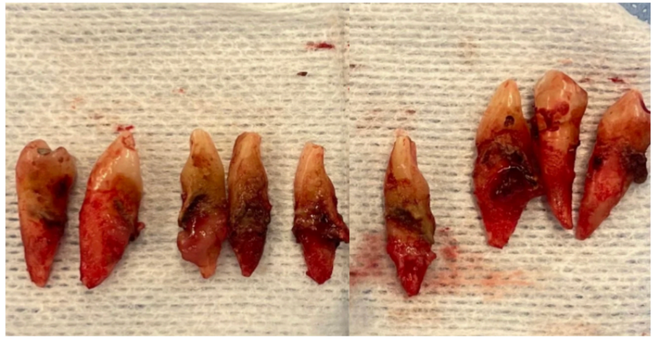

Fig. 7. *Extracted teeth #21–#29*

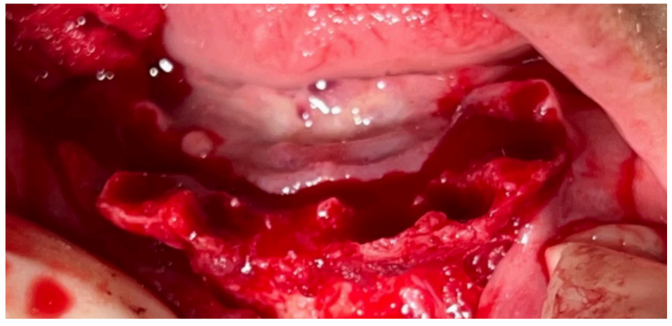

Fig. 8. *Post-extraction sockets of teeth #21 to #29 with full-thickness flap elevation*

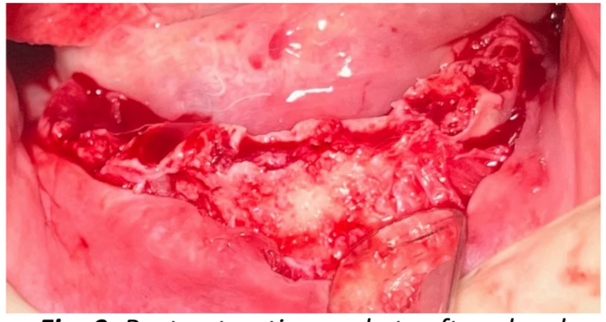

Fig. 9. *Post-extraction sockets after alveolar bone smoothing*

POST-OPERATIVE FOLLOW UP

The patient was closely monitored through weekly follow-up visits to ensure proper postoperative recovery. Throughout this period, healing progressed smoothly and uneventfully, with no indications of infection, delayed tissue repair, or exposed bone. The surgical site demonstrated consistent epithelialization and the patient reported minimal discomfort. At 14 days postoperatively, complete mucosal closure was achieved and clinical examination revealed no signs of medication-related osteonecrosis of the jaw (MRONJ). Overall, the healing trajectory was favorable and the patient tolerated the postoperative course well.

Fig. 10. *Mucosal healing at 2nd follow-up, 14 days after surgical treatment*

CONCLUSION

This case underscores that oral bisphosphonate therapy should be regarded as a significant clinical consideration rather than a negligible risk in dentoalveolar surgery. Thorough medical history assessment, individualized surgical planning and close postoperative surveillance are essential to minimizing complications and supporting predictable outcomes. Careful, patient-centered management remains fundamental when treating individuals exposed to long-term bisphosphonate therapy.

REFERENCES

References and source links used in this work can be accessed through the QR code: