Medication-Related Osteonecrosis of the Jaw: 2026 Update

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Medication-related osteonecrosis of the jaw (MRONJ) is a rare but serious adverse event associated with bone antiresorptive agents. **Patients at increased risk include those individuals that:**

-have received antiresorptive agents at higher doses and more frequent treatment schedules

-have received antiresorptive agents for more than two years

-have periodontal disease

-have poor oral hygiene

-wear maxillary and/or mandibular dentures

-are over the age of 65

-are smokers

-have/had malignant diseases such as multiple myeloma, breast, prostate and lung cancers

-have received chemotherapeutic agents

-have received corticosteroid therapy or treatment with antiangiogenic agents

-have diabetes.

Although MRONJ is associated with bone-invasive dental procedures such as tooth extractions, it can occur spontaneously without any dental intervention whatsoever.

Currently there are three classes of drugs with antiresorptive properties approved by the United States Food and Drug Administration for use in humans. **Bisphosphonates** are approved for the treatment or prevention of postmenopausal osteoporosis in women, osteoporosis in men, and osteoporosis that is related to drug therapy. Additionally, some bisphosphonates are also approved in more intensive, high-dose regimens for hypercalcemia of metastatic bone diseases and Paget's disease of bone. Bisphosphonate medications bind to bone and have long lasting effects. Bisphosphonate medications include orally administered agents alendronate (Fosamax) and risedronate (Actonel) and parenterally administered agents zoledronic acid (Reclast) and ibandronate (Boniva).

Receptor Activator of Nuclear factor Kappa B Ligand inhibitors (RANKL) are approved for the treatment of osteoporosis and solid cancers metastatic to bone, giant cell tumors of bone, and hypercalcemia of malignancy. RANKL inhibitors do not bind to bone as readily and show shorter lasting therapeutic effects. RANKL inhibitors are administered via subcutaneous injections and include denosumab (Prolia) and denosumab (Xgeva). **Sclerostin inhibitors** are approved for the treatment of postmenopausal osteoporosis in women at high risk for fractures or who cannot tolerate other drugs for this indication. Sclerostin inhibitors also do not bind to bone as readily and show shorter lasting therapeutic effects. Sclerostin inhibitors are administered via subcutaneous injections and include Romosozumab (Evenity). **Other classes of osteoporosis medications**, including parathyroid receptor agonists, selective estrogen-receptor modulators, and calcitonin, are not associated with the same risk of development of MRONJ as bisphosphonates, RANKL inhibitors, and sclerostin inhibitors.

Diagnosis of MRONJ includes patients that are currently on or have had previous treatment with antiresorptive agents, patients with exposed bone that persists for eight or more weeks, and patients that have no history of radiation treatment or metastatic diseases of the jaw. If MRONJ is suspected, a prompt referral is indicated for management and/or treatment. A differential diagnosis of MRONJ may include other conditions such as alveolar osteitis, sinusitis, periodontal disease, or periapical pathosis.

Prevention strategies for MRONJ include but are not limited to performing any high-risk surgeries PRIOR to initiating any antiresorptive agents, utilizing preoperative and post-operative antibiotics as well as a pre-operative antimicrobial mouth rinse, achieving primary closure of any extraction site(s), encouraging patients to maintain good oral hygiene and regular dental care, encouraging smoking cessation, and encouraging diabetes optimization.

The exact mechanism by which antiresorptive agents cause MRONJ has not been clearly elucidated to date; however, it has been suggested that suppression of bone turnover and remodeling by these medications impairs the body's ability to repair microfractures normally in the maxilla and the mandible.

The radiograph and clinical photograph below are representative of how an MRONJ case might present; with local pain/soreness, local purulent discharge, exposed necrotic bone loss, and gingival inflammation.

Case courtesy Scott Boyden DDS, MD

Case courtesy Scott Boyden DDS, MD

As dental providers, our job is to always apply the aforementioned preventative strategies, prioritize and support any oncologic therapy/therapies, prioritize and support continued bone health, and aid in the preservation of quality of life for these patients.

References:

1. American Association of Oral and Maxillofacial Surgeons' Position Paper on Medication-Related Osteonecrosis of the Jaws 2022 Update. J Oral Maxillofac Surg. 2022 May; 80(5):920-943.
2. Osteoporosis and Medication-Related Osteonecrosis of the Jaw. Research Services and Scientific Information, ADA Library. Update April 2023.