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A population study of MRONJ-afflicted patients

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INTRODUCTION & AIM

Advances in antiresorptive and antiangiogenic therapies have transformed the management of neoplasm and osteoporosis complications.
However, these benefits are tempered by the emergence of medication-related osteonecrosis of the jaws (MRONJ) - a rare but nevertheless severe condition marked by non-healing bone exposure with inflammation.
Its occurence poses a substantial clinical and quality-of-life burden for affected patients.

The aim of the paper is to characterise and analyse the clinical and demographic profile of patients with bisphosphonate (BP) history who were treated for MRONJ over a 4-year period.

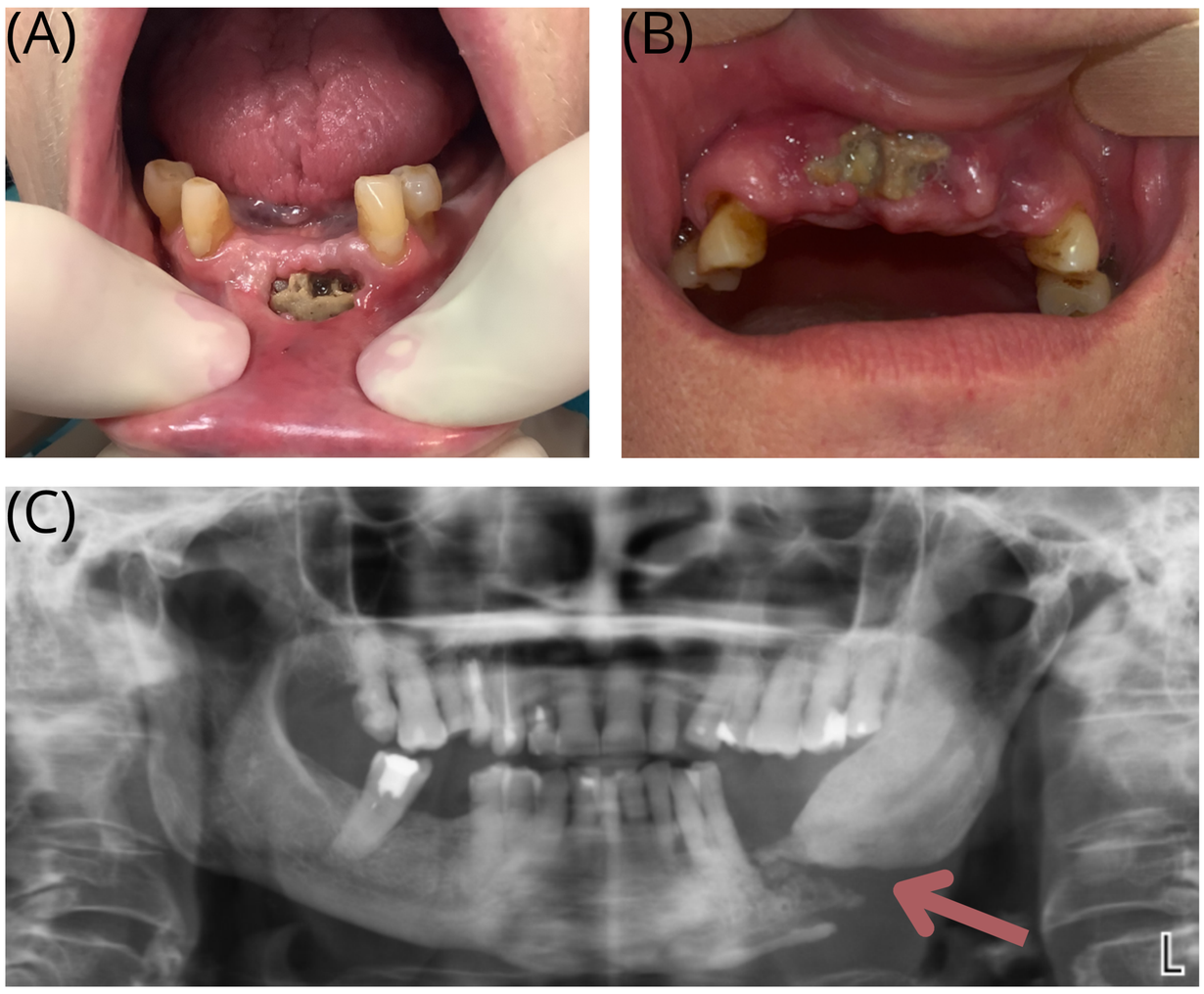


Figure 1. Clinical and radiographic manifestations related to MRONJ.
(A-B) Intraoral views demonstrating exposed necrotic bone and surrounding mucosal inflammation.
(C) Panoramic radiograph displaying a pathological fracture of the mandible due to osteonecrosis.

METHOD

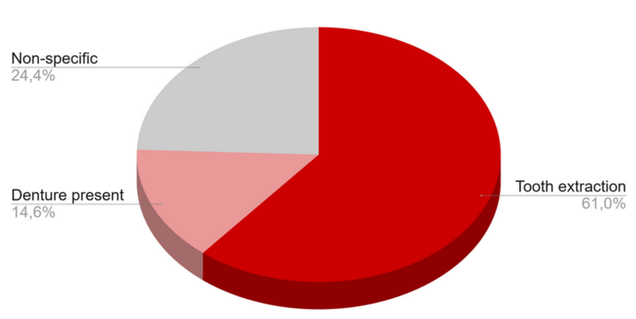
Study design: retrospective clinical observation (2020–2024).
Sample size: 60 patients.
Inclusion criteria: prior bisphopsphonate therapy, no radiotherapy to the head and neck region, complete medical history.
Final study group size: **41 patients**.

Data collected:
- Age, gender, underlying disease
- Local causative factors (extraction, denture trauma)
- Type and route of administration of antiresorptive drug
- Clinical and radiographic symptoms, lesion site,
- MRONJ stage, according to the American Association of Oral and Maxillofacial Surgeons)

RESULTS & DISCUSSION

Sample group characteristics	
Mean age	68.3 years (44–90)
Gender	73.2% female, 26.8% male
BP indication	neoplasm - 73.2%, osteoporosis - 26.8%
BP administration route	75.6% IV, 24.4% PO

MRONJ tends to be more prevalent in older patients and in women (73.2% of the group). Neoplastic disease was the predominant bisphosphonate indication (73.2%), most commonly breast cancer (36.6%). Intravenous (high-dose) BP administration accounted for 75.6% of cases, while oral (low-dose) administration (24.4%) was confined to osteoporosis patients, where generally longer BP treatment duration could be a contributing factor.



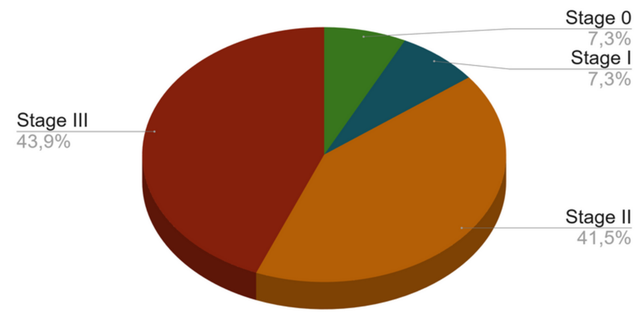


Figure 2. (*left*) Local causative factors for the onset of MRONJ symptoms in the study group. (*right*) MRONJ severity in the study group classified by staging according to the American Association of Oral and Maxillofacial Surgeons (AAOMS).

Tooth extraction was the primary precipitating factor in the analysed cohort. Only 36.8% extractions were performed under antibiotic coverage.
Necrotic lesions occurred in 14.6% of patients wearing removable dentures (out of 31.7%), suggesting mucosal microtrauma as a potential trigger. Periodontal disease was suspected in 29.3% of cases, and odontogenic inflammatory foci in 31.7%, supporting the inflammation-based pathogenesis of MRONJ. In 24.4% of patients, no single local cause was identified, with multiple aforementioned non-surgical factors contributing to lesion development.
85.4% of the patients were diagnosed with the more severe AAOMS stage II–III MRONJ, uncorrelated with BP administration route and local triggers.

CONCLUSION

Medication-related osteonecrosis of the jaws arises from the interplay of systemic antiresorptive therapy and local inflammatory or mechanical factors. The high proportion of advanced cases highlights delayed diagnosis and insufficient prevention. Early dental assessment, standardized protocols, and close interdisciplinary cooperation are key to reducing MRONJ risk and improving patient outcomes.

FUTURE WORK / REFERENCES

Future studies will aim to develop preventive protocols for high-risk patients and the assesment of available treatment options.

Full list of references available through the QR code link.