



Essential review points on the retrospective study of osteoradionecrosis in the jaws

Mi Hyun Seo, Soung Min Kim

Department of Oral and Maxillofacial Surgery, Dental Research Institute, School of Dentistry, Seoul National University, Seoul, Korea

Abstract (J Korean Assoc Oral Maxillofac Surg 2020;46:208-210)

Recently, after reviewing the online journal, *Journal of the Korean Association of Oral and Maxillofacial Surgeons*, we found a recently published original article by Manzano et al., entitled, "Retrospective study of osteoradionecrosis in the jaws of patients with head and neck cancer". Although this original article was well written and provided a great deal of information regarding osteoradionecrosis in the jaws, we would like to add a few additional recommendations based on our small concerns and recently updated articles.

Key words: Osteoradionecrosis, Conservative treatment, Predisposing factors

[paper submitted 2019. 7. 4 / revised 2019. 7. 29 / accepted 2019. 8. 3]

In this article Manzano et al.¹, report that dentoalveolar abscesses and ill-fitting dental prosthetics in directly radiated regions predisposed the areas to osteoradionecrosis (ORN) and ORN management through less invasive therapies was effective for the treatment and control of ORN. Although this experiment was well designed and provided a great deal of information for ORN management and related predisposing factors, we have some essential comments based on our recent studies and review processes.

First, the authors concluded that less invasive treatment options were the first choice for ORN cases. Closure of bone exposure was observed in most cases in this study which were treated with less invasive therapies. In addition, the definition of less invasive treatment is unclear, whether simply using antibiotics, 0.12% chlorhexidine, or curettage. Each patient's singular and clinical specifications must be considered in order to optimize the benefits of treatment. Currently,

newly updated paradigms for conservative treatment such as medication with pentoxifylline and tocopherol are being clinically accepted².

Second, the authors referenced ORN stages that were composed of Stage 0 to III, based on Støre and Boysen³ in 2000. But there is no case of stage 0 or stage I among their 20 patients, only stage II or III cases were shown in Table 1. As we know well, radiotherapy (RT) has several side effects, including xerostomia, mucositis, or bone marrow destruction on radiograms. If authors want to show these results accurately, they should also have shown bony exposure ORN cases with stage II and III, in the changed study designs.

Third, the authors examined patient dental records from a 4 year period. However, it was not clear how long after the treatment signs of ORN occurred in each patient. Some patients were described as having no signs of ORN within 10 days postoperatively. We wonder whether there is any data on these patients' clinical progress. As we also know, radiation effects can last the whole life of a patient and may not decrease over time. And even without any trauma to the jaw, hypoxic and hypovascular entities could spontaneously induce an unexpected ORN. The authors described local and systemic predisposing factors. Fourteen cases (70.0%) were related to dental conditions such as dental extractions, dentoalveolar abscesses, periodontal disease, dental prosthetics, and residual roots, and 2 cases (10.0%) were associated with systemic factors such as tobacco and alcohol use. Even with

Soung Min Kim

Department of Oral and Maxillofacial Surgery, Dental Research Institute, School of Dentistry, Seoul National University, 101 Daehak-ro, Jongno-gu, Seoul 03080, Korea

TEL: +82-2-2072-0213 FAX: +82-2-766-4948

E-mail: smin5@snu.ac.kr

ORCID: <https://orcid.org/0000-0002-6916-0489>

© This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Copyright © 2020 The Korean Association of Oral and Maxillofacial Surgeons. All rights reserved.

the exception of local factors such as extractions, we have to consider whether systemic factors can be defined as drinking or alcohol consumption, too.

Fourth, the author did not clearly suggest ORN treatment sequences or protocols. In spite of some controversy regarding the optimal treatment for ORN, there is a broad consensus that treatment should be multimodal, including conservative measures at the early stage and surgical resection with reconstruction for the most severe stages if conservative treatment failure⁴. It seems that ORN should be described systemically from the diagnosis and staging of the patient before coming to the conclusion that conservative treatment is effective. Aggressive surgical resection of all diseased hard and soft tissue and immediate reconstruction with free tissue transfer has been suggested for stage III disease⁵.

Fifth, the authors reported a total of 583 patients and 158 head and neck cancer (HNC) patients in Fig. 1 and the Materials and Methods section. What is the meaning of the 583 patients? Is this number just the number of patients at the authors' institute during 2013-2017? Among 158 patients, the authors reported only 139 patients received RT, and among those 139 patients, only 20 patients were categorized as ORN patients from dental records. For the clarification of these methodologic approaches, authors should list the exact criteria for ORN in the 139 patients, and also the radiation purposes including radical, postsurgical, preoperative, or even palliative approaches. Careful reading did not reveal uniform explanations or clear numbers of patients even in Tables 2 to 4.

The total of 139 patients could be counted as 141 patients in Table 2, as oropharynx 53, oral cavity 44, larynx 20, hypopharynx 4, nasopharynx 8, and others 12. In spite of our generous understanding of its overlapped counting, the total number of tumor locations in Table 3 was 79 sites. Furthermore, ORN incidence according to management in Table 4, the total number of patients was 131, composed of 11 RT, 32 RT+chemotherapy (CT)+surgery, 28 RT+surgery, and 60 RT+CT. These confused or incorrect calculations have lowered the reliability of this clinical research paper.

Sixth, the authors reported two main types of RT as cobalt therapy and intensity modulated radiotherapy (IMRT). As we know, cobalt therapy uses gamma rays from radioisotope cobalt-60, which has been widely used as an external beam radiation machine. IMRT is a recently updated megavoltage machine, which is preferred for deep lying malignancy targets and delivers a low skin dose and deeper penetration. Megavoltage X-rays are produced by linear accelerators op-

erating at voltages in excess of the 1,000 kV range. Thus, if the authors aimed to show different usage for these two types of RT, their usage criteria should also have been reported.

Finally, there are some English grammar errors and exact medical terminology should be corrected, such as, "To describe the profile and dental management of ORN in HNC patients undergoing RT in an oncological clinical research center.", in the Abstract section is a phrase, not a sentence. Also, the full term for IMRT is "intensity modulated radiation therapy", not "intensive modulated radiotherapy".

From the above comments, we suggest that ORN treatment should be approached more systemically based on accurate clinical diagnoses, and essential review points should be considered carefully during retrospective reviews.

ORCID

Mi Hyun Seo, <https://orcid.org/0000-0001-8220-6480>

Soung Min Kim, <https://orcid.org/0000-0002-6916-0489>

Authors' Contributions

All authors read and approved the final manuscript. M.H.S. wrote the manuscript. S.M.K. revised and corrected the entire article, and draft the manuscript.

Acknowledgement

This work was supported by Basic Science Research Program through NRF funded by the Ministry of Education (2017R1D1A1B04029339).

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

References

1. Manzano BR, Santaella NG, Oliveira MA, Rubira CMF, Santos PSDS. Retrospective study of osteoradionecrosis in the jaws of patients with head and neck cancer. *J Korean Assoc Oral Maxillofac Surg* 2019;45:21-8.
2. Seo MH, Eo MY, Myoung H, Kim SM, Lee JH. The effects of pentoxifylline and tocopherol in jaw osteomyelitis. *J Korean Assoc Oral Maxillofac Surg* 2020;46:19-27.
3. Støre G, Boysen M. Mandibular osteoradionecrosis: clinical behaviour and diagnostic aspects. *Clin Otolaryngol Allied Sci* 2000;25:378-84.
4. Costa DA, Costa TP, Netto EC, Joaquim N, Ventura I, Pratas AC,

- et al. New perspectives on the conservative management of osteoradionecrosis of the mandible: a literature review. *Head Neck* 2016;38:1708-16.
5. Jacobson AS, Buchbinder D, Hu K, Urken ML. Paradigm shifts in the management of osteoradionecrosis of the mandible. *Oral Oncol* 2010;46:795-801.

How to cite this article: Seo MH, Kim SM. Essential review points on the retrospective study of osteoradionecrosis in the jaws. *J Korean Assoc Oral Maxillofac Surg* 2020;46:208-210. <https://doi.org/10.5125/jkaoms.2020.46.3.208>