

## Otorhinolaryngology Sinus Endoscope Surgery as Palliative Debridement in Medication-Related Osteonecrosis of the Jaw (MRONJ)

Rodriguez Genta SA<sup>1\*</sup>, Melman HA<sup>2</sup> and Picardo SN<sup>3</sup>

### Abstract

In recent years, an adverse event has been reported in response to treatment with Antiresorptive (AR) and/or Antiangiogenic (AG) drugs, known as Medication Related Osteonecrosis of the Jaw (MRONJ) and generally associated with dental surgical procedures.

In our healthcare practice it is very common to receive a patient who has already undergone or who is planning to perform a procedure involving maxillary bone manipulation, at the same time, needs to start or to be in contact with treatment like AR and/or AG for some pathology bone metabolism: metastatic cancer patients for example.

Otorhinolaryngology sinus endoscope surgery is a fundamental clue in MRONJ pathology to avoid the volumetric expansion of osteonecrotic lesions in the maxilla that could be established due to their consumption, especially in teeth with an indication for extraction, which is contraindicated (except in cases that compromises the systemic integrity of the patient) before and during treatment with (AR) and/or (AG) and even more so in patients diagnosed with MRONJ in order to control Stage 3 of the illness: chronic sinus or nasal communication that could had consequences as meningitis disease.

**Keywords:** Otorhinolaryngology; Otorhinolaryngology sinus endoscope surgery; Palliative care; Medication related osteonecrosis of the jaw; Antiangiogenic drugs; Antiresorptive drugs.

<sup>1</sup>Head of Practical Works Chair in Oral and Maxillofacial Surgery II School of Dentistry University of Buenos Aires, PhDs Bioethics Science Medicine School Pontifical Catholic University of Argentina, Member of AAOMS, Argentina

<sup>2</sup>Head of Practical Works Chair in Otorhinolaryngology School of Medicine University of Buenos Aires, Department of Otorhinolaryngology Houssay Hospital Vicente López Buenos Aires Argentina, Professor of Otorhinolaryngology UCES, Member of AOCBA, Argentina

<sup>3</sup>Head of Practical Works Chair in Oral and Maxillofacial Surgery II School of Dentistry University of Buenos Aires, Department of Dentistry Favalaro Foundation University Hospital, Thesis Doctoral Director of Bioethics Science Medicine School Catholics University of Buenos Aires, Member of AAOMS, Argentina

\*Corresponding Author: Rodriguez Genta SA, Head of Practical Works Chair in Oral and Maxillofacial Surgery II School of Dentistry University of Buenos Aires, PhDs Bioethics Science Medicine School Pontifical Catholic University of Argentina, Member of AAOMS, Argentina.

Receiving Date: 12-10-2022

Accepted Date: 12-20-2022

Published Date: 12-30-2022

Copyright© 2022 by Rodriguez Genta SA, et al. All rights reserved. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## Introduction

Definition Medication Related  
Osteonecrosis of the Jaw (MRONJ) includes all the following elements: Current or previous treatment with antiresorptive therapy alone or in combination with immune modulators or antiangiogenic medications [1-3]. Exposed bone or bone that can be probed through an intraoral or extraoral fistulae in the maxillofacial region that has persisted for more than 8 weeks. No history of radiation therapy to the jaws or metastatic disease to the jaws [4]. MRONJ could be expressed in four stages. Stage 3 is the clinical one which is irreversible, in this case: oral antral/oral nasal communication or extraoral fistulae [4].

For that reason, working together: dentists and otorhinolaryngology physicians it is certainly to control dissemination progress of the illness that It is possible an oral antral/oral nasal communication could cause morbid impact in our patients. There

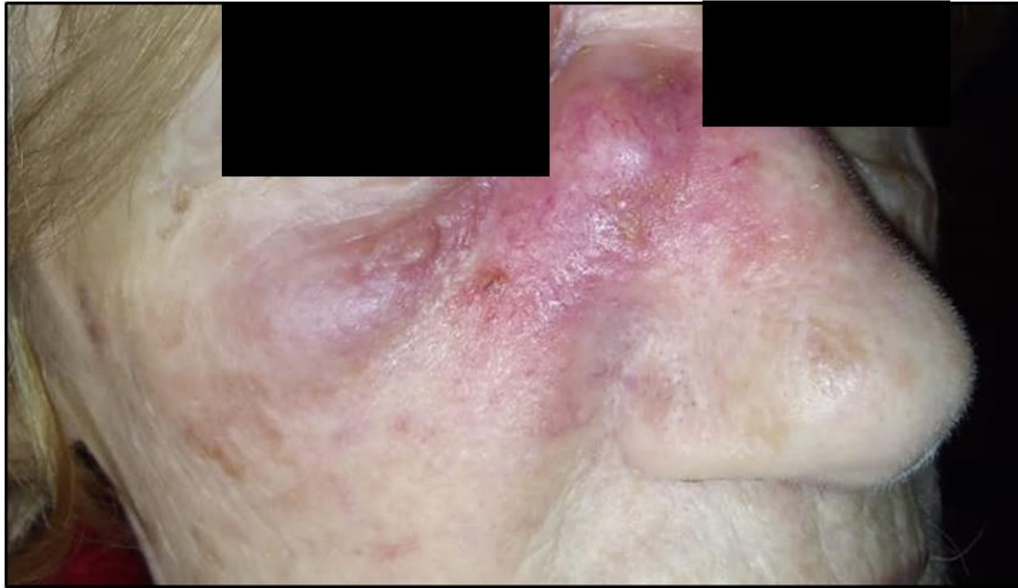
are many techniques used to make identification clear and opening of the maxillary sinus. With the sinus endoscope We could stop sinus inflammatory comorbid without produce bone manipulation preventing highest bone exacerbation avoiding increase MRONJ [5].

## Clinical case

Female patient, 75 years old. The patient was diagnosed with breast cancer with femur, humerus, lung and kidney MTA. The patient has prescribed with an AR: Zoledronic Acid 4mg during six years long and Fulvestrant without another comorbidity in her health. The patient was affected with dental maxilla surgery (1.6;1.5;1.3;1.2;1.1;2.1;2.2;2.3 extractions) with three maxilla bone toilettes because of periodontal disease (Figure 1). These dental surgeries caused a maxilla sinus infection with a Chronic Sinus communication and another comorbid consequence: a suborbital extraoral fistulae (Figure 2).



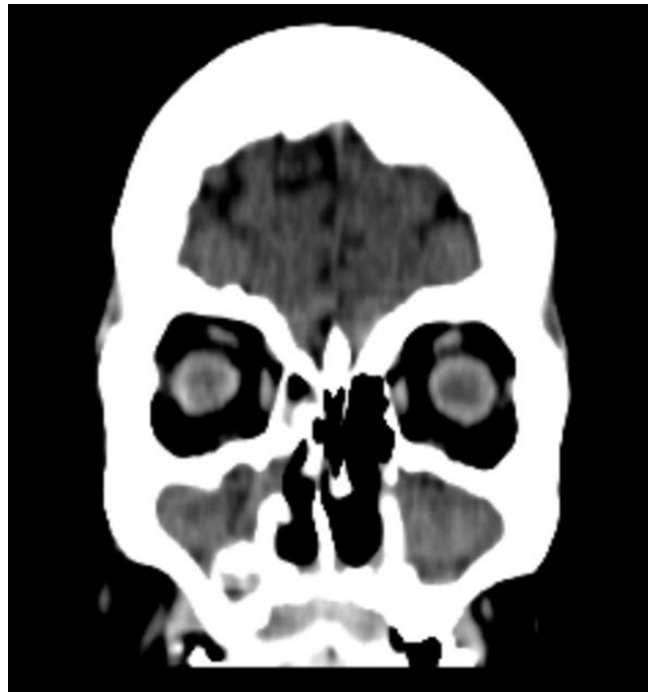
**Figure 1:** Female patient, suffered dental extractions and three toilettes under Zoledronic Acid prescribed because of her diagnosis: Breast Cancer to control her metastases.



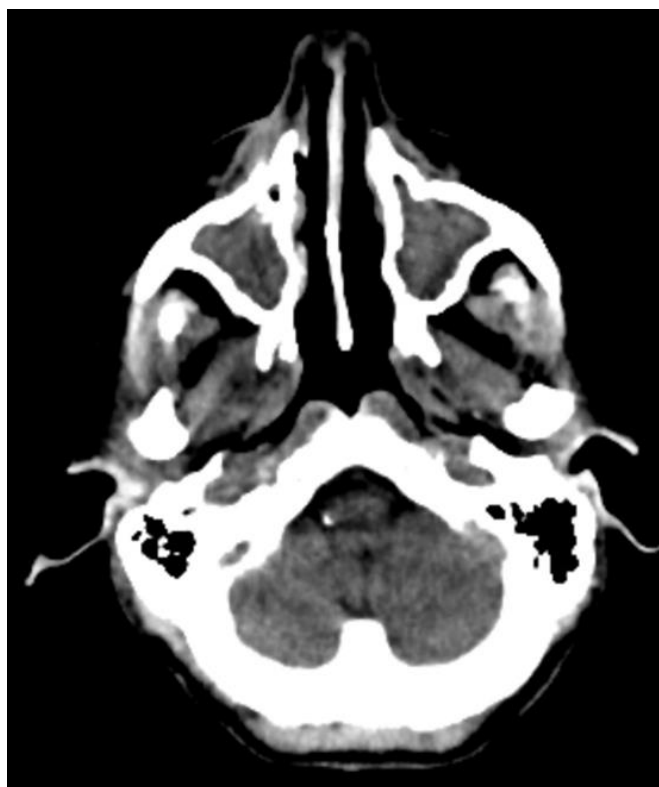
**Figure 2:** Dental toilettes surgeries caused a maxilla sinus infection with a dangerous consequence: a suborbital cutaneous fistula that solved with sinus endoscope by otorhinolaryngology surgery was effective.

For that reason, Otorhinolaryngology derivation and sinus endoscope surgery was programed in order to control these MRONJ stage 3 and avoid the meningitis development because chronic sinus communication and cutaneous fistulae

consequently. Cone Beam tomography (coronal and axial cuts) was done, and it showed radiopaques imagines in bilateral maxilla sinus occupied with inflammatory reactions because of MRONJ Stage 3 (Figure 3,4).



**Figure 3:** Show Cone Beam tomography (coronal and axial cuts) showing radiopaques imagines in bilateral maxilla sinus occupied with inflammatory reactions because of MRONJ Stage 3.



**Figure 4:** Show Cone Beam tomography (coronal and axial cuts) showing radiopaques images in bilateral maxilla sinus occupied with inflammatory reactions because of MRONJ Stage 3.

## Discussion

It is known maxilla and jaw bones have an ectomesenchymal origin, for that reason these bones are capable of tolerate microbiota and occlusal forces. Despite, oro antral and oro nasal bone origin is mesenchymal, because of absence of the teeth. So, drugs AR like bisphosphonates are accumulated in progress as their oncology treatment prescribed in order control their MTA. It is impossible dentists ask for a drug holiday because it is not a contribution for dental therapies, emphasized the drugs accumulation in maxilla and jaw bones. It is the reason for MRONJ those affect maxilla sinus ought to be treat by otorhinolaryngology's physicians in case chronic sinus communications were established working from nasal approach [6-7]. There are many techniques used to make identification clear and opening of the maxillary sinus. With the sinus endoscope,

the ostium (os) can be visualized lying deep within the hiatus semilunaris between the uncinate process and the bulla ethmoidalis. The os is the most easily identified if the uncinate is completely removed. If it is not visible after the uncinate resection, a long, narrow, curved suction can be safely placed into the maxillary sinus if the surgeon observes the following caveats. First, the suction should be placed low in the hiatus semilunaris and directed with the curve facing inferiorly and laterally, so as not to penetrate the medial wall of the orbit. Second, one should watch carefully as the maxillary sinus is entered to be sure the suction enters the bony sinus and penetrates the mucosa. If the bone is penetrated but the maxillary sinus mucosa is pushed laterally, there will be a bony opening but no mucosal opening, which predisposes the os to stenosis [8]. The creation of a wide maxillary antrostomy will

allow for easy visualization of the os postoperatively and may prevent stenosis. The "ideal" maxillary sinus os size is not known, but typically it is widened to 5 to 15mm in diameter. Once the os is identified endoscopically, the posterior edge of the natural os (the posterior fontanelle) may be resected using straight biting forceps, taking care to open bony and mucosal surfaces and to not pull the mucosa off the posterior wall of the maxillary sinus. Once the os is partially opened, the backbiting instruments can be used to remove bone of the anterior fontanelle and any remnants of the uncinat process. Generally, the opening should not extend further forward than the anterior end of the middle turbinate. Opening further anteriorly may injure the nasolacrimal duct and cause infections or stenosis of the duct [9].

The Infundibulum of the maxillary sinus is the funnel-like channel in the antrum leading to the maxillary sinus os. The infundibulum of the maxillary sinus may be obstructed by a large or diseased Haller cell, which is an anterior ethmoid cell lying within the maxillary sinus along the medial floor of the orbit. If this is present, the Haller cell should be removed after the os is widely opened and after the local anatomic landmarks are identified [10].

The bulla ethmoidalis is the most constant and largest anterior ethmoid cell. It forms the posterior border of the hiatus semilunaris and therefore also a good landmark for the maxillary sinus os. Some surgeons prefer to find the maxillary sinus ostia before removing the bulla ethmoidalis to have the bulla as a guide to the maxillary os [11]. During dissection, the bulla ethmoidal is entered infero-medially with a suction, curette, or forceps. The anterior and inferior walls are removed carefully and

traced superiorly. The superior extent of the bulla ethmoidalis usually is the roof of the ethmoid cells. This is a good landmark for the frontal recess because the bulla usually is at the posterior wall of the frontal recess. As such, it is critical that the entire superior, coronally oriented attachment of the bulla ethmoidalis be resected if there is concern about mucociliary drainage of the frontal sinus or if dissection of the frontal recess is being considered. The bulla attaches laterally to the lamina papyracea. Complete resection of this lateral aspect of the bulla improves visualization of the remainder of the ethmoid cells and facilitates dissection as it proceeds posteriorly. Occasionally, another anterior ethmoid cell, the sinus lateralis, may be located between the superior aspect of the bulla and the fovea. There may be smaller anterior ethmoid cells posterior to the bulla that need to be exenterated before reaching the basal lamella. Small septations along the roof of the anterior ethmoid cavity may make visualization of the fovea ethmoidal difficult and complete resection of disease at the top unsafe at this point. If so, the surgeon can return to the dissection at the fovea after it has been more easily identified in the larger posterior ethmoid cells [11].

## Conclusion

MRONJ Stage 3 is an irreversible step of this pathology, so dentists and physicians must work together in case maxilla sinus complications respect on inflammatory exacerbations in chronic sinus communications after bone toilettes were develop, which are contraindicating under the authors so, otorhinolaryngology sinus endoscope surgery as palliative debridement [12]. Recent advances in understanding the pathophysiology of sinusitis and the importance of the

ostiomeatal complex, linked with advances in endoscopic optics, instrumentation, and computed tomography, have led to the rapid adoption of endoscopic sinus surgery for chronic sinusitis and other disorders related to the paranasal sinuses. By no means, however, has endoscopic surgery replaced more traditional external or endonasal approaches to sinus disease. In experienced hands, each technique can be successfully performed, and in many ways, the more traditional sinus surgery and endoscopic techniques complement each other. Familiarity with both techniques is advantageous. Although the indications for each procedure may overlap, common to successful surgical outcomes for endoscopic and traditional sinus surgery is the necessity of thoroughly understanding the pathophysiology of nasal and sinus disorders before embarking on a course of

medical and surgical management. Interest in the precise anatomy of the lateral nasal wall and paranasal sinuses has been rekindled by the popularization of endoscopic sinus surgery. Intimate familiarity with this anatomy, congenital and acquired variation and key surgical landmarks are equally essential for all approaches [10]. For that reason, working together: dentists and otorhinolaryngology physicians it is certainly to control dissemination progress of the illness that it is possible an oral antral/oral nasal communication could cause morbid impact in our patients. There are many techniques used to make identification clear and opening of the maxillary sinus. With the sinus endoscope, sinus inflammatory comorbid could be stopped without any bone manipulation preventing highest bone exacerbation avoiding increase MRONJ [13].

## References

1. Ruggiero SL, Dodson TB, Assael LA, Landesberg R, Marx RE, Mehrotra B; American Association of Oral and Maxillofacial Surgeons. American Association of Oral and Maxillofacial Surgeons position paper on bisphosphonate-related osteonecrosis of the jaws--2009 update. *J Oral Maxillofac Surg.* 2009;67(5 Suppl):2-12. [PubMed](#) | [CrossRef](#)
2. Picardo SN, Rodriguez Genta SA, Rey EA. How to Control Stages about Medication Related Osteonecrosis of the Jaw (MRONJ). *J Clin Case Rep Med Res.* 2020;10.
3. Picardo SN, Rodriguez Genta SA, Basilaki, JM, Lopreite GH, Rey EA. Relationship Between MRONJ and Endodontic Treatment. *Dentistry J.* 2020;5(4).
4. Ruggiero SL, Dodson TB, Aghaloo T, Carlson ER, Ward BB, Kademani D. American Association of Oral and Maxillofacial Surgeons' Position Paper on Medication-Related Osteonecrosis of the Jaws-2022 Update. *J Oral Maxillofac Surg.* 2022;80(5):920-943. [PubMed](#) | [CrossRef](#)
5. Guelman R, Larroudé MS, Mansur JL, Sánchez A, Vega E, Zanchetta MB, et al. Osteonecrosis Maxilar: Relevancia Del Trabajo en Equipo entre Odontólogo Y Osteólogo. *ANDO.* 2022;30(7):12-18.
6. Picardo S, Genta SR, Rey E. Fundamentos de elección terapéutica: osteonecrosis maxilar asociada a drogas antirresortivas (MRONJ). *Rev. Ateneo Argent. Odontol.* 2020:13-7.
7. Cabrini RL. Anatomía patológica bucal. 1980.
8. Ng YH, Sethi DS. Isolated sphenoid sinus disease: differential diagnosis and management. *Curr Opin Otolaryngol Head Neck Surg.* 2011;19(1):16-20. [PubMed](#) | [CrossRef](#)
9. Chu S, Ci J, Wang C. Paranasal sinus CT and 3 kinds of nasal endoscopic sphenoid sinus surgical approaches: Retrospective analysis of 128 cases. *Medicine (Baltimore).* 2020;99(42):e22835. [PubMed](#) | [CrossRef](#)
10. Wigand ME, Cirugía Endoscópica de los Senos Paranasales y la Base Craneal Anterior. *AMOLCA.* 2009;8:94-146.
11. Bolger WE, Stammberger H, Ishii M, Ponikau J, Solaiyappan M, Zinreich SJ. The Anterior Ethmoidal "Genu": A Newly Appreciated Anatomic Landmark for Endoscopic Sinus Surgery. *Clin Anat.* 2019;32(4):534-540. [PubMed](#) | [CrossRef](#)

12. Limones A, Sáez-Alcaide LM, Díaz-Parreño SA, Helm A, Bornstein MM, Molinero-Mourele P. Medication-related osteonecrosis of the jaws (MRONJ) in cancer patients treated with denosumab VS. zoledronic acid: A systematic review and meta-analysis. *Med Oral Patol Oral Cir Bucal*. 2020;25(3):e326-e336. [PubMed](#) | [CrossRef](#)
13. Picardo SN, Rodriguez Genta SA, Rey EA. Medication Related Osteonecrosis of the Jaw (MRONJ): Clinical Atraumatic Management. *SunText Review Dent Sci*. 2020;1(1):107.