

## Research Article

# MULTIDISCIPLINARY APPROACH TO MEDICATION-RELATED OSTEONECROSIS OF THE JAW: REPORT OF A CASE

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Nowadays the multidisciplinary team (MDT) plays a critical role in the treatment of patients with osteonecrosis of the oral cavity, in particular for the reconstructive-rehabilitation phase of complex cases. Among the objectives of the MDT we find the improvement of the quality of life of patients, the restoration of the anatomical defect following surgery, as well as the planning of an aesthetic-functional rehabilitation.

The experience of the MDT composed of professionals belonging to the Medicine and Oral Pathology Outpatient Clinic of the Maggiore Hospital of Trieste and to the Department of Otolaryngology of the S. Maria degli Angeli Hospital in Pordenone is presented in relation to surgical-prosthetic rehabilitation in a patient with drug-induced osteonecrosis.

The patient, suffering from right maxillary osteonecrosis induced by therapy with Zoledronic Acid, underwent a demolitive surgical intervention of right maxillectomy. At the same time, reconstruction was carried out using a microvascularized fibula flap and insertion of 5 implants. Subsequently, the patient was rehabilitated with a fixed prosthesis on implants.

The rehabilitation of the treated patient allowed the resumption of functional activities such as chewing and phonation, guaranteeing the patient a good quality of life. Last but not least, it has allowed us to obtain a good result also from an aesthetic point of view.

There are numerous studies in literature which confirm the success of planning by the MDT in treating MRONJ that demonstrate how an effective and dynamic MDT positively influences the patient's therapeutic and rehabilitative path. The MDT must therefore be able to formulate a personalized therapeutic and rehabilitation plan for the individual patient.

## **Introduction**

Multiple myeloma is a well-known osteolytic disease that can affect the entire skeleton. While bisphosphonates are the cornerstone for management of multiple myeloma, they are associated with medication-related osteonecrosis of the jaw (MRONJ).<sup>[1]</sup> Treatment of the necrotic bone remains challenging, especially in patients with multiple myeloma, as the disease itself is associated with limited bone healing.<sup>[2]</sup>

Given the widespread nature of bony disease, surgical intervention with segmental resection of the mandible and reconstruction with a vascularized bone graft is controversial with a paucity of data. In fact, previous authors advocated against microvascular bone reconstruction in such cases, as there was concern that the transferred bony segment had already been exposed to bisphosphonates and would be affected in a similar manner resulting in osteonecrosis.<sup>[3][4]</sup>

In these cases, multidisciplinary team (MDT) plays a critical role in the treatment of patients with osteonecrosis of the oral cavity, in particular for the reconstructive-rehabilitation phase of complex cases.

We describe a representative case and report the outcomes of a patient with multiple myeloma who in 2019 underwent mandible reconstruction with vascularized fibula bone grafts after segmental mandible resection for medication-related osteonecrosis. The MDT was composed of professionals belonging to the Medicine and Oral Pathology Outpatient Clinic of the Maggiore Hospital of Trieste and to the Department of Otolaryngology of the S. Maria degli Angeli Hospital in Pordenone.

## **Materials and methods**

The patient in this case is a 67-year-old man who was diagnosed with multiple myeloma, primarily affecting the vertebral bodies of the lower back approximately 10 years ago. Over the years, he had several courses of chemotherapy. In 2017, he received antiresorptive therapy, specifically Zometa, which caused osteonecrosis of the right maxilla with associated osteomyelitis. This was managed for approximately 1 year with multiple courses of antibiotics and oral antiseptic rinses.

He presented to S. Maria degli Angeli Hospital with progressive infection affecting all the right maxilla and extending beyond the midline as well. Computed tomographic (CT) scan confirmed the diagnosis of osteonecrosis.

Given the severity of the disease demonstrated through imaging, a decision was made to proceed with segmental resection of the right maxilla. Reconstruction of the defect was preplanned with virtual surgical planning and CT angiography was utilized to assess the donor sites. The reconstruction was then completed using a barrel osteocutaneous free fibula flap that was harvested from the right lower extremity. A surgical guide was prepared to plan the maxillary and fibula

osteotomy sections; the same fibula osteotomy template also contained the surgical guides for the insertion of 4 prosthetically guided osseointegrated implants which were then inserted before the anastomosis of the free removal of the fibula. The peroneal vessels of the flap were anastomosed to the right facial artery and a branch of the right internal jugular vein. The postoperative course was unremarkable. No major complications, free flap failures, emergency room visits, or readmissions were observed. Pathology of the maxilla specimen confirmed diagnosis of osteonecrosis.

The patient is now free from disease and is now waiting for prosthetic rehabilitation on implants.

## Results

Given the widespread use of bisphosphonates in the management of multiple myeloma, MRONJ continues to be a devastating complication requiring specialized treatment when it occurs. As demonstrated in our case series and multiple previous reports, conservative treatment does not always control the disease, which has a significant impact on the quality of life of these patients.<sup>[5][6][7]</sup>

Excisional debridement of the mandible has been recommended in advanced cases with promising outcomes.<sup>[1]</sup> Meticulous preoperative planning along with intraoperative bony cultures and completion of a postoperative antibiotic course represented key components for a successful outcome.

## Conclusions

This case report demonstrated that patients with multiple myeloma and advanced MRONJ can be managed successfully and safely by segmental maxilla resection and reconstruction with vascularized fibula bone graft. In these cases, MDT plays a key role in guaranteeing complete recovery from the disease, also ensuring a rehabilitation phase that guarantees function and aesthetics to the patient, thus improving their quality of life. Although this is a promising approach, further larger studies are necessary to confirm our positive outcomes.

## References

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## Declarations

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