

*Extended Abstract*

# Application of Ozone Therapy in the Conservative Surgical Treatment of Osteonecrosis of the Jaw: Preliminary Results †

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## 1. Objectives

The main goals of the management of osteonecrosis of the jaw (ONJ) are to slow the progression of the disease and, when it is achievable, to remove all the necrotic bone promoting the tissues' healing. In particular, the gold standard is represented by the surgical procedures (conservative or invasive) [1].

Recently, the use of medical ozone is increasingly applied in oral surgery, due to its valuable features, thanks to antimicrobial effect, regenerative and angiogenic activities [2].

This study aimed to evaluate the efficacy and safety of ozone application in the conservative surgical treatment of ONJ.

## 2. Materials and Methods

Twenty-three patients have been referred to our Sector of Oral Medicine (UNIPA) for ONJ treatment and have been enrolled in this study.

All patients have been staged, according to SICMF-SIPMO clinical and radiological staging system.

After informed consent, the PROMaF protocol [3] has been modified, adding insufflation/injection of ozone:

1. Antibiotic prophylaxis and one-minute mouthrinse with 0.2% Chlorhexidine from the day before and for six days after the surgical procedure.
2. Local anesthesia achieved using 3% mepivacaine hydrochloride without adrenaline
3. Elevation of a full-thickness mucoperiosteal flap
4. Curettage of the necrotic bone
5. Insufflation inside the bone defect (15 mL dosage) (by pink Venocat cannula 20Gx1.1/4"/1.10 × 32 mm) and injection around its edges (15 mL dosage) (by 26Gx1/2" needle—0.45 × 13 mm) of an oxygen-ozone mixture (15γ concentration)
6. Tension-free suture

One week after, sutures have been removed; the follow-up has been expected at 15 days, 1, 3, 6 and 12 months after surgery; radiological evaluation has been carried out at 90 days, 6 and 12 months.

Local Ethics Committee (Azienda Ospedaliera Universitaria Policlinico Paolo Giaccone di Palermo) approved the study (record number N°1/2018).

### 3. Results

During the study period, twenty-three patients have been recruited, whose descriptive statistics are shown in Table 1.

At the most recent follow-up visit (mean follow-up  $8.72 \pm 5.2$  mo), complete clinical healing has been observed in nine patients under bisphosphonates therapy (75%) and nine patients in treatment with denosumab or denosumab + bevacizumab (81%); in five patients, only clinical improvement has been observed. No recurrence signs have been showed in radiological findings.

**Table 1.** Patients’ descriptive statistics.

Age (yrs)	65.4 ± 13
Male	7 (30%)
Female	16 (70%)
Cancer	17 (70%)
Non-Cancer	6 (30%)
Involved bone	
Maxilla	6 (30%)
Mandible	17 (70%)
ONJ stage*	
I A	4 (17%)
I B	5 (22%)
II A	4 (17%)
II B	7 (31%)
III B	3 (13%)
ONJ-related medications	
Bisphosphonates	12 (53%)
Denosumab	7 (30%)
Denosumab + Bevacizumab	4 (17%)
Time of administration of ONJ-related medications (mo)	
Cancer	21.3 ± 14.1
Non-Cancer	152 ± 77.1

\* ONJ stage according to SICMF-SIPMO clinical and radiological staging system.

### 4. Conclusions

Although with the great limitation of these preliminary results, the authors suppose that ozone application may act as local regulators of wound healing, improving the results of ONJ surgical treatment.

**Conflicts of Interest:** The authors declare no conflict of interest.

### References

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