

## Analysis of the Outcome of the Treatment of Osteoradionecrosis in Patients after Radiotherapy for Head and Neck Cancer

**Authors :** Petr Daniel Kovarik, Matt Kennedy, James Adams, Ajay Wilson, Andy Burns, Charles Kelly, Malcolm Jackson, Rahul Patil, Shahid Iqbal

**Abstract :** Introduction: Osteoradionecrosis (ORN) is a recognised toxicity of radiotherapy (RT) for head and neck cancer (HNC). Existing literature lacks any generally accepted definition and staging system for this toxicity. Objective: The objective is to analyse the outcome of the surgical and nonsurgical treatments of ORN. Material and Method: Data on 2303 patients treated for HNC with radical or adjuvant RT or RT-chemotherapy from January 2010 - December 2021 were retrospectively analysed. Median follow-up to the whole group of patients was 37 months (range 0-148 months). Results: ORN developed in 185 patients (8.1%). The location of ORN was as follows; mandible=170, maxilla=10, and extra oral cavity=5. Multiple ORNs developed in 7 patients. 5 patients with extra oral cavity ORN were excluded from treatment analysis as the management is different. In 180 patients with oral cavity ORN, median follow-up was 59 months (range 5-148 months). ORN healed in 106 patients, treatment failed in 74 patients (improving=10, stable=43, and deteriorating=21). Median healing time was 14 months (range 3-86 months). Notani staging is available in 158 patients with jaw ORN with no previous surgery to the mandible (Notani class I=56, Notani class II=27, and Notani class III=76). 28 ORN (mandible=27, maxilla=1; Notani class I=23, Notani II=3, Notani III=1) healed spontaneously with a median healing time 7 months (range 3-46 months). In 20 patients, ORN developed after dental extraction, in 1 patient in the neomandible after radical surgery as a part of the primary treatment. In 7 patients, ORN developed and spontaneously healed in irradiated bone with no previous surgical/dental intervention. Radical resection of the ORN (segmentectomy, hemi-mandibulectomy with fibula flap) was performed in 43 patients (all mandible; Notani II=1, Notani III=39, Notani class was not established in 3 patients as ORN developed in the neomandible). 27 patients healed (63%); 15 patients failed (improving=2, stable=5, deteriorating=8). The median time from resection to healing was 6 months (range 2-30 months). 109 patients (mandible=100, maxilla=9; Notani I=3, Notani II=23, Notani III=35, Notani class was not established in 9 patients as ORN developed in the maxilla/neomandible) were treated conservatively using a combination of debridement, antibiotics and Pentoclo. 50 patients healed (46%) with a median healing time 14 months (range 3-70 months), 59 patients are recorded with persistent ORN (improving=8, stable=38, deteriorating=13). Out of 109 patients treated conservatively, 13 patients were treated with Pentoclo only (all mandible; Notani I=6, Notani II=3, Notani III=3, 1 patient with neomandible). In total, 8 patients healed (61.5%), treatment failed in 5 patients (stable=4, deteriorating=1). Median healing time was 14 months (range 4-24 months). Extra orally (n=5), 3 cases of ORN were in the auditory canal and 2 in mastoid. ORN healed in one patient (auditory canal after 32 months. Treatment failed in 4 patients (improving=3, stable=1). Conclusion: The outcome of the treatment of ORN remains in general, poor. Every effort should therefore be made to minimise the risk of development of this devastating toxicity.

**Keywords :** head and neck cancer, radiotherapy, osteoradionecrosis, treatment outcome

**Conference Title :** ICSOMP 2022 : International Conference on Surgery in Oral and Maxillofacial Pathology

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** September 27-28, 2022