



Oral Health & Reducing the Risk of Osteoradionecrosis

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Aims

- Briefly review the aetiology and presentation of ORN
- Highlight the strategies for managing these patients
- Discuss the role of dental health in the context of ORN



Osteoradionecrosis

Area of exposed, devitalised bone present for >3 months, in a previously irradiated field, that fails to heal in the absence of neoplastic disease

Not acknowledge radiographic ORN

Meyer (1970) proposed that it was the result of a radiation-induced osteomyelitis

Marx (1983) proposed a triad of hypoxia, hypovascularity & hypocellularity which compromises wound healing rather than an infection

Delanian et al. (2004) described a fibro-atrophic process with activation and dysregulation of fibroblasts



Osteoradionecrosis

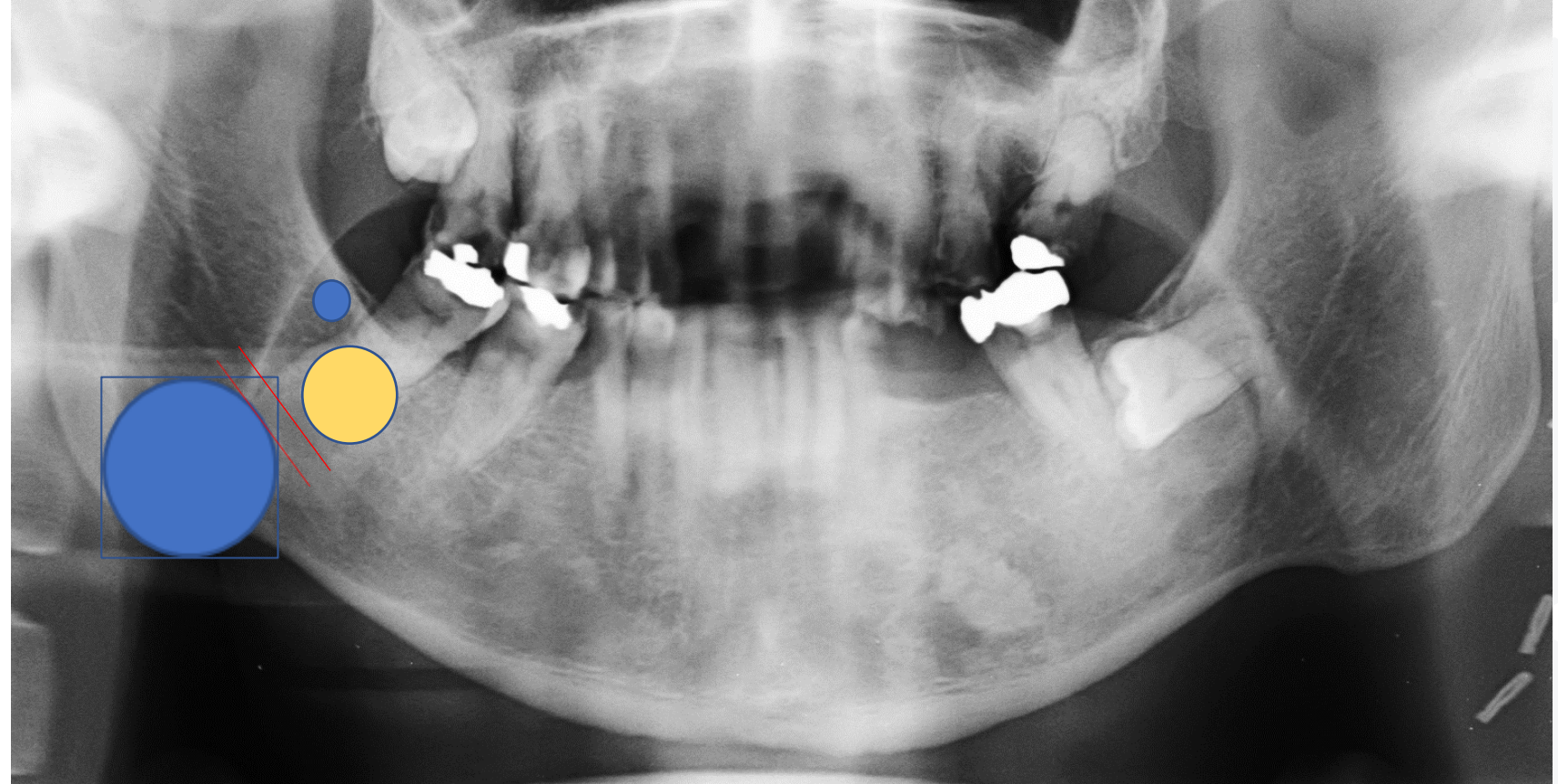
Incidence 2-10%

Spontaneous – (Earlier, higher doses >60Gy)

Trauma induced- (Early significant trauma. Later-impaired healing)

Posterior mandible
(high density, greater absorption, limited vascular supply)

Timing- Mostly occurs in first few years after RT completion (70-94%)



Osteoradionecrosis...Risk factors

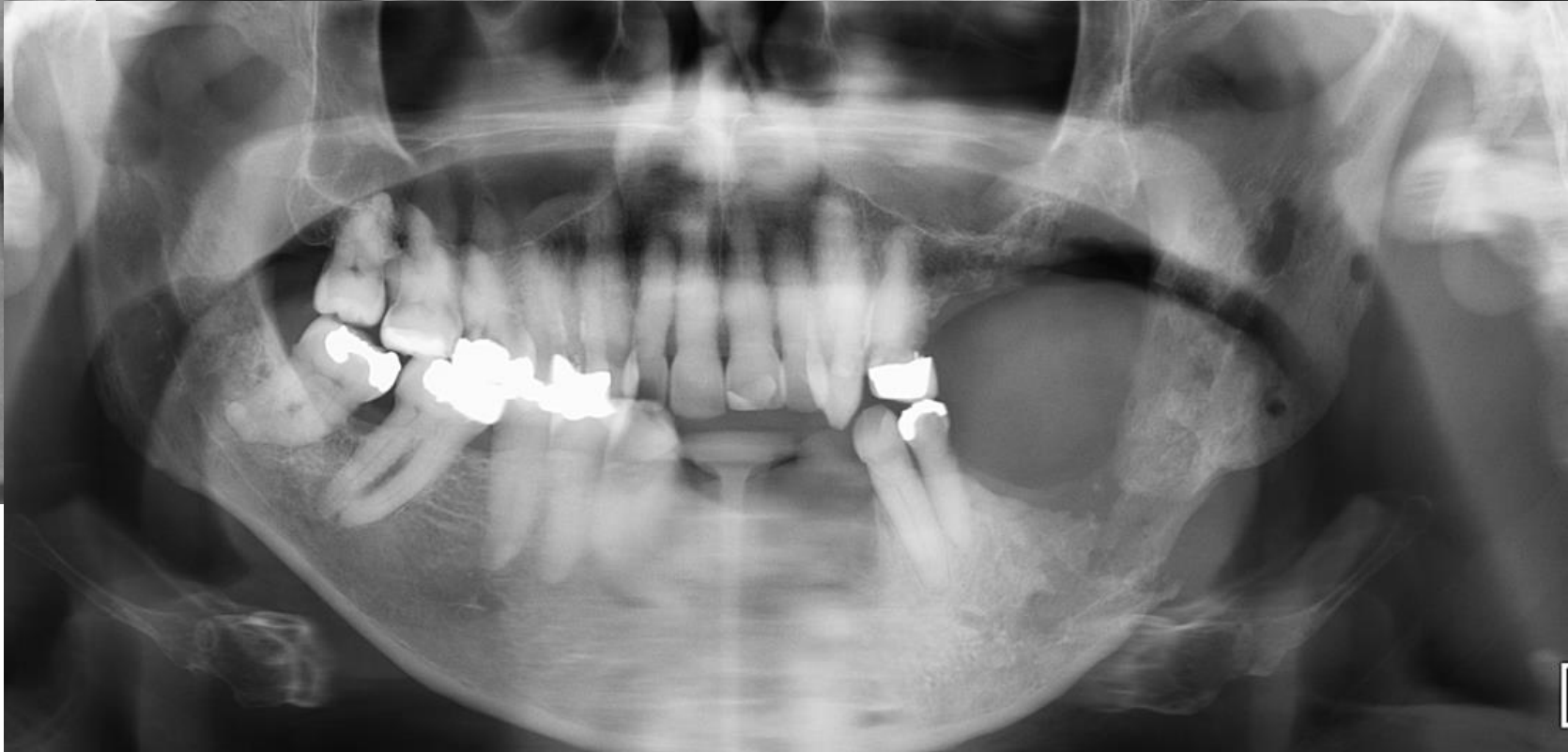
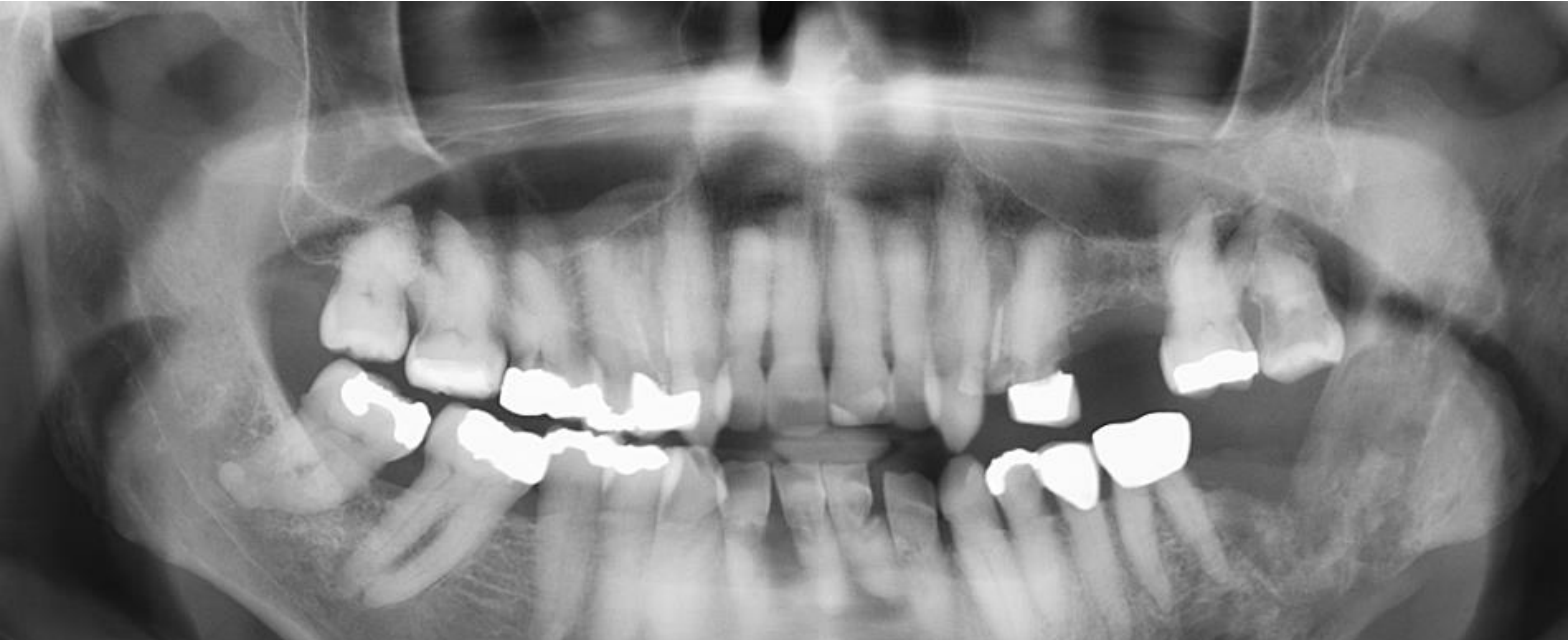
- Significant heterogeneity, low level evidence, uncertainty
- Identify higher risk patients and procedures but far from definitive
- Chemotherapy
- > 60Gy
- Heavy alcohol consumption
- Smoking
- Malnutrition
- Tumour location (OP)
- Advanced tumour staging, bone inv
- Mandibular surgery
- Posterior mandible (3-24)
- Xerostomia
- Poor oral and dental health
- Active periodontal disease
- Trauma from prosthesis
- No pre-operative dental assessment
- Pre RT XLA (5.5% (2.1-10.1%)) - No indication for prophylactic removal of healthy teeth to prevent ORN, 10-21 days min
- Post RT XLA (5.3% (2.9-8.2%)), nos teeth, timing <3-6/12, bi modal risk at 1 then 2-5yrs



Osteoradionecrosis...Symptoms

- Asymptomatic
- Secondary infection- acute/ chronic
- Dysaesthesia/ anaesthesia (IDN)
- Trismus
- Neuropathic pain
- Pathological fracture
- Extra-oral fistula
- Mobile teeth, dental issues (pain, abscess)





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Prevention

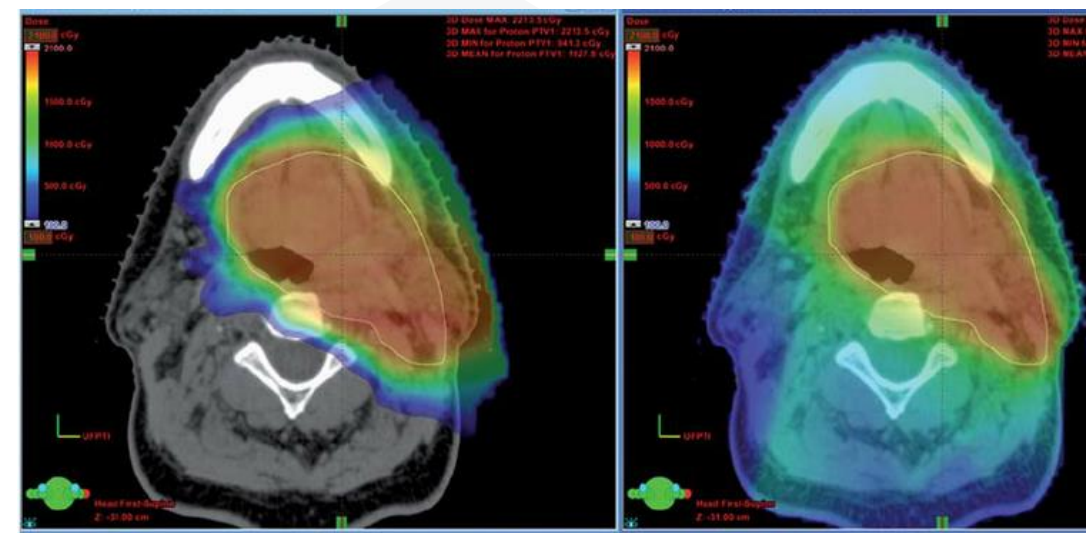
PBT vs IMRT- reduce fields- bone, effect on salivary glands and xerostomia?

7.7% to 2% IMRT vs IMPT for OPC (Zhang et al. 2017) through mandibular dose redn

Increase time of pre RT xla, limit nos teeth
(10-21)

Avoid surgical trauma

Dental/ Oral issues



Mendenhall et al. 2011

Clinical Investigation

HOPON (Hyperbaric Oxygen for the Prevention of Osteoradionecrosis): A Randomized Controlled Trial of Hyperbaric Oxygen to Prevent Osteoradionecrosis of the Irradiated Mandible After Dentoalveolar Surgery

Patients having XLA/ Implant placement in posterior mandible >50Gy

Both groups received CHX & Amoxy
HBO arm, 30 daily dives for 90 mins.

Outcome measure = ORN 6/12

Incidence of ORN at 6 months was 6.4% (HBO)& 5.7% (Control)
Patients in the hyperbaric arm had fewer acute symptoms but no significant differences in late pain or quality of life

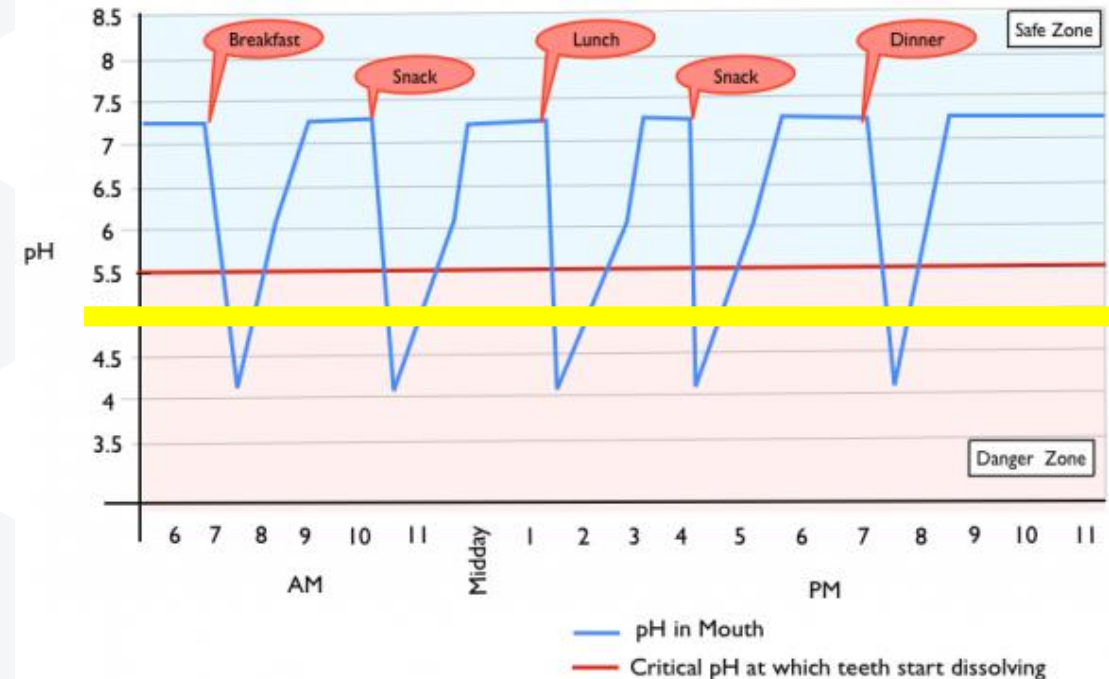


Dental & Oral Health

- Xerostomia sequelae
 - Resting pH below 5 post RT NPC over time (Zheng et al. 2021)
- Caries
 - Frequency of sugar intake
 - Fluoride (D 5000)
 - Root caries mnmt – stents, SDF
- Rubbing prosthesis
- Trismus
- Management periodontal disease
- Advice
 - Oral hygiene
 - Smoking
 - Alcohol
 - Nutrition



A Healthy Stephan Curve



Close recall and monitoring by GDP



Intervention

- **Symptomatic management**
 - HSWMW, CHX
 - Short term antimicrobials for acute infection (Amox/ Metro)
 - Long term antibiotics to minimise infection and attempt mucosalisation (Doxy)
- **Medical Management**
 - PENTOCLO (pentoxifylline, tocopherol, clodronate)
- **Surgical intervention**
 - Debridement
 - Resection



Summary

- **ORN is a significant and debilitating post treatment issue which is only likely to increase given the changes in disease profile.**
- **Once established ORN is difficult to manage therefore prevention is the best treatment.**
- **Dental issues requiring surgical intervention pose a significant RF for ORN.**
- **Ensure advice given by all specialties is not detrimental to oral health.**
- **Maintaining a healthy, disease free dentition long term is critical in helping to prevent ORN.**
- **Achieved through close follow up, pt education in primary dental care.**





Questions?