

Osteoradionecrosis of the Jaw

ELECTIVE — prophylaxis is timed to the planned surgery

An adjunct — the 30/10 protocol for established disease and 20+10 for prophylaxis before surgical wounding of irradiated bone, on contested trial evidence.

TREATMENT PROTOCOL

Pressure	2.4 ATA
Duration	90 min
Frequency	Daily
Sessions	Established disease: 30, then minor debridement; +10 if response adequate (Marx 30/10). Stage II adds 10 after surgery; Stage III: 30 before segmental resection, 10 after; none for later reconstruction in Marx's current protocol. Prophylaxis: 20 before surgery, 10 after
Review	After 60 treatments

PATIENT SELECTION

Who to treat	Established osteoradionecrosis of the mandible, maxilla or skull after head-and-neck radiotherapy. Prophylaxis for planned surgical wounding of irradiated tissue — dental extraction or facial reconstruction.
Who not to treat, or when to stop	Medication-related osteonecrosis is a different, drug-induced entity — do not import its trials. ISOO-MASCC-ASCO 2024 confines hyperbaric oxygen with surgery to cancer-free patients.
Mechanism	Irradiated bone is hypovascular, hypocellular and hypoxic. Raising tissue oxygen tension supports osteoblast and fibroblast function and angiogenesis, confirmed in irradiated human tissue by a durable oximetry rise and increased microvessel density.
Outcome measure	Incidence of osteoradionecrosis for prophylaxis; 1-year recovery or healing for treatment; pain; wound dehiscence.

WHAT THE NUMBERS SHOW

- Marx 1985 RCT (prophylaxis): osteoradionecrosis **5.4% vs 29.9%, p=0.005**.
- Shaw 2019 HOPON phase-3 RCT: osteoradionecrosis at 6 months **6.4% vs 5.7%, OR 1.13 (95% CI 0.14–8.92) — null**.
- Annane 2004 ORN96 RCT (double-blind, sham-controlled, stopped early): 1-year recovery **19% (6/31) vs 32% (12/37), RR 0.60 (95% CI 0.25–1.41), P=0.23 — negative, and stopped early for a possible harm signal**.
- Forner 2022 (combined randomised data): healing at 1 year **70% vs 51% — favourable but not significant, and underpowered**.
- Geçkil 2025 (13 studies; abstract only, AMSTAR-2 critically low): pooled single-arm success **69% with hyperbaric oxygen plus surgery, 38% hyperbaric alone, 36% surgery alone**. These are proportions from different studies, not a comparative effect; HBO alone was no better than surgery alone.
- Quah 2024 (prevention at extraction, 29 studies): pooled single-arm ORN **3.4% with pentoxifylline–tocopherol (PENTO) vs 4.6% with HBO — not a head-to-head test, but funders now raise PENTO/PENTOCLO as the oral alternative; no head-to-head trial has reported yet**.

EVIDENCE BASE

Shape and certainty	Randomised trials exist for both prophylaxis (one positive, one null) and treatment (one negative, one favourable but underpowered). The 2024 ISOO-MASCC-ASCO guideline does not recommend routine prophylactic use before extraction (it may be offered where a substantial bone volume received more than 50 Gy), and says hyperbaric oxygen with surgery may be used in cancer-free patients with established disease. The wiki holds this page as guarded .
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Study	Design	Result and risk of bias
Marx 1985 — PMID 3897335	Open-label RCT, prophylaxis	Positive; RoB 2 high
Shaw 2019 HOPON — PMID 30851351	Phase-3 RCT	Null primary; early secondaries favoured HBO
Annane 2004 ORN96 — PMID 15520052	Double-blind sham RCT, stopped early	Negative
Forner 2022 — PMID 34843843	Combined randomised data	Favourable, not significant
Geçkil 2025 — PMID 40097107	Meta-analysis, 13 studies	Mixed; pooled single-arm proportions; AMSTAR-2 critically low; abstract only

WHAT THE EVIDENCE DOES NOT SUPPORT

Cautions	HOPON found no prophylactic benefit against a low background rate, concluding routine prophylaxis is unnecessary. Annane found no treatment benefit and was stopped early for potentially worse outcomes in the treated arm. In skull-base disease, conservative management including hyperbaric oxygen resolved only 4.1% against 71.8% for surgery (non-randomised; HBO pooled with other conservative care). Dental implant survival in irradiated bone is unsettled: two small studies, one randomised, found no difference; a five-study retrospective subgroup (Liu 2026) favoured HBO.
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STATUS IN SOUTH AFRICA

Status	Accepted indication in South Africa (SAUHMA Level B for both treatment and prophylaxis). No clean PMB pair for the condition itself — the funding pathway runs via the underlying malignancy.
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Compiled from the **UHMS Hyperbaric Oxygen Therapy Indications Manual, 15th edition (2023)** and the appraised trial evidence held in an HBOT evidence library. All treatments are 100% oxygen. US Navy Treatment Table profiles are named, not reproduced — the US Navy Diving Manual is the operative document at the chamber. Session counts are largely guideline convention rather than dose-finding evidence. This card summarises published parameters and does not replace those source documents or clinical judgement for the individual patient. Generated 03 October 2026. Not a SAUHMA publication and carries no society endorsement.