

INPLASY

Management of Calvarial Osteoradionecrosis After Treatment of Cutaneous Malignancy

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202520117

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 February 2025 and was last updated on 27 February 2025.

INTRODUCTION

Review question / Objective Osteoradionecrosis (ORN) is a recognized complication of radiotherapy. However, calvarial ORN (ORNC) following treatment for cutaneous malignancies are poorly understood. Shedding light on the limited evidence to date, this study aims to summarize existing evidence and highlight the research gaps.

Condition being studied Osteoradionecrosis of the calvarium (ORNC) - affecting the frontal, parietal, occipital, and squamous temporal bones.

METHODS

Participant or population Patients who developed ORNC post radiotherapy following treatment of cutaneous cancer.

Intervention Radiation therapy following treatment of cutaneous cancer.

Comparator Nil control group.

Study designs to be included Systemic Review.

Eligibility criteria Studies were included if they addressed a persisting non-healing scalp wound in the scalp region following radiation therapy for malignancies, and were excluded based on the following pre-determined criteria:

- 1) Lack of relevance: Articles were excluded if they did not discuss or evaluate a non-healing wound in the setting of prior radiation.
- 2) ORN of sites other than the calvarium: articles investigating ORN of other body sites and non-calvarial head and neck sites such as the skull base, facial skeleton, and occipital-cervical junction were excluded.
- 3) ORNC caused by radiotherapy treatment for intracranial pathologies: This review focuses on situations where radiation is specifically targeted at cutaneous scalp tissue alone, to mitigate potential confounding factors, arising from variations in

surgical interventions (such as craniotomy) and radiotherapy regimes.

4) Insufficient results or inability to extrapolate results specific to ORNC.

Author 9 - Carly Fox - Supervision, writing/editing, plastic surgical advice, presentation.

Information sources PubMed and Embase.

Main outcome(s)

- 1) What's the definition of calvarial osteoradionecrosis(ORNC)?
- 2) What are the incidence and risk factors of calvarial osteoradionecrosis(ORNC)?
- 3) What are the radiotherapy parameters of ORNC?
- 4) How is it diagnosed?
- 5) How is ORNC currently managed?

Quality assessment / Risk of bias analysis JBI Critical Assessment Tool was used because only case reports and series are available.

Strategy of data synthesis Three independent reviewers were involved in abstract screening and full-text review, and discrepancies were resolved through group discussion. Quality was assessed using the JBI Appraisal Tool for Case Reports and Case Series. Data on the definition, incidence, risk factors, radiotherapy parameters, diagnostic methods, and management strategies were collated.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Language restriction English.

Country(ies) involved Australia.

Keywords Osteoradionecrosis, Osteoradionecrosis of the calvarium.

Contributions of each author

Author 1 - Siyuan Pang - Design, data collection, analysis, drafting/editing, presentation.

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Author 2 - Elizabeth Concannon Concannon - Design, data collection, drafting/editing.

Author 3 - Martin Higgins - Design, data curation, editing.

Author 4 - Katharine Drummond - Writing/editing, neurosurgical advice.

Author 5 - Peter Gearing - Design, data collection, editing.

Author 6 - Maxim Devine - Design, editing.

Author 7 - Albert Tiong - Writing/editing, surgical oncology advice.

Author 8 - Anand Ramakrishnan - Supervision, editing, plastic surgical advice.