

# INPLASY

## The role of transarterial embolization plus radiotherapy compared to radiotherapy or transarterial embolization alone in the management of painful bone metastases: results of a systematic review

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### ADMINISTRATIVE INFORMATION

**Support** - Not Applicable.

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

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY2024110073

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 17 November 2024 and was last updated on 17 November 2024.

## INTRODUCTION

**Review question / Objective** The clinical question was: (P) in painful Bone Metastases, is Trans-arterial embolization plus RadioTherapy (I) superior when compared with RadioTherapy or Trans-arterial embolization alone (C), in relation to the outcomes (O) of benefit and harm?

**Condition being studied** Bone metastases are the most common malignant skeletal lesions and significantly influence patients' quality of life due to pain, pathological fractures, and compression of nearby structures such as nerves.

Current treatment modalities to manage pain and prevent fractures are medical therapy, surgery, and radiotherapy. The latter considered the best evidence-based non-interventional treatment. Interventional radiology procedures may play an important and complementary role to manage

bone metastases. The present systematic review was performed to assess the efficacy and the safety of the combined treatment of embolization plus radiotherapy for the treatment of painful bone metastases in terms of clinical response, local disease control and adverse events.

## METHODS

**Search strategy** We performed a comprehensive literature search using PubMed, Scopus, WebOfScience, Medline Plus and The Cochrane Library to identify full-text articles evaluating efficacy and safety of embolization plus radiotherapy compared to embolization or radiotherapy alone in bone metastases.

The studies were identified using the following medical subject headings (MeSH) and keywords: "embolization", "radiotherapy" and "bone metastases". The search strategy was: ("embolization" [MESH] OR "chemoembolization"

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[All fields]) AND (“radiotherapy” [MESH]) OR “radiotherapy [All fields]) AND (“bones” [MESH]) OR “osseous [All fields]) AND (“metastases” [MESH]) OR “metastases” [All fields]).

**Participant or population** Patient with bone metastases who underwent radiotherapy and embolization as combined or alone treatment.

**Intervention** Embolization group and radiotherapy group.

**Comparator** Embolization plus radiotherapy group.

**Study designs to be included** Systemic Review.

**Eligibility criteria** studies included in the clinical question.

**Information sources** literature search using PubMed, Scopus, WebOfScience, Medline Plus and The Cochrane Library.

**Main outcome(s)** clinical response (based on patient’s subjective pain score), local disease control (based on imaging evaluation) and adverse events (local and systemic).

**Quality assessment / Risk of bias analysis** Certainty of evidence for all selected outcomes was performed according to the GRADE approach, considering study limitations, imprecision, indirectness, inconsistency, and publication biases. Certainty level starts at higher pre-specified level for randomized controlled trials, but levels of certainty can be downgraded if limitations in one of the above-mentioned domains are detected. Evidence was classified as having high, moderate, low, and very low level of certainty.

**Strategy of data synthesis** The quality assessment showed high clinical and methodological heterogeneity and risks of bias in the included studies; therefore, meta-analysis outcomes were not reported, and quantitative analysis was possible only on clinical response rates using the inverse variance-weighted average.

**Subgroup analysis** Not applicable.

**Sensitivity analysis** Inverse variance-weighted average as quantitative analysis for clinical response rates.

**Country(ies) involved** Italy.

**Keywords** embolization; radiotherapy, bone metastases; pain.

**Contributions of each author**

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