NICE National Institute for Health and Care Excellence

NICE guidance

Radiofrequency ablation for palliation of painful spinal metastases

HealthTech guidance
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Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

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This guidance replaces IPG758.

1 Recommendations

1.1 Evidence on the safety and efficacy of radiofrequency ablation for palliation of painful spinal metastases is limited in quantity and quality. Therefore, this procedure should only be used with special arrangements for clinical governance, consent, and audit or research. Find out what special arrangements mean on the NICE guidance page.

1.2 Clinicians wanting to do radiofrequency ablation for palliation of painful spinal metastases should:

- Inform the clinical governance leads in their healthcare organisation.
- Give people (and their families and carers as appropriate) clear written information to support shared decision making, including NICE's information for the public.
- Ensure that people and their families and carers understand the procedure's safety and efficacy, and any uncertainties about these.
- Audit and review clinical outcomes of everyone having the procedure. The main efficacy and safety outcomes identified in this guidance can be entered into NICE's audit tool (for use at local discretion).
- Discuss the outcomes of the procedure during their annual appraisal to reflect, learn and improve.

1.3 Healthcare organisations should:

- Ensure systems are in place that support clinicians to collect and report data on outcomes and safety for everyone having this procedure.
- Regularly review data on outcomes and safety for this procedure.

1.4 Patient selection should be done by a multidisciplinary team. The procedure

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should only be done by clinicians with training and expertise in vertebral interventions.

1.5 NICE encourages further research into the procedure. This should report details of patient selection, type of tumour and interventional procedures used.

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2 The condition, current treatments and procedure

The condition

2.1 Spinal metastases can affect quality of life by causing severe pain, functional impairment, vertebral fractures, nerve root impingement, spinal cord compression and hypercalcaemia.

Current treatments

2.2 Treatment for spinal metastases is always palliative. It aims to reduce pain, improve and maintain function, provide mechanical stability, and prevent further local tumour progression. Current treatment options include a combination of medical therapies (such as analgesics, systemic therapies including osteoclastic inhibitors such as bisphosphonates and denosumab, chemotherapy or hormone therapy), orthotic support, radiation therapy (external beam radiotherapy or stereotactic body radiotherapy), and minimally invasive localised percutaneous procedures such as cryoablation, photodynamic therapy, microwave ablation and radiofrequency ablation. These techniques may also be used with kyphoplasty or vertebroplasty to improve structural or mechanical stabilisation after tumour ablation. Open surgery (or surgery combined with radiotherapy) may be suitable for some people with spinal cord compression and vertebral fractures.

The procedure

2.3 Radiofrequency ablation is a procedure for palliative treatment of spinal metastases. It is usually done in a day-case setting using a transpedicular or parapedicular approach under general anaesthesia or local anaesthesia with sedation. The approach is either percutaneous, endoscopic or surgical.

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2.4 Under imaging guidance (fluoroscopy, CT or MRI), a radiofrequency probe is inserted into the spinal tumour. The radiofrequency probe is attached to a radiofrequency generator, which creates high-frequency alternating current pulses that heat and destroy the tumour.

2.5 Radiofrequency ablation is not usually done if the spinal metastases are close to neurological structures because of the risk of neurological injury.

2.6 This is a standalone radiofrequency ablation procedure and not an adjunct to vertebroplasty or kyphoplasty.

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3 Committee considerations

The evidence

3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 4 sources, which was discussed by the committee. The evidence included 3 prospective case series and 1 retrospective analysis. It is presented in the summary of key evidence section in the overview. Other relevant literature is in the appendix of the overview.

3.2 The professional experts and the committee considered the key efficacy outcomes to be: reduction in pain, reduction in use of analgesics (especially opioids) and health-related quality of life.

3.3 The professional experts and the committee considered the key safety outcomes to be: infection, thermal damage to adjacent structures, including neurological damage.

3.4 The committee discussed 4 commentaries from patients who have had this procedure.

Committee comments

3.5 The committee was informed that the procedure can provide rapid pain relief.

3.6 The committee was informed that this procedure is primarily used for sclerotic lesions.

3.7 Different types of radiofrequency ablation devices may be used in this procedure, including bipolar and monopolar electrodes, but not all can be used for sclerotic lesions.

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3.8 There may be a risk of pathological fracture if cement is not used, but there is a small group of patients for whom the use of cement is contraindicated.

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Update information

Minor changes since publication

January 2026: Interventional procedures guidance 758 has been migrated to HealthTech guidance 669. The recommendations and accompanying content remain unchanged.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.

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