NICE National Institute for Health and Care Excellence

NICE guidance

Radiofrequency ablation as an adjunct to balloon kyphoplasty or percutaneous vertebroplasty for palliation of painful spinal metastases

HealthTech guidance

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www.nice.org.uk/guidance/htg670

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.

Contents

This guidance replaces IPG759.

1 Recommendations

1.1 Evidence on the safety and efficacy of radiofrequency ablation as an adjunct to balloon kyphoplasty or percutaneous vertebroplasty for palliation of painful spinal metastases is adequate to support using this procedure provided that standard arrangements are in place for clinical governance, consent and audit. Find out what standard arrangements mean on the NICE guidance page.

1.2 For auditing the outcomes of this procedure, the main efficacy and safety outcomes identified in this guidance can be entered into NICE's audit tool (for use at local discretion).

1.3 Patient selection should be done by a multidisciplinary team. The procedure should only be done by clinicians with training and expertise in kyphoplasty or vertebroplasty techniques.

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.

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. This creates a cavity in the vertebral body. In this procedure, percutaneous vertebroplasty or balloon kyphoplasty is done at the same time with the aim of preventing subsequent fractures in the treated vertebrae.

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

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 11 sources, which was discussed by the committee. The evidence included 4 systematic reviews, 1 prospective case series, 5 retrospective cohort studies and 1 case report. 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: cement leakage, infection, and thermal damage to adjacent structures (including neurological damage).

3.4 Patient commentary was sought but none was received.

Committee comments

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

3.6 Different types of radiofrequency ablation devices are used in this procedure, including bipolar and monopolar electrodes.

3.7 The committee was advised that this procedure is primarily used for lytic lesions.

3.8 The committee noted that evidence on the additional benefit of radiofrequency ablation as an adjunct to kyphoplasty or vertebroplasty is limited.

3.9 The committee encourages submission of data to an appropriate register.

Update information

Minor changes since publication

January 2026: Interventional procedures guidance 759 has been migrated to HealthTech guidance 670. The recommendations and accompanying content remain unchanged.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.