NICE National Institute for Health and Care Excellence

NICE guidance

Percutaneous ultrasound-guided microwave ablation for symptomatic benign thyroid nodules

HealthTech guidance

Published: 16 November 2022

www.nice.org.uk/guidance/htg646

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 IPG743.

1 Recommendations

1.1 Evidence on the safety of percutaneous ultrasound-guided microwave ablation for symptomatic benign thyroid nodules shows some well-recognised complications. Evidence on efficacy is adequate. Therefore, this procedure can be used provided standard arrangements are in place for clinical governance, consent and audit. Find out what standard arrangements mean on the NICE guidance page.

1.2 Patient selection should be done by a multidisciplinary team.

1.3 This procedure should only be done by a clinician with experience in the procedure and specific training in thyroid ultrasound.

1.4 Patients should be assessed to exclude thyroid cancer before the procedure.

1.5 Immediate support should be available to deal with airway complications.

2 The condition, current treatments and procedure

The condition

2.1 Thyroid nodules may be cystic, colloid, hyperplastic, adenomatous, or cancerous. Most are benign and often asymptomatic. They may be single (solitary nodule) or multiple (multinodular goitre). Some thyroid nodules produce thyroxine or triiodothyronine and cause thyrotoxicosis. These are called hyperfunctioning or toxic thyroid nodules.

Current treatments

2.2 Benign thyroid nodules may need treatment if they are symptomatic or causing cosmetic problems. Conventional treatment includes surgery. Less invasive alternatives to surgery include ethanol ablation, percutaneous laser ablation, high intensity focused ultrasound ablation and radiofrequency ablation.

The procedure

2.3 Ultrasound-guided percutaneous microwave ablation for symptomatic benign thyroid nodules is a minimally invasive procedure done in an outpatient setting using local anaesthesia. The aim is to reduce symptoms and improve cosmetic appearance by making the nodule smaller while preserving thyroid function and with fewer complications than surgery.

2.4 The patient is placed in the supine position with moderate neck extension. A microwave antenna is inserted into the nodule using ultrasound guidance to visualise the electrode during the procedure. Once in position, the microwave antenna is activated to heat and destroy the tissue by coagulative necrosis. The antenna may be repositioned to ensure that most of the nodule is ablated.

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 3 systematic reviews, 4 non-randomised comparative studies and 4 case series. 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: symptom relief, cosmetic improvement and nodule volume reduction.

3.3 The professional experts and the committee considered the key safety outcomes to be: pain, bleeding, damage to adjacent structures and inadvertent treatment of malignant nodules.

3.4 One patient organisation submission and 2 commentaries from patients who have had this procedure were received and discussed by the committee.

Committee comments

3.5 The committee noted that this procedure can be done with cooled and uncooled microwave ablation devices. Most of the evidence it reviewed on the safety and efficacy of this procedure came from cooled microwave ablation devices.

3.6 The committee was informed that using uncooled microwave ablation devices means smaller needles can be used.

Update information

Minor changes since publication

January 2026: Interventional procedures guidance 743 has been migrated to HealthTech guidance 646. The recommendations and accompanying content remain unchanged.

ISBN: 978-1-4731-8554-8

Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.