

Ultrasound-Guided Minimally Invasive Treatment (MIT): A Paradigm Shift in the Management of Benign Thyroid Nodules – Where We Stand and the Way Forward

Sir,

Thyroid nodules are common in the general population and they are commonly benign. Numerous studies suggest a prevalence of 2%–6% with palpation, 19%–35% with ultrasound and 8%–65% in autopsy data.^[1] As far as the Indian context goes, the prevalence of a palpable thyroid nodule in the community is about 12.2%.^[2] Almost 95% of thyroid nodules are benign with a small percentage actually turning out to be malignant. All nodules >1 cm need to be evaluated whether they are palpable or non-palpable (commonly referred to as an incidentaloma) but not all nodules require treatment.

Current indications for treatment of benign thyroid nodules include large thyroid nodules causing symptoms – cosmetic deformity or pressure symptoms including pain, dysphagia, foreign body sensation, dyspnea, neck discomfort, neck bulging or cough.

In 2011, the Endocrine Society of India published a position statement for the management of patients with thyroid nodules.^[2] Currently, as per these guidelines, benign thyroid nodules are kept on follow-up and for symptomatic benign thyroid nodules surgery is offered: either hemi or total thyroidectomy.

Issues with surgical treatment options for benign thyroid disease

Worldwide, a large number of surgeries are performed for benign thyroid disease. One of the major complications of thyroidectomy is hypoparathyroidism. Prevalence of hypoparathyroidism at 3–6 months, 12 months and at long-term follow-up is around 22.9%, 16.7% and 14.5%, respectively. Although most patients with postsurgical hypoparathyroidism recover parathyroid function, the prevalence of permanent disease in clinical practice is non-negligible at around 14.5%.^[3]

Bartsch *et al.*^[4] in their study found that the main indication for surgery was ‘exclusion of malignancy’ in two-thirds of patients of their study group, but a preoperative fine needle aspiration cytology (FNAC) was performed in only 12%. It is therefore often critically noted that thyroid resections are indicated too liberally for so-called ‘cold’, potentially malignant nodules. Already in the early 2000s, the rate of total thyroidectomies and hemithyroidectomies has increased from 37% to 73% with postoperative hypoparathyroidism as the major complication after surgery for benign thyroid disease. Thus, this issue requires more awareness.^[4]

Similarly, in another study by Mathonnet *et al.*,^[5] they found that the ratio of thyroidectomies with cancer over thyroidectomies with benign nodules was 0.8, and they concluded that there is suboptimal management of patients prior to thyroidectomy. Mean rates of recurrent laryngeal nerve injury and hypocalcemia (requiring blood tests plus treatments within 4–12 months) were estimated at 1.5% and 3.4%, respectively in their study. This suggests overdiagnosis and potential harm to patients and this calls for a review of the relevance of thyroidectomy.

To overcome the pitfalls and issues with surgery, minimally invasive treatment (MIT) options for benign thyroid nodular disease have been proposed. MITs are considered as minimally invasive because they do not require any general anaesthesia, surgical incision, or the removal of healthy thyroid tissue, thus allowing for a minimal impact on patients while providing effective treatment of the disease. Given that they are provided under the guidance of ultrasound, MITs are also called ‘ultrasound-guided treatments’.^[6]

MIT include both chemical, such as EA, and thermal ablations (TAs), the latter comprising four different techniques, namely radiofrequency ablation (RFA), laser ablation, microwave ablation and high-intensity focused ultrasound.^[6]

Global MIT guidelines for the management of benign thyroid nodules

The Task Force Committee of the Korean Society of Thyroid Radiology (KSThR) developed recommendations for the optimal use of RFA for thyroid tumours in 2012. As new meaningful evidence accumulated, KSThR decided to revise the guidelines in 2017.^[7]

More recently in 2020, the European Thyroid Association has published the ETA Clinical Practice Guideline for the Use of Image-Guided Ablation in Benign Thyroid Nodules.^[8]

As per these guidelines, in adult patients with benign thyroid nodules that cause pressure symptoms and/or cosmetic concerns and decline surgery, image-guided TA should be considered as a cost- and risk-effective alternative option to surgical treatment or observation alone. MIT is not recommended for asymptomatic benign nodules. Before ablation of thyroid lesions, a benign cytological diagnosis is needed. Ideally, a repeat FNAC is suggested for cytologically benign nodules with the exception of spongiform nodules and pure cystic lesions.

In multinodular goitres, TA should be restricted to patients with a well-defined dominant nodule or those who are not candidates for thyroid surgery or radioactive iodine treatment, as a palliative therapy option. TA should also be considered in young patients with small benign autonomously functioning thyroid nodules and incomplete suppression of peri-nodular thyroid tissue due to the higher probability of normalization of thyroid function and the advantage of avoiding irradiation and restricting the risk of late hypothyroidism.

The way forward

The efficacy and safety of MIT options for benign thyroid nodules including ethanol injection and TA have been proven and documented in the literature by various prospective and randomized studies including randomised clinical trials and meta-analysis. Based on the current evidence and guidelines by both the ETA and Korean Thyroid Association (KTA), detailed indications and contraindications for the usage of these MIT techniques, criteria for patient selection, eligibility for these procedures and the outcomes and follow-up of such patients are now available. Sufficient endorsement by national societies and the establishment of a working group including endocrinologists, head-neck surgeons, interventional radiologists and histopathologists for developing joint guidelines for the usage of MIT for benign thyroid nodules in the Indian context are the need of the hour. Limited teaching centres, cost/reimbursement issues and lack of uniformity in practice in the Indian context may be an issue, but this is the way forward.

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Conflicts of interest

There are no conflicts of interest.

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