



RE: 2017 Thyroid Radiofrequency Ablation Guideline: The Korean Society of Thyroid Radiology

Kai Lun Cheng, MD, PhD^{1, 2, 3},
Wei-Che Lin, MD, PhD⁴

¹Department of Medical Imaging, Chung Shan Medical University Hospital, Taichung 40201, Taiwan; ²School of Medical Imaging and Radiological Sciences, Chung Shan Medical University, Taichung 40201, Taiwan; ³Department of Veterinary Medicine, National Chung Hsing University, Taichung 40201, Taiwan; ⁴Department of Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University College of Medicine, Kaohsiung 83305, Taiwan

Keywords: *Thyroid; Ultrasound; Radiofrequency ablation; RF ablation; Thyroid recurrent cancers; Guideline*

Dear Editor,

With great interest, we read the article “2017 Thyroid Radiofrequency Ablation Guideline: Korean Society of Thyroid Radiology” (1). In recent years, both Korea and Italy have published recommendations for treating thyroid nodules with radiofrequency ablation (RFA) (2, 3). Since 2009, the Korean Society of Thyroid Radiology (KSThR) has continuously updated the recommendations regarding thyroid RFA. The 2017 guidelines proposed by the KSThR include indications, pre-procedural evaluations, procedures, post-procedural monitoring, efficacy, and safety with

Received June 27, 2018; accepted after revision June 28, 2018.

Corresponding author: Wei-Che Lin, MD, PhD, Department of Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital, Chang Gung University College of Medicine, 123 Ta-Pei Road, Niao-Sung, Kaohsiung 83305, Taiwan.

• Tel: (8867) 7317123 • Fax: (8867) 7317123

• E-mail: u64lin@yahoo.com.tw

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

abundant meaningful evidences.

In the present article, in addition to the trans-isthmic approach and moving-shot technique, which are two basic techniques for thyroid RFA, the authors briefly mention vascular ablation techniques, which have been introduced to minimize marginal regrowth. Park et al. (4) have proposed vascular ablation techniques, including the artery-first and marginal venous ablation techniques, to improve the efficacy of thyroid RFA. According to our experience, it is not uncommon to find marginal veins surrounding thyroid nodules; however, finding a feeding artery is significantly less likely. Additionally, we must question whether or not it is safe to ablate a feeding artery without covering it with sufficient isthmic tissue or to ablate the marginal veins without ablating the feeding artery. We also believe that vascular ablation techniques may not be simple for beginners and could result in a greater number of bleeding complication events. However, we noted the recommendations as interesting and would like to thank the authors for this highly beneficial work.

Based on our preliminary experience with thyroid RFA, we believe that the recommendations for thyroid RFA reported by the KSThR are appropriate for clinical practice and that the proposed key issues may provide a more comprehensive review for doctors interested in thyroid RFA.

REFERENCE

1. Kim JH, Baek JH, Lim HK, Ahn HS, Baek SM, Choi YJ, et al.; Guideline Committee for the Korean Society of Thyroid Radiology (KSThR) and Korean Society of Radiology. 2017 Thyroid Radiofrequency Ablation Guideline: Korean Society of Thyroid Radiology. *Korean J Radiol* 2018;19:632-655
2. Garberoglio R, Aliberti C, Appetecchia M, Attard M, Boccuzzi G, Boraso F, et al. Radiofrequency ablation for thyroid nodules: which indications? The first Italian opinion statement. *J Ultrasound* 2015;18:423-430
3. Na DG, Lee JH, Jung SL, Kim JH, Sung JY, Shin JH, et al.; Korean Society of Thyroid Radiology (KSThR); Korean Society of Radiology. Radiofrequency ablation of benign thyroid nodules and recurrent thyroid cancers: consensus statement and recommendations. *Korean J Radiol* 2012;13:117-125
4. Park HS, Baek JH, Park AW, Chung SR, Choi YJ, Lee JH. Thyroid radiofrequency ablation: updates on innovative devices and techniques. *Korean J Radiol* 2017;18:615-623

Response

Ji-hoon Kim, MD, PhD¹,
Jung Hwan Baek, MD, PhD²

¹Department of Radiology, Seoul National University College of Medicine, Seoul 03080, Korea; ²Department of Radiology and Research Institute of Radiology, University of Ulsan College of Medicine, Asan Medical Center, Seoul 05505, Korea

To the Editor,

First, we appreciate your thoughtful comments of Dr. Cheng and Dr. Lin on our article. The 2017 thyroid radiofrequency ablation (RFA) guideline, published in the Korean Journal of Radiology (1) recommend standard (i.e., perithyroidal lidocaine injection, trans-isthmic approach, and moving-shot technique) and advanced techniques (i.e., vascular ablation techniques, including the artery-first and marginal venous ablation techniques), to improve the efficacy of thyroid RFA. Operators can apply the artery-first ablation technique in hypervascular thyroid nodules (2). Hypervascular nodules are resistant to heat because of heat-sink effect, therefore marginal recurrence is more common in these cases than in hypovascular nodules (i.e., spongiform nodules). To minimize marginal recurrence, the 2017 guideline recommend artery-first ablation techniques. Before ablation, operators evaluate feeding arteries using color Doppler ultrasonography (US). During ablation of the arteries, operators should not ablate arteries outside the thyroid gland to prevent bleeding. Bleeding and hematoma are the major complications of thyroid RFA (3). We recommend artery ablation, especially at isthmic area, during a trans-isthmic approach. However, as you described, feeding arteries cannot be identified on color Doppler US in some thyroid nodules. In such cases, ablation of nodule and perinodular veins can achieve excellent results.

Venous staining achieved by perinodular vein ablation is also effective in inducing venous infarction of thyroid

nodules. This ablation technique is essential for prevention of marginal recurrence (4). However as you described, there are several critical structures around the thyroid gland, such as the esophagus, recurrent laryngeal nerve, medial variation of vagus nerve, and middle cervical sympathetic ganglion (5, 6). Evaluation of these structures before ablation and monitoring during procedure are essential for complication-free thyroid ablation. Fortunately, these structures are well-visible on US, except for the recurrent laryngeal nerve. Therefore, operators with a good knowledge of perithyroidal anatomy and experience with thyroid RFA can use these advanced techniques safely.

We believe that your comments have enriched our study and we sincerely appreciate your attention.

REFERENCE

1. Kim JH, Baek JH, Lim HK, Ahn HS, Baek SM, Choi YJ, et al.; Guideline Committee for the Korean Society of Thyroid Radiology (KSThR) and Korean Society of Radiology. 2017 Thyroid Radiofrequency Ablation Guideline: Korean Society of Thyroid Radiology. *Korean J Radiol* 2018;19:632-655
2. Park HS, Baek JH, Park AW, Chung SR, Choi YJ, Lee JH. Thyroid radiofrequency ablation: updates on innovative devices and techniques. *Korean J Radiol* 2017;18:615-623
3. Chung SR, Suh CH, Baek JH, Park HS, Choi YJ, Lee JH. Safety of radiofrequency ablation of benign thyroid nodules and recurrent thyroid cancers: a systematic review and meta-analysis. *Int J Hyperthermia* 2017;33:920-930
4. Sim JS, Baek JH, Lee J, Cho W, Jung SI. Radiofrequency ablation of benign thyroid nodules: depicting early sign of regrowth by calculating vital volume. *Int J Hyperthermia* 2017;33:905-910
5. Ha EJ, Baek JH, Lee JH. Ultrasonography-based thyroidal and perithyroidal anatomy and its clinical significance. *Korean J Radiol* 2015;16:749-766
6. Park C, Suh CH, Shin JE, Baek JH. Characteristics of the middle cervical sympathetic ganglion: a systematic review and meta-analysis. *Pain Physician* 2018;21:9-18