

## REPLY:

We have read the letter regarding our recently published article in the *American Journal of Neuroradiology*<sup>1</sup> and hereby provide a reply. Tez and Tez suggested the issue of incidental small papillary thyroid cancer. A 10% incidence of incidental small papillary thyroid cancer was found in multinodular goiter with benign cytology. To minimize missing cancer, the Korean Society of Thyroid Radiology (KSThR) recommended at least 2 different benign biopsy results before radiofrequency ablation.<sup>2</sup> In addition, the KSThR recommended careful examination of sonography findings and lymph node metastasis before treatment.<sup>3</sup> KSThR also does not recommend thyroid radiofrequency ablation for follicular neoplasms or primary thyroid cancers.<sup>2</sup> On the basis of these KSThR recommendations, missing cancer was a rare complication after radiofrequency ablation in a large-population multicenter study<sup>4</sup> and long-term follow-up studies by thermal ablation techniques.<sup>5-8</sup>

Regarding complications after surgery and radiofrequency ablation, surgery showed a higher incidence of hypothyroidism than radiofrequency ablation (71% versus 0%) in our study. Because our study included a considerable number of patients with total thyroidectomy (due to bilateral thyroid nodules), hypothyroidism was an inevitable complication in these patients. Hypothyroidism depends on the surgical methods (ie, total thyroidectomy or lobectomy). Regarding the statistical issue, the Wilcoxon signed rank test was used for comparison of the volume reductions between enrollment and the follow-up visit of the radiofrequency group.

The main conclusion of our study was that radiofrequency ablation effectively treats benign thyroid nodules with a low amount of complications.<sup>1</sup> Hence, radiofrequency ablation may be considered as possibly the first-line treatment for benign thy-

roid nodules. However radiofrequency ablation has a potential limitation of missing incidental small papillary thyroid cancers. This limitation should be carefully validated in the future.

## REFERENCES

1. Che Y, Jin S, Shi C, et al. **Treatment of benign thyroid nodules: comparison of surgery with radiofrequency ablation.** *AJNR Am J Neuroradiol* 2015 Mar 26. [Epub ahead of print] CrossRef Medline
2. Na DG, Lee JH, Jung SL, 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;13:117–25 CrossRef Medline
3. Lee YH, Baek JH, Jung SL, et al; Korean Society of Thyroid Radiology (KSThR), Korean Society of Radiology. **Ultrasound-guided fine needle aspiration of thyroid nodules: a consensus statement by the Korean Society of Thyroid Radiology.** *Korean J Radiol* 2015;16:391–401 CrossRef Medline
4. Baek JH, Lee JH, Sung JY, et al; Korean Society of Thyroid Radiology. **Complications encountered in the treatment of benign thyroid nodules with US-guided radiofrequency ablation: a multicenter study.** *Radiology* 2012;262:335–42 CrossRef Medline
5. Lim HK, Lee JH, Ha EJ, et al. **Radiofrequency ablation of benign non-functioning thyroid nodules: 4-year follow-up results for 111 patients.** *Eur Radiol* 2013;23:1044–49 CrossRef Medline
6. Spiezia S, Garberoglio R, Milone F, et al. **Thyroid nodules and related symptoms are stably controlled two years after radiofrequency thermal ablation.** *Thyroid* 2009;19:219–25 CrossRef Medline
7. Dössing H, Bennedbæk FN, Hegedüs L. **Long-term outcome follow-up interstitial laser photocoagulation of benign cold thyroid nodules.** *Eur J Endocrinol* 2011;165:123–28 CrossRef Medline
8. Valcavi R, Riganti F, Bertani A, et al. **Percutaneous laser ablation of cold benign thyroid nodules: a 3-year follow-up study in 122 patients.** *Thyroid* 2010;20:1253–61 CrossRef Medline

J.H. Baek

Department of Radiology and Research Institute of Radiology  
University of Ulsan College of Medicine  
Asan Medical Center  
Seoul, Korea

<http://dx.doi.org/10.3174/ajnr.A4479>