



## Invited Commentary

## Invited commentary: Postoperative thyroid hormone supplementation rates following thyroid lobectomy



In this issue of the American Journal of Surgery, Fingeret et al. have provided a retrospective single-institution cohort study to evaluate the need for thyroid hormone supplementation after a thyroid lobectomy.<sup>1</sup>

While certain conditions can only be treated by performing a total thyroidectomy, our understanding of molecular biology, genetics and advancement in surgical technique have allowed the performance of a thyroid lobectomy in lieu of the above, in certain cases. A recent change in guidelines by the American Thyroid Association (ATA) in 2015 has shifted our management paradigm,<sup>2</sup> most significantly for well-differentiated, smaller cancers (<4cm) without evidence of high-risk features. This marked a change from the prior thought process which required a total thyroidectomy for any and all malignancies.

As the authors have noted, thyroid lobectomies are predominantly performed for symptomatic benign nodules, nodules which are indeterminate and in certain low-risk, well-differentiated thyroid cancers. Numerous studies discuss the reduced risk of recurrent laryngeal nerve injury, hematomas and other post-operative complications which stem from reduced dissection and manipulation when we perform thyroid lobectomies over total thyroidectomies.<sup>3,4</sup> Interestingly, a retrospective study was performed by Farag et al. to evaluate whether the risk of post-operative complications is further increased when a cohort of obese patients is compared to those with a normal body mass index (BMI).<sup>5</sup> They found no increased rate of complications in that patient population.

Another equally important facet is the consideration that a thyroid lobectomy may decrease the risk of post-operative hypothyroidism compared to a total thyroidectomy and therefore, the need for long term thyroid hormone supplementation. In addition to the need for life long patient compliance, chronic hypothyroidism can lead to issues with quality-of-life, even in some cases of subclinical hypothyroidism. Patients with chronic hypothyroidism may suffer from weight gain, myopathy, neurocognitive slowness, in addition to the cost accrued for a lifetime of thyroid hormone supplementation. This has been well studied with previous quality-of-life questionnaires targeted at this specific population.<sup>6</sup>

In this study, which evaluates one hundred patients who underwent thyroid lobectomies over the span of one year, the authors found that the majority of patients with benign pathology will not require thyroid hormone supplementation to achieve the goal of an optimal TSH level. This optimal level varies between benign and malignant disease, which naturally require a lower post-operative TSH level and usually require thyroid function suppression.

Understandably, certain factors were found to be associated with a higher need for post-operative thyroid supplementation. The findings corroborate those of previous studies, and show that a higher pre-operative TSH level, thyroiditis, remnant thyroid volume and the presence of malignancy on final pathology are all found to be associated with the need for thyroid hormone supplementation.<sup>7,8</sup>

Another point to consider is that studies have also shown an association between a higher pre-operative TSH level and the likelihood of identifying a differentiated thyroid cancer when surgery is performed for thyroid nodules. The extent of surgery in these cases is usually decided by the ATA guidelines referenced above.<sup>9</sup>

Discussions regarding the possible need for post-operative thyroid supplementation, regardless of the extent of surgery remain a very important part of the pre-operative counseling process, and this study elaborates on the factors that would increase the risk of post-operative hypothyroidism, permitting an informed consent on the part of the patient with regards to the possibility of long-term thyroid hormone supplementation.

#### Declaration of competing interest

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

#### References

1. Wilson M, Patel A, Goldner W, Baker J, Sayed Z, Fingeret AL. Postoperative thyroid hormone supplementation rates following thyroid lobectomy. *Am J Surg*. July 2020. <https://doi.org/10.1016/j.amjsurg.2020.06.052>.
2. Haugen BR, Alexander EK, Bible KC, et al. 2015 American thyroid association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer the American thyroid association guidelines task force on thyroid nodules and differentiated thyroid cancer. *Thyroid*. 2016;26(1). <https://doi.org/10.1089/thy.2015.0020>.
3. Hauch A, Al-Qurayshi Z, Randolph G, Kandil E. Total thyroidectomy is associated with increased risk of complications for low- and high-volume surgeons. *Ann Surg Oncol*. 2014;21(12):3844–3852. <https://doi.org/10.1245/s10434-014-3846-8>.
4. Kandil E, Krishnan B, Noureldine SI, Yao L, Tufano RP. Hemithyroidectomy: a meta-analysis of postoperative need for hormone replacement and complications. *ORL (Oto-Rhino-Laryngol) (Basel)*. 2013;75(1):6–17. <https://doi.org/>

- 10.1159/000345498.
5. Farag M, Ibraheem K, Garstka ME, et al. Thyroid surgery and obesity: cohort study of surgical outcomes and local specific complications. *Am J Surg*. 2019;217(1):142–145. <https://doi.org/10.1016/j.amjsurg.2018.07.038>.
  6. McMillan C, Bradley C, Razvi S, Weaver J. Evaluation of new measures of the impact of hypothyroidism on quality of life and symptoms: the ThyDQoL and ThySRQ. *Value Health*. 2008;11(2):285–294. <https://doi.org/10.1111/j.1524-4733.2007.00232.x>.
  7. Cox C, Bosley M, Southerland LB, et al. Lobectomy for treatment of differentiated thyroid cancer: can patients avoid postoperative thyroid hormone supplementation and be compliant with the American Thyroid Association guidelines? *Surgery*. 2018;163(1):75–80. <https://doi.org/10.1016/j.surg.2017.04.039>.
  8. Stoll SJ, Pitt SC, Liu J, Schaefer S, Sippel RS, Chen H. Thyroid hormone replacement after thyroid lobectomy. *Surgery*. 2009;146(4):554–560. <https://doi.org/10.1016/j.surg.2009.06.026>.
  9. Su A, Zhao W, Wu W, et al. The association of preoperative thyroid-stimulating hormone level and the risk of differentiated thyroid cancer in patients with thyroid nodules: a systematic review and meta-analysis. *Am J Surg*. 2020. <https://doi.org/10.1016/j.amjsurg.2020.01.009>.

Nikita Machado\*

*University Hospitals Conneaut, Suite 203 158 W Main Rd, Conneaut, OH, 44030, USA*

Scott Wilhelm\*\*

*University Hospitals Cleveland, 11100 Euclid Ave, Cleveland, OH, 44106, USA*

\* Corresponding author. Department of Surgery, University Hospitals Conneaut, Case Western Reserve University, USA.

\*\* Corresponding author. Division of Endocrine Surgery, University Hospitals Cleveland Medical Center, Case Western Reserve University, USA.

*E-mail address: [Nikita.n.machado@gmail.com](mailto:Nikita.n.machado@gmail.com) (N. Machado).*

*E-mail address: [Scott.wilhelm@uhhospitals.org](mailto:Scott.wilhelm@uhhospitals.org) (S. Wilhelm).*

8 July 2020