



AMERICAN  
THYROID  
ASSOCIATION

FOUNDED 1923

**Editor-in Chief**

Jerome M. Hershman, MD  
VA Greater Los Angeles Healthcare System  
and UCLA School of Medicine  
Endocrinology 111D  
11301 Wilshire Blvd  
Los Angeles, CA 90073  
Telephone: 310-268-3852 Fax: 310-268-4879  
Email: [clinicalthyroidology@thyroid.org](mailto:clinicalthyroidology@thyroid.org)

**Associate Editors:**

**Albert G. Burger, MD**  
Professor, University of Geneva  
Geneva, Switzerland  
Email: [clinicalthyroidology@thyroid.org](mailto:clinicalthyroidology@thyroid.org)

**Stephanie L. Lee, MD, PhD**  
Director of the Thyroid Health Center  
Boston University Medical Center  
Boston, MA  
Telephone: 617-638-8530 Fax: 617-638-7221  
Email: [clinicalthyroidology@thyroid.org](mailto:clinicalthyroidology@thyroid.org)

**Jorge H. Mestman, MD**  
Professor of Clinical Medicine and OB/GYN  
University of Southern California  
Keck School of Medicine  
Los Angeles, CA  
Telephone: 323-442-6179  
Email: [clinicalthyroidology@thyroid.org](mailto:clinicalthyroidology@thyroid.org)

**Stephen W. Spaulding, MD**  
Professor of Medicine  
Department of Medicine  
University at Buffalo, SUNY  
Telephone: 716-862-6530 Fax: 716-862-6526  
Email: [clinicalthyroidology@thyroid.org](mailto:clinicalthyroidology@thyroid.org)

**President**

James A. Fagin, MD

**Secretary/Chief Operating Officer**

John C. Morris, MD

**Treasurer**

David H. Sarne, MD

**President-Elect**

Bryan R. Haugen, MD

**Past-President**

Gregory A. Brent, MD

**Executive Director**

Barbara R. Smith, CAE  
American Thyroid Association  
6066 Leesburg Pike, Suite 550  
Falls Church, VA 22041  
Telephone: 703-998-8890  
Fax: 703-998-8893  
Email: [thyroid@thyroid.org](mailto:thyroid@thyroid.org)

**Designed By**

Karen Durland ([kdurland@gmail.com](mailto:kdurland@gmail.com))

**Clinical Thyroidology**

Copyright © 2012

American Thyroid Association, Inc.

Printed in the USA. All rights reserved.

# Clinical THYROIDOLOGY

VOLUME 24 • ISSUE 10

OCTOBER 2012

## EDITORIAL

### Prophylactic Central-Neck Dissection for Papillary Thyroid Carcinoma: A Thin Line between Benefit and Risk

In the September issue of *Thyroid*, Giordano and associates report a high rate of permanent hypoparathyroidism (16%) in patients undergoing prophylactic bilateral central-neck dissection (CND) during initial surgery for papillary thyroid carcinoma (PTC). (See the [summary in this issue](#) of *Clinical Thyroidology* on page 4.) (1). They propose a surgical strategy aimed at limiting prophylactic CND to the ipsilateral level VI compartment whenever possible. Prophylactic CND is currently the subject of vociferous debate among surgeons treating thyroid cancer, with valid arguments both for and against. Since the findings reported in the large, adequately powered, single-institution study by Giordano are a near-perfect reflection of the rest of the literature on the topic, this is an opportune moment to examine the benefits and risks of prophylactic CND in a distilled and dispassionate manner.

The central neck (level VI) contains approximately four to six lymph nodes per side. Though up to 70% of patients with PTC are observed to have microscopically positive nodes when prophylactic CND is performed routinely, only a small minority of these will manifest clinically as recurrences when CND is not performed routinely. The inferior parathyroid lies within the level VI territory and is jeopardized during CND; it can be accidentally removed or, more frequently, devascularized. Thus, autotransplantation of inferior parathyroid glands is standard practice when CND is performed. A technically well-executed parathyroid autotransplantation should result in a functional parathyroid within 6 weeks in 90% of cases. The recurrent laryngeal nerve runs obliquely through the center of the paratracheal area in the central neck. CND involves meticulous work right along the nerve to achieve compartmental clearance of the paratracheal nodes that flank the nerve. The above factors make CND technically demanding, so it is not surprising that most surgeons do not include prophylactic CND while performing thyroid cancer surgery.

The existing publications supporting prophylactic CND are all flawed to some degree. Because of the very large sample size and long-term follow-up required to demonstrate an oncologic benefit of prophylactic CND, a randomized, controlled trial on this topic is likely infeasible (2). So, retrospective studies are all we have for now. Several European studies have reported reduced cause-spe-

*continued on next page*

## EDITORIAL — Prophylactic Central-Neck Dissection for Papillary Thyroid Carcinoma: A Thin Line between Benefit and Risk

cific mortality associated with prophylactic CND (3), though these results have been received with skepticism by many because of problems with study design and a sense that this conclusion may be biologically implausible. Recently, in a multicenter study involving 606 patients, Popadich et al. demonstrated that prophylactic ipsilateral CND reduced the rate of central-neck reoperation from 6.1% to 1.5% and was associated with lower stimulated thyroglobulin (Tg) levels (4). These beneficial effects were achieved without any increase in the long-term complication rate.

Arguments against prophylactic CND mainly concern hypoparathyroidism. Ipsilateral CND is associated with increased rates of temporary hypoparathyroidism but not permanent hypoparathyroidism. However, as reflected in the work by Giordano et al., bilateral CND is consistently associated with permanent hypoparathyroidism rates exceeding 5% or even 10%, figures that are generally considered unacceptable.

Like all surgical decisions, the issue of prophylactic CND boils down to the ratio of benefit to risk. But the key here is perspective: as survival rates in PTC are excellent, we are afforded the luxury of moving one rung up on Maslow's hierarchy of needs, into the realm of secondary end points such as recurrences, reoperations, Tg levels and hypoparathyroidism—all of which can be considered issues of convenience in comparison to the specter of cancer-specific mortality.

Patients who undergo prophylactic ipsilateral CND enjoy the convenience of avoiding reoperations and frequently enjoy the reassurance of undetectable stimulated Tg levels. In exchange, they take on the inconvenience of increased rates of temporary hypoparathyroidism. A growing minority of clinicians perceive this to be a trade that ends up in the patient's favor, particularly when considering that the surveillance process is often simplified in patients who have undergone prophylactic ipsilateral CND. In contrast, the risk:benefit profile of bilateral prophylactic CND is unfavorable. The high price of permanent hypoparathyroidism is not counterbalanced by any measurable oncologic gains (5).

Lastly, it is important to point out the influence of publication bias on this topic. The available evidence allows us only to conclude that ipsilateral prophylactic CND may be beneficial in the hands of expert surgeons. Given the technical challenges described above, CND should not be performed by the occasional thyroid surgeon. If it is to be performed at all, prophylactic CND should be performed ipsilaterally only, and by experts who will keep patients with thyroid cancer on the right side of the thin line between benefit and risk.

—**Michael W. Yeh, MD**

Section of Endocrine Surgery  
 UCLA David Geffen School of Medicine

### References

1. Giordano D, Valcavi R, Thompson GB, Pedroni C, Renna L, Gradoni P, Barbieri V. Complications of central neck dissection in patients with papillary thyroid carcinoma: results of a study on 1087 patients and review of the literature. *Thyroid* 2012;22:911-7. Epub July 24, 2012.
2. Carling T, Carty SE, Ciarleglio MM, Cooper DS, Doherty GM, Kim LT, Kloos RT, Mazzaferri EL Sr, Peduzzi PN, Roman SA, et al. American Thyroid Association design and feasibility of a prospective randomized controlled trial of prophylactic central lymph node dissection for papillary thyroid carcinoma. *Thyroid* 2012;22:237-44. Epub February 7, 2012.
3. Mazzaferri EL, Doherty GM, Steward DL. The pros and cons of prophylactic central compartment lymph node dissection for papillary thyroid carcinoma. *Thyroid* 2009;19:683-9.
4. Popadich A, Levin O, Lee JC, Smooke-Praw S, Ro K, Fazel M, Arora A, Tolley NS, Palazzo F, Learoyd DL, et al. A multicenter cohort study of total thyroidectomy and routine central lymph node dissection for cN0 papillary thyroid cancer. *Surgery* 2011;150:1048-57.
5. Lee YS, Kim SW, Kim SK, Kang HS, Lee ES, Chung KW. Extent of routine central lymph node dissection with small papillary thyroid carcinoma. *World J Surg* 2007;31:1954-9.