American Thyroid Association Statement on the Essential Elements of Interdisciplinary Communication of Perioperative Information for Patients Undergoing Thyroid Cancer Surgery

Sally E. Carty,¹ Gerard M. Doherty,² William B. Inabnet III,³ Janice L. Pasieka,⁴ Gregory W. Randolph,⁵
Ashok R. Shaha,⁶ David J. Terris,⁷ Ralph P. Tufano,⁸ and R. Michael Tuttle,⁹
for the Surgical Affairs Committee of the American Thyroid Association

Background: Thyroid cancer specialists require specific perioperative information to develop a management plan for patients with thyroid cancer, but there is not yet a model for effective interdisciplinary data communication. The American Thyroid Association Surgical Affairs Committee was asked to define a suggested essential perioperative dataset representing the critical information that should be readily available to participating members of the treatment team.

Methods: To identify and agree upon a multidisciplinary set of critical perioperative findings requiring communication, we examined diverse best-practice documents relating to thyroidectomy and extracted common features felt to enhance precise, direct communication with nonsurgical caregivers.

Results: Suggested essential datasets for the preoperative, intraoperative, and immediate postoperative findings and management of patients undergoing surgery for thyroid cancer were identified and are presented. For operative reporting, the essential features of both a dictated narrative format and a synoptic computer format are modeled in detail. The importance of interdisciplinary communication is discussed with regard to the extent of required resection, the final pathology findings, surgical complications, and other factors that may influence risk stratification, adjuvant treatment, and surveillance.

Conclusions: Accurate communication of the important findings and sequelae of thyroidectomy for cancer is critical to individualized risk stratification as well as to the clinical issues of thyroid cancer care that are often jointly managed in the postoperative setting. True interdisciplinary care is essential to providing optimal care and surveillance.

Introduction

CURRENT AMERICAN HEALTH-CARE ENVIRONMENTS for patients with thyroid carcinoma differ widely in availability, capability, and delivery without a single type of specialist consistently serving as the predominant caregiver (1). Surgical input is integral to decision-making in thyroid cancer, but the content and quality of information flow can differ

widely among practitioners concerning the preoperative findings, operative extent, surgical findings, and adjuvant care plan. In addition, there is not yet a universally accepted model for effectively communicating these critical pieces of data between the various health-care providers involved in the management of thyroid cancer patients. Thyroid cancer specialists value and seek information from multiple sources to develop an optimal management plan for each individual

Authors are listed in alphabetical order.

¹Division of Endocrine Surgery, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.

²Department of Surgery, Boston University School of Medicine, Boston, Massachusetts.

³Department of Surgery, Mount Sinai Medical Center, New York, New York.

⁴Department of Surgery, University of Calgary, Calgary, Canada.

⁵Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts.

⁶Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, New York.

⁷Department of Otolaryngology, Georgia Health Sciences University, Augusta, Georgia.

⁸Department of Otolaryngology/Head and Neck Surgery, Johns Hopkins University School of Medicine, Baltimore, Maryland.

⁹Department of Endocrinology, Memorial Sloan-Kettering Cancer Center, New York, New York.

that will lead to a rational, risk-based approach to initial therapy, adjuvant therapy, and follow-up studies. Interdisciplinary communication is especially important in thyroid cancer since the pre- and intraoperative findings often complement the histologic findings described on the pathology report to influence risk stratification, adjuvant treatment, and follow-up strategy. With this in mind, the American Thyroid Association (ATA) Surgical Affairs Committee was asked to define a suggested essential perioperative dataset representing the critical information that should be readily available to each member of the multidisciplinary team making treatment and management recommendations for individual thyroid cancer patients.

Methods

We reviewed the 2009 ATA guidelines (1) to construct a basic perioperative dataset of factors necessary for accurate risk stratification after surgery for thyroid cancer. We agreed upon a set of critical intraoperative findings requiring communication to nonsurgical caregivers and tested these datasets by reviewing diverse examples of best-practice documents relating to thyroidectomy, including office notes, referral letters, operative consents, operative reports, operative diagrams and artwork, and pre- and postoperative patient educational materials, including the extensive patient education website of the American Association of Endocrine Surgeons (2). We then extracted the essential common-denominator features felt to enhance precise and direct communication. We here present basic recommended datasets along with further suggestions to enhance the mutual prospective communication of well-defined care plans for management and cancer surveillance of patients after thyroidectomy. The final document was approved by the ATA Board of Directors and officially endorsed by the American Association of Endocrine Surgeons (AAES), the American Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS), and the American Head and Neck Society (AHNS).

Results

Essential elements of interdisciplinary communication

From a clinical perspective, data that need to be communicated among the disease management team members are acquired in three distinct settings: preoperative evaluations, intraoperative findings, and postoperative data, events, and plans. A wide variety of findings from clinical examination, biochemical testing, cross-sectional and functional imaging tests, and other sources can have a major impact on postoperative risk assessment and therefore may significantly influence decision-making with regard to the role of adjuvant radioiodine ablation therapy (RAI), degree of thyrotropin (TSH) suppression, and extent and frequency of follow-up evaluations. Potentially important *preoperative* findings that may influence postoperative management include:

- High-risk physical examination findings such as a palpable cervical lymph node, a cervical or upper thoracic scar, fixation or other evidence of gross extrathyroidal extension, hoarseness, stridor, morbid obesity, and dermal metastasis
- High-risk historical features such as prior neck irradiation, unexplained bone pain, suspicion of distant or

central nervous system metastasis, current or prior hyperparathyroidism, multiple endocrine neoplasia type 2b, prior difficult intubation, and chronic vitamin D deficiency or other clinical issues that might predispose to postoperative hypocalcemic paresthesias

- Preoperative ultrasound findings with regard to both the thyroid gland and cervical lymph node evaluation
- Preoperative chest radiograph findings, if performed
- Preoperative laryngoscopy findings, if performed
- Known or suspected sites of metastatic disease detected on preoperative imaging
- Performance of any imaging studies using iodinated contrast within the previous 6 months
- Comorbid conditions, including pregnancy, that could influence decisions regarding TSH suppression, thyroid hormone withdrawal, or use of RAI
- Abnormal laboratory values that could influence RAI decision-making such as alterations in renal function or in the complete blood count and differential

Similarly, several kinds of *intraoperative* information are critical to the risk stratified postoperative management approach. These include:

- Extent of thyroid surgery
- Description of gross extrathyroidal extension
- Completeness of surgical resection (R0, R1, or gross residual disease)
- Details of suspected residual gross or microscopic thyroid tissue
- Extent of lymph node dissection
- Recurrent laryngeal nerve issues
- Parathyroid gland issues

Finally, a number of *postoperative* findings are also critical to an individualized management approach, including:

- Postoperative hypocalcemia, hypoparathyroidism, vitamin D use, and details of treatment
- Postoperative vocal cord dysfunction
- Other operative complications (such as chyle leak, spinal accessory nerve dysfunction, Horner's syndrome, motor weakness of the arm/shoulder, diaphragmatic paralysis, marginal mandibular nerve deficit) along with the management plan for those complications
- Final pathology report, which optimally should include details supporting extent of thyroidectomy, presence of cancer multifocality, etc.
- Replacement therapy and its timing (levothyroxine, cytomel, calcium)
- Use of iodinated contrast computed tomography in the postoperative period
- Anticipated after-care plan

Operative reporting of thyroidectomy

In addition to documenting the anatomic findings and the surgical care provided during thyroidectomy, the operative report is a tremendously useful communication tool. It should accurately describe the particular thyroid resection using language or data coding that makes the anatomy and the extent of resection clear, along with information sufficient to identify the patient, support the diagnosis and treatment, and promote continuing care. The suggested essential elements

are presented here; there are two main methods to convey the variables, necessary data, and anatomy. The traditional way is a surgeon-dictated narrative, while synoptic reporting has more recently come into vogue.

The initial section of a thyroidectomy report should succinctly list the patient's name, medical record number, date of surgery, preoperative diagnosis, postoperative diagnosis, type(s) of anesthetic and any major anesthetic issues that occurred, and names of the surgeon, first assistant, and other surgical participants. The specific indications for thyroidectomy are stated along with the pertinent history and test results and documentation of informed consent. The name of the operation should be clearly stated using precise language; e.g., left thyroid lobectomy and isthmuslectomy, total thyroidectomy with right superior parathyroid autotransplantation, reoperative bilateral thyroidectomy. In two-stage thyroid surgery, reoperative resection of a contralateral lobe is generally termed completion total thyroidectomy with designation of the side removed. A surgical time-out may be described.

For the nonsurgeon readers of a thyroidectomy report, we also recommend use of a synopsis, which is usually placed near the top of the report to describe the pertinent findings as concisely and directly as possible. Information should be recorded promptly because when dictation is delayed beyond 24 hours, operative reports are more likely to contain deficiencies (3). For narrative reporting, although there is some evidence that attending surgeons may be better equipped to dictate complex operations (3), it is also clear that teaching and mentorship during residency demonstrably improves this skill (4,5).

Next, a *dictated narrative* should briefly describe incision placement, the approach to reach the lobe or gland, any notable detail on the size, shape, extent, and/or consistency of each exposed thyroid lobe, and any intraoperative decisions that were required. The report should clearly indicate if bilateral dissection was performed. The report details should accurately describe the thyroid operation that is named in the operative report. Description should include any identified local invasion, substernal extent, surrounding fibrosis, unusual vascularity, unexpected anatomy, and other notable features, for example, kyphoscoliosis, anomalous right subclavian artery, ectopic thyroid tissue, a long or bifid pyramidal lobe, thyroglossal duct cyst, adherent lymph node, or a nonrecurrent laryngeal nerve. In reoperation, the extent of the thyroid gland, its size and/or shape, and the encountered scar tissue may also be documented. If thyroid tissue is intentionally or unavoidably left behind, the reason, location and an estimated weight or size should be stated. The narrative should describe the identified parathyroid glands, as well as the conduct of parathyroid autotransplantation if required. Identification of the recurrent laryngeal nerve and its branching anatomy is often described, and any unusual or aberrant recurrent laryngeal nerve anatomy is carefully described. The identity and disposition of each resected specimen(s) is clearly given for correlation with the pathology report. The central compartment (level VI) lymph nodes may be described (6) along with specific details of compartment-oriented (central or lateral) nodal resection, if performed. The use and/or results of ancillary procedures are described such as local or regional anesthetic injection, frozen section analysis, or intraoperative parathyroid hormone monitoring. If the

technique is used, comment on recurrent laryngeal nerve monitoring should be given (7). Strict brevity is best for descriptions of hemostasis, drain use, closure, dressings, estimated blood loss, and sponge/needle counts. The narrative should conclude with a description of the patient's condition and immediate disposition. Some surgeons also include a hand-drawn sketch or illustration of the operative findings. An example of a short informative narrative report for initial total thyroidectomy is given in Appendix A.

The dictated operative report may be supplemented by an electronic dataset, or a *synoptic operative report* generated by use of a computer program may supplant it entirely. Synoptic reports are designed to prompt the surgeon to list specific types of operative information in a series of data-populated fields. A web-based synoptic operative report (WebSMR[®]) for cancer-specific sites including thyroid (8) was recently developed in the province of Alberta, Canada; reports are created through a combination of drop-down menus, yes/no fields, and comment boxes to produce a concise readable note that can be adapted to meet both institutional and individual surgeon needs. The thyroid WebSMR was developed to include prognostic indicators allowing for calculation of the initial stage by MACIS score (9), including specific anatomic details such as nerve and parathyroid gland status. Immediacy and cost-savings in transcription (10) have made the thyroid WebSMR report a provincial standard in Canada, where in the future it is planned to be synced with the synoptic pathology report to provide a concise clinical document for risk stratification (8). An independently designed synoptic thyroidectomy report has also been developed by Memorial Sloan Kettering Cancer Center; it offers particular importance as a research tool and is reported to facilitate systematic documentation based on the concept that thyroid surgery involves a well-defined number of maneuvers or steps required to complete the procedure (11). When possible, we recommend use of a synoptic operative report because it not only offers streamlined ease of use but also proffers the dual advantages of standardized data reporting (8,10–13) and adaptability for the needs of an individual surgeon or program. Some of the data essential for postoperative risk stratification are only available after the operative note is dictated. A suggested basic synoptic report for patients with thyroid cancer appears in Appendix B.

After thyroidectomy: the initial care plan

Regardless of who will be providing immediate care and long-term surveillance for patients with thyroid cancer, communication about the operative course is essential. If all caregivers are using a common electronic medical record, such communication is especially easy to do; an example appears in Appendix C.

Although the management of surgical conditions or complications is often considered the surgeon's responsibility, most multidisciplinary collaborators appreciate knowing the particular or possible complications of thyroidectomy that may bear vigilance. Today there is also an increasing demand to engage the patient in direct perioperative communication. The surgeon's instructions and plan for prophylactic or therapeutic calcium supplementation, wound care, drain management, voice changes, calcitriol use, pending medication changes, pending lab testing including TSH monitoring, return to work,

next surgical visit, etc., may be clearly articulated to both the patient and their primary care physicians. In addition, the pathology report is of course a key element in the staging process. For a patient with thyroid cancer on final histology, the letter sent by the surgeon to describe the first postoperative visit can also anticipate the multidisciplinary care plan and the providers involved in care decisions, by providing when possible all available data such as the pathology report and results of molecular marker testing if available.

Particularly in the care of patients with thyroid carcinoma, optimal perioperative communication is a two-way street. Multidisciplinary communication concerning the patient's preoperative conditions and diagnoses, postoperative levothyroxine dosing and any subsequent results of adjuvant radioiodine use, the initial estimates of risks of recurrence and disease specific mortality, and the long-term care plan, is very appropriate and appreciated information for the operating surgeon to receive from nonsurgical caregivers. Interdisciplinary communication also facilitates patient compliance with surveillance.

Conclusions

Accurate communication of the important findings of thyroidectomy is critical to individualized risk stratification as well as to the short-term follow-up issues of thyroid cancer care that are often jointly managed in the postoperative setting. Moreover, true multidisciplinary communication is essential to providing optimal adjuvant care and surveillance. Although defining the roles and responsibilities of thyroid cancer care is beyond the scope of the present article, we feel sure all caregivers would agree that careful communication among the individual practitioners of a health-care environment remains of paramount importance—it is then that all practitioners and the patients themselves most benefit.

Author Disclosure Statement

W.B.I. and R.M.T. are consultants for Genzyme. For all other authors, no competing financial interests exist.

References

- Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, Mazzaferri EL, McIver B, Pacini F, Schlumberger M, Sherman SI, Steward DL, Tuttle RM 2006 Management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* **16**:109–142.
- The American Association of Endocrine Surgeons. www.endocrinesurgery.org (accessed November 14, 2011).
- Novitsky YW, Sing RF, Dercher KW, Griffo ML, Matthews BD, Heniford BT 2005 Prospective, blinded evaluation of accuracy of operative reports dictated by surgical residents. *Am Surg* **71**:627–632.
- Moore RA 2000 The dictated operative note: important but is it being taught? *J Am Coll Surg* **190**:639–640.
- Eichholz AC, Van Voorhis BJ, Sorosky JL, Smith BJ, Sood AK 2004 Operative note dictation: should it be taught routinely in residency programs? *Obstr Gynecol* **103**:342–346.
- Carty SE, Cooper DS, Doherty GM, Duh Q-Y, Kloos RT, Mandel SJ, Randolph GW, Stack BC, Steward DL, Terris DJ 2009 Consensus statement on the terminology and classification of central neck dissection for thyroid cancer. *Thyroid* **19**:1153–1158.
- Randolph GW, Henning D; International Neural Monitoring Study Group 2011 Electrophysiologic recurrent laryngeal nerve monitoring during thyroid and parathyroid surgery: international standards guideline statement. *Laryngoscope* **121**:S1–S16.
- Chambers AJ, Pasioka JL, Temple WJ 2009 Improvement in the accuracy of reporting key prognostic and anatomic findings during thyroidectomy by using a novel web-based synoptic operative reporting system. *Surgery* **146**:1090–1098.
- Hay ID, Thompson GB, Grant CS, Bergstralh EJ, Dvorak CE, Gorman CA, Maurer MS, McIver B, Mullan BP, Oberg AL, Powell CC, van Heerden JA, Goellner JR 2002 Papillary thyroid carcinoma managed at the Mayo Clinic during six decades (1940–1999): temporal trends in initial therapy and long-term outcome in 2444 consecutively treated patients. *World J Surg* **26**:879–885.
- Laflamme MR, Dexter PR, Graham MF, Hui SL, McDonald CJ 2005 Efficiency, comprehensiveness and cost-effectiveness when comparing dictation and electronic templates for operative reports. *AMIA Ann Symposium Proc* **2005**:425–429.
- Iyer NG, Nixon IJ, Palmer F, Ganly I, Patel SG, Shaha AR 2010 Electronic synoptic operative reporting for thyroid surgery using an electronic data management system: potential for prospective multicenter data collection. *Ann Surg Oncol* **18**:762–766.
- Edhemovic I, Temple WJ, de Gara CJ, Stuart GC 2004 The computer synoptic operative report—a leap forward in the science of surgery. *Ann Surg Oncol* **11**:941–947.
- Harvey A, Zhang H, Nixon J, Brown CJ 2007 Comparison of data extraction from standardized versus traditional narrative operative reports for database-related research and quality control. *Surgery* **141**:708–714.

Address correspondence to:
Sally E. Carty, M.D.

Division of Endocrine Surgery
University of Pittsburgh School of Medicine
101 Kauffman, 3471 Fifth Avenue
Pittsburgh, PA 15213

E-mail: cartyse@upmc.edu

Appendix A. Sample Narrative Operative Report for Total Thyroidectomy

Patient Name:
Surgeon:
Assistant(s): Dr. VV
Date:
Operation: Total Thyroidectomy
Anesthesia: General
Preoperative Diagnosis: Right papillary thyroid carcinoma
Postoperative Diagnosis: Same
Estimated Blood Loss: <50 cc

Synopsis: A 2 cm firm white mass in the right superior thyroid pole did not appear to invade the capsule or surrounding structures. The central lymph nodes and left thyroid lobe looked normal. The entire thyroid gland was completely resected and three identified parathyroid glands were left viably *in situ*.

Indications: The patient has FNA cytology showing a right 2.0 cm BRAF-positive papillary cancer. Cervical ultrasound shows no lymphadenopathy. He understands the indications, risks, benefits and alternatives to total thyroidectomy and wants to proceed today.

Description of Procedure: With the patient in the supine position, general anesthesia was satisfactorily induced via endotracheal intubation. Dr. VV adjusted a rolled sheet beneath the patient's shoulders and prepped and draped the anterior neck in a sterile manner with iodine solution. After infiltrating with 0.5% bupivacaine local anesthetic, I made a mid-transverse incision, raised subplatysmal flaps, and parted the median raphe. The central compartment bilaterally contained no identifiable lymphadenopathy to palpation and inspection. Beginning on the right, I sequentially mobilized the right thyroid lobe which contained a 2 cm white rock-hard superior pole mass that did not appear to invade the capsule or surrounding structures; the rest of the lobe appeared normal in size and consistency. I gradually rotated the lobe medially, dividing its blood supply between fine absorbable ties. The capsule was not entered during dissection. I identified and preserved *in situ* the right superior and inferior parathyroid glands and both fine branches of the normal-caliber left recurrent laryngeal nerve, which branched about 1 cm caudal to the ligament of Berry.

When the right lobe was circumferentially mobilized, I dissected the isthmus away from the anterior trachea, taking the short pyramidal lobe in continuity. I then circumferentially mobilized the normal-sized left thyroid lobe, dividing its blood supply between fine ties. It was normal in shape without palpable nodularity. I identified and preserved a normal-sized left superior parathyroid gland, dissecting it free from the posterior thyroid capsule onto its vascular pedicle and it remained viable. I identified and preserved the right recurrent laryngeal nerve which was well seen at the ligament of Berry and caudally. The left inferior parathyroid gland was not seen.

The entire thyroid gland was anatomically resected together with any adherent lymph nodes. It was oriented for Pathology and sent for routine processing. Hemostasis was reliably present. Dr. VV then closed the incision in layers using running 3-0 absorbable suture for the strap muscles followed by inverted interrupted absorbable suture for platysma and running subcuticular clear monofilament 4-0 polydioxanone for skin. She applied a sterile occlusive paper strip dressing. Sponge and needle counts were correct and the patient tolerated the procedure well. I attest that I was

scrubbed and operating for the key and critical portions of the case and was immediately available throughout.

Appendix B: Essential Data Fields for Synoptic Reporting on Patients with Thyroid Cancer

Preoperative Prognostic Indicators

FNA results
 Preoperative TNM stage
 Known nodal or distant metastasis
 Age of patient

Intraoperative course and anatomic findings

Name of operation
 Description of gross extrathyroidal cancer extension or invasion
 Completeness of resection: suspected gross or microscopic residual thyroid cancer
 Extent of thyroid gland resection with details of suspected residual gross or microscopic thyroid tissue
 Description and resection of lymph nodes by compartment
 Other: laterality of dissection, resection of other tissues or structures, laryngeal nerve management, results of PTH monitoring

Immediate recuperation

Type of anesthesia
 Voice or breathing issues
 Parathyroid or calcium problems
 Management of T4/T3
 Other issues

Final staging

Final histology
 Cancer size (cm)
 Microscopic invasion
 Histologic metastasis
 Estimates of risk of recurrence and disease specific mortality
 Molecular marker status
 Aftercare plan

Appendix C: Electronic Template for Day-of-Thyroidectomy Letter to Referring Provider(s)

Date
 Referring Provider Name and Address
 Dear Dr. XX,

I'm pleased to report that Mr./Ms. YY underwent an uneventful thyroid lobectomy/total thyroidectomy, today/yesterday. Surgery was performed under AA anesthesia, and s/he was discharged on BB date. Notable intraoperative findings were: CC, DD (eg capsular invasion, enlarged nodes, large tumor, nerve invasion etc.) Notable complications were: none/EE.

Mr./Ms. YY was/was not started on routine calcium supplementation which will be weaned as an outpatient. S/he was/was not begun on T4 supplementation. S/he will be re-evaluated in my office in 1–3 weeks at which time I will send you a copy of the operative and pathology reports.

Please do not hesitate to contact me at the number below should you have any questions.

Sincerely,
 Dr. WW
 Address and phone
 cc: PCP, unless same as referring provider