



Near-Total Laryngectomy for Extranodal Infiltration from Papillary Cancer to Larynx and Hypopharynx

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Abstract

Papillary thyroid cancer usually presents with limited loco-regional disease. Rarely extrathyroidal extension to the surrounding vital structures is seen. It is rarer for metastatic node from papillary thyroid cancer to directly infiltrate into the larynx or pharynx. We report a rare case where an extranodal extension from a metastatic papillary thyroid cancer infiltrated into the larynx and pyriform sinus in a 56-year-old female. Near-total laryngectomy with partial pharyngectomy was done for gross removal of the disease to achieve long-term locoregional disease-free survival. Although locally advanced thyroid cancer is rare, once noted, it presents challenge to the surgeon to achieve gross total removal of the tumor. Initial radical resection should be done to achieve gross total removal of the cancer.

Keywords Near-total laryngectomy · Papillary carcinoma · Pyriform fossa

Introduction

Papillary carcinoma thyroid usually presents with limited locoregional disease with good prognosis if managed properly, i.e., favorable long-term oncologic outcomes [1–5]. Invasion of the surrounding vital structures like the trachea, larynx, esophagus, and recurrent laryngeal nerve due to extrathyroidal extension is rarely seen. It is extremely rare to see a metastatic papillary carcinoma node infiltrating into the larynx or hypopharynx. Although locally invasive nodal metastatic papillary carcinoma is rare, it presents challenge to the operating surgeon to achieve gross total removal of the tumor. The basic aim of the treatment is the locoregional control of

the disease by gross total removal of the tumor, followed by adjuvant radioactive iodine ablation, and external beam radiotherapy only in selected cases [6]. Preoperative evaluation of such cases for the extent of disease and formulation of the surgical resection is of utmost importance in order to achieve complete gross tumor removal [7].

Since not much advances have been made in the management of locally advanced thyroid cancer, debate still exists in the literature about the optimal treatment to be adopted in patients with locally advanced differentiated thyroid carcinoma. An aggressive surgical approach at first diagnosis appears to offer a better prognosis in terms of both overall survival and disease-free survival in such patients, especially those over 45 years of age [8]. We report a rare event of infiltration of the larynx and pharynx by nodal metastases of papillary thyroid cancer. Gross total removal of the cancer was achieved by aggressive approach which entailed near-total laryngectomy with partial pharyngectomy and modified radical neck dissection on the right side. This case is reported to highlight the rare nature of a metastatic node with extranodal extension and surgical procedure used to achieve local and region long-term control.

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Case Report

A 56-year-old female presented to us with history of swelling right neck of 2-month duration. It was associated with

breathing difficulty of a week's duration. She had prior history of total thyroidectomy done 1 year back for papillary thyroid cancer. On evaluation, she had large swelling in the upper right neck moving with swallowing. Laryngeal crepitus was present. Office-based fiber-optic laryngoscopy showed a polypoid mass involving the right pyriform sinus with restricted movement of the right hemilarynx. Contrast-enhanced scan of the neck region revealed $6.8 \times 6.4 \times 6.1$ cm lobulated heterogeneously enhancing mass lesion with few non-enhancing cystic areas (Fig. 1). The mass involved right carotid, parapharyngeal, retropharyngeal, prevertebral, posterior cervical, and submandibular spaces. Mass was noticed causing displacement of the right carotid artery and internal jugular vein antero-medially with infiltration of the right pyriform sinus and narrowing of the supraglottic larynx (Fig. 2). The mass was seen abutting the right thyroid cartilage with involvement of right ary-epiglottic fold and minimal extension to the posterior glottis. FNAC from the mass was in favor of the metastatic papillary thyroid carcinoma. During surgery after the modified radical neck dissection and retropharyngeal clearance, the lymph nodes at the level II and level III were found matted and infiltrating the right thyroid cartilage lamina. After careful dissection of the carotid sheath with preservation of carotid artery and internal jugular vein, the same

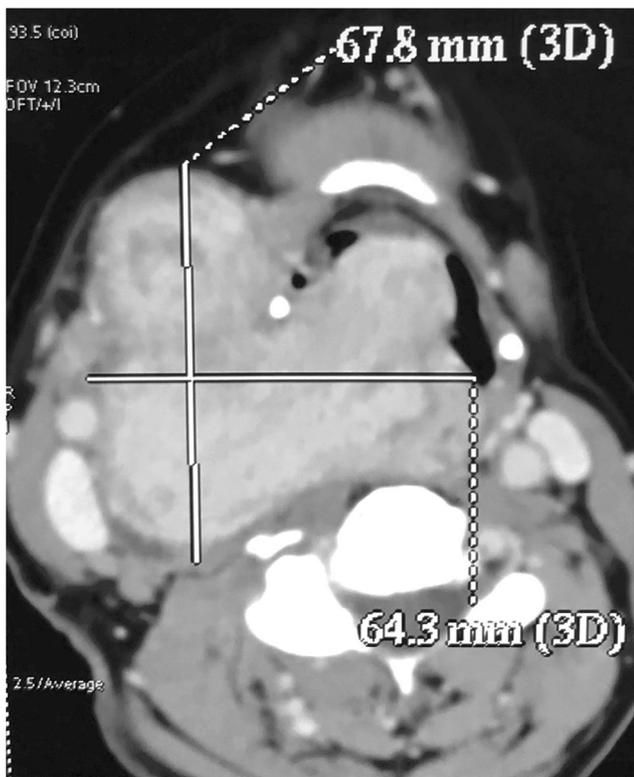


Fig. 1 Axial CT scan of the upper neck showing $6.8 \times 6.4 \times 6.1$ cm lobulated heterogeneously enhancing mass lesion with few non-enhancing cystic areas. The mass is narrowing the upper airway with displacement of the carotid artery IJV laterally



Fig. 2 Coronal CT scan of the neck depicting lobulated heterogeneously enhancing mass with lateral displacement of the carotid artery and IJV without encasing them

lymph nodal mass was found infiltrating the right pyriform sinus (Fig. 3). The decision was taken to do a near-total laryngectomy to achieve gross total removal of the cancer as no other laryngeal preservation surgery was possible. After performing tracheotomy between 2nd and 3rd tracheal rings, near-total laryngectomy with partial pharyngectomy was performed (Figs. 3 and 4). Reconstruction of the dynamic myomucosal shunt for speech was done utilizing remnant left larynx. To have enough of mucosa for shunt, submucosal dissection and piecemeal removal of a sufficient amount of residual left cricoid and thyroid cartilage is done to permit tubing of the remnant laryngeal mucosa over 10 No. feeding tube. Since in this case enough of the pharyngeal mucosa was preserved, we used interrupted inverted sutures with 3-0 vicryl for both pharyngeal closure and shunt reconstruction. Anterior wall tracheostoma is fashioned suturing superior skin incision to the superior tracheal incision and inferior skin incision to the inferior tracheal incision after resecting cartilaginous part of 3rd tracheal ring. Postoperative period was uneventful, and she started phonating after 3rd postoperative week. Radioactive iodine scan and treatment done did not reveal any uptake in the neck or any part of the body. She is being regularly followed in our outpatient services.

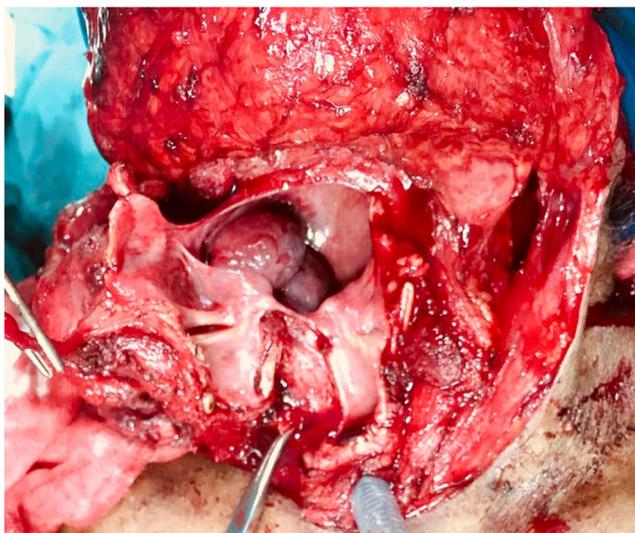


Fig. 3 Clinical picture of near-total laryngectomy being performed. Smooth, lobulated mass in the right hypopharynx due to the infiltration of the right pyriform fossa from the metastatic level II/III lymph nodes. Left side hemilarynx is preserved to reconstruct the dynamic myomucosal shunt

Discussion

Locally advanced well-differentiated thyroid cancer is rare with reported incidence of 4.1% [9]. Gross extrathyroidal extension is a bad prognostic sign and predicts poor survival [10–12]. Extrathyroidal extension to anterior soft tissues like straps muscles can be resected along with the thyroid gland without any morbidity, while infiltration of the trachea and the larynx will result in significant impact on breathing, swallowing, and speech. Most of the authors favor aggressive approach with full thickness excision of airway to obtain optimal control of cancer



Fig. 4 Specimen of the near-total laryngectomy with partial pharyngectomy depicting lobulated mass involving right pyriform sinus from the metastatic level; II/III lymph nodes

[13]. For all stage II–IV well-differentiated cancers, Nishida et al. advocated full thickness excision of airway and reserved shave resection for only stage I cases [14]. On the other hand, McCaffery reported comparable outcomes with full thickness resection for stages III and IV and shave excision for stages I and II, provided all gross tumor is resected [10]. Irrespective of the stage and presentation of cancer, basic principle of achievement of gross disease excision is crucial to optimize outcomes.

We report a case where a locally advanced metastatic papillary carcinoma node with perinodal extension had infiltrated into the right thyroid cartilage and the right pyriform sinus, a rare event to occur. The possible radical resection with preservation of the lung powered speech was near-total laryngectomy with partial pharyngectomy and right modified radical neck dissection. This achieved gross total removal of the papillary cancer which is the basic principle of any thyroid cancer surgery and also gave patient lung powered speech without any foreign prosthetic material and additional recurring costs. The negative consequence of the surgical procedure was a permanent tracheostoma which is a little price to be paid for the high volume of cancer burden and local infiltration into the thyroid cartilage and the right pyriform sinus.

Conclusion

Complete resection with preservation of vital functions of swallowing and speech is critical for superior outcomes in locally advanced thyroid cancer. Our case is reported not only for the rarities of the extranodal infiltration into larynx and pharynx but also for the radical approach to achieve R0 resection and simultaneously rehabilitate such a case with acceptable morbidity.

Authors' Contributions AHH wrote the draft of the article. AHH, IHH, HJ, and FJW helped in the final writing of the paper and gave final approval of the article. AHH, IHH, and FJW participated in the article revision.

Compliance with Ethical Standards

Competing Interests The authors declare that they have no competing interests.

Consent The informed consent was obtained from the patient for the publication of this report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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