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Re-Evaluation of Open Partial Horizontal Laryngectomies at Our Institution According to the New Classification Recommended by the European Laryngological Society

Original Investigation

Gülpembe Bozkurt, Özlem Ünsal, Berna Uslu Coşkun

Department of Otorhinolaryngology, Şişli Hamidiye Etfal Training and Research Hospital, İstanbul, Turkey

Abstract

Objective: The aim of this study was to re-evaluate the open partial horizontal laryngectomies (OPHLs) performed at our institution in terms of the new classification of the European Laryngological Society and compare the differences with the new classification system.

Methods: A retrospective analysis of 45 patients diagnosed with T1b, T2, and T3 laryngeal carcinoma who were treated with OPHLs in our department between 2010 and 2016 were conducted.

Results: All supraglottic laryngectomies (31 operations) were classified as OPHL Type 1. Among these, 11 operations required a resection of an additional structure including arytenoid (ARY) in five operations, piriform sinus (PIR) in four operations, the base of tongue (BOT) in one surgery, and ARY + PIR in one patient. Five supracricoid laryngectomies with cricohyoidoepiglottopexy (CHEP), five supracricoid laryngectomies with cricohyoidopexy (CHP), and four near-total laryngectomy operations constituted Type 2 OPHL (7 operations) and Type 3 OPHL (7 operations). Among these operations, two were classified into Type 2b OPHL and four into Type 3b OPHL as the superior margin of incision included epiglottis.

Conclusion: We consider that, this new classification, because it allows understanding the content of the surgery from the related title, will be useful in comparing different series and techniques.

Keywords: Larynx cancer, laryngectomy, classification, surgery

Introduction

Laryngeal cancer is the fifth most common tumor in males. It constitutes 2.5% and 0.5% of all tumors observed in males and females, respectively (1). It has various surgical treatment options, varying from transoral laser microsurgery to total laryngectomy, depending on the stage of the disease, preferences of the clinic, and the lung capacity of the patient. Among these options, laryngeal function preservation surgery led the way of various partial surgeries.

Increasing number of publications (2, 3) that emphasize the oncological and functional advantages of transoral laser microsurgeries (TLM) limits the indications of open partial horizontal laryngectomies (OPHL). However, OPHL is still an important and oncologically safe method for the treatment of primary or chemoradiotherapy-resistant recurrent laryngeal cancers (4, 5). Additionally, it ensures a quite favorable functional outcome in properly selected patients, and it constitutes a good alternative to total laryngectomy regarding local control rates and disease-free survival.

Traditionally, open partial laryngectomies are categorized into three groups (6-8):

1. Vertical partial laryngectomies, used in the treatment of glottic tumors.
2. Horizontal partial laryngectomies, for tumors located in the supraglottic larynx.
3. Atypical open partial laryngectomies, which cannot be classified as "vertical" or "horizontal," and which include certain additional and atypical applications.

Up to now, the nomenclature used in the classification of these surgical techniques was shaped according to the lower margin of resection (supraglottic or supracricoid), or the pexy type used for establishing laryngeal reconstruction (cricohyoidoepiglottopexy or cricohyoidopexy). A working committee of the European Laryn-

Address for Correspondence:
Gülpembe Bozkurt
E-mail: gptalayhan@gmail.com

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gological Society (called the Committee on Nomenclature) presented a new classification for OPHLs in 2014 to eliminate this discrepancy in classification, and to create a common and understandable terminology (9). This new classification presents three main types of surgical nomenclature based on the lower margin of resection to simplify the defining of OPHLs of different shapes and to clarify the content of surgical resection.

Type 1. Supraglottic laryngectomies.
Type 2. Supracricoid laryngectomies.
Type 3. Supratracheal laryngectomies.

Additionally, each type can be extended to neighboring laryngeal/pharyngeal regions, and the abbreviations below can be added to the nomenclature depending on the scope of the surgical resection.

+ARY- extended to an arytenoid (side should be mentioned).
+BOT- extended to the base of tongue.
+PIR- extended to a piriform sinus (side should be mentioned).
+CAU- extended to arytenoid, cricoarytenoid joint, and accompanying hemicricoid plaque (side should be mentioned).

In Type 2 and Type 3 laryngectomies, "a" and "b" suffixes refer if the epiglottis cannot and can be resected, respectively.

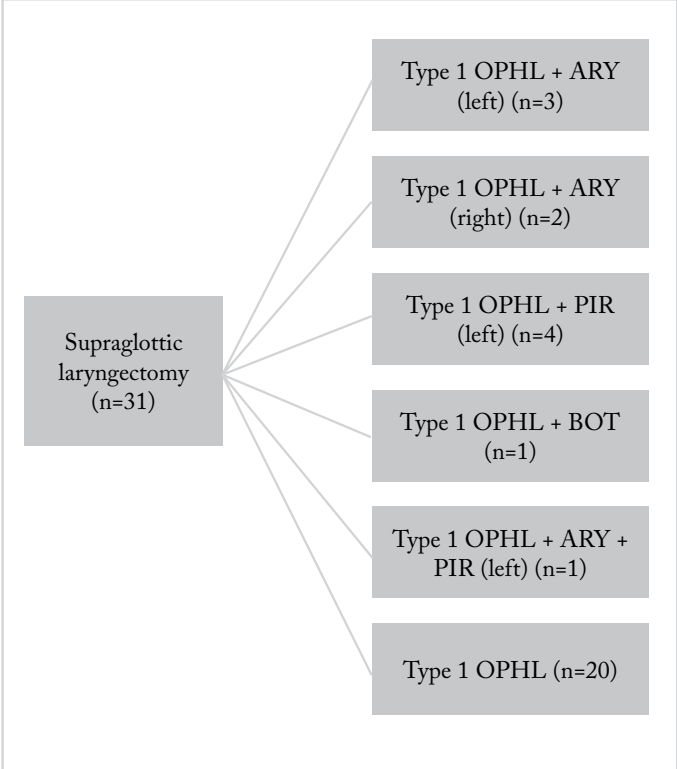

Figure 1. Distribution of 31 patients that underwent supraglottic laryngectomy operation according to the new classification
OPHL: open partial horizontal laryngectomy; ARY: arytenoid; PIR: piriform sinus; BOT: base of tongue

The aim of our study is to re-evaluate the medical records of our patients who previously underwent OPHL regarding the new classification.

Methods

The data of 221 patients that were diagnosed with laryngeal carcinoma in our clinic between 2010 and 2016 were retrospectively examined. It was determined that 45 patients underwent various OPHL operations due to supraglottic (n=31; T1-n=20; T2-n=11) and glotto-supraglottic (transglottic) (n=14; T2-n=7; T3-n=7) carcinomas. 45% (n=80) of the rest of the patients underwent total laryngectomy, 28% (n=51) underwent various vertical partial laryngectomy operations, and the remaining 25% (n=45) of patients were directed towards chemoradiotherapy. This study was approved by the Ethics Committee of Şişli Hamidiye Etfal Training and Research Hospital and it was conducted under the committee's permission number 658, dated April 26, 2016. All patients that underwent OPHL operation was male, and their median age was 51 (38–61). It was determined that 31 patients underwent supraglottic laryngectomy, ten patients underwent supracricoid laryngectomy, and four patients underwent near-total laryngectomy operations. Bilateral functional neck dissection (including the Levels 2-5) was accompanied laryngectomy in all patients. These operations were renamed according to the new OPHL classification recommended by the European Laryngological Society in 2014.

Results

Twenty of 31 supraglottic laryngectomies were compatible with Type 1 OPHL of the new classification, but 11 patients required a renewal of the operation name due to additional resections (Figure 1).

Two of the five supracricoid laryngectomies (cricohyoidoepiglottopexy) (CHEP) were entitled as Type 3a OPHL, due to resecting a part of cricoid cartilage because of anterior subglottic extension. The surgery of the other patient was named as Type 2a OPHL+ ARY (right) due to additional arytenoid resection (Figure 2).

One of the five supracricoid laryngectomy procedures (cricohyoidopexy) (CHP) was denominated as Type 3b OPHL due to resecting a part of cricoid because of anterior subglottic extension. The operations of two patients were named as Type 2b OPHL+ ARY (right) due to additional arytenoid resection and the surgeries of the remaining two were called as Type 2b OPHL (Figure 2).

Three of four near-total laryngectomy operations entitled as Type 3a OPHL and the operation of the remaining patient was named Type 3b OPHL+ CAU (left) due to performing an additional left cricoarytenoid unit resection.

Discussion

In laryngeal cancer treatment, non-surgical treatments that aim to protect organs and existing functions have started to play an important role. Recent studies on the evaluation of the functional results of chemotherapy and radiotherapy discuss the various complications and high costs of these treatments (10, 11). For this reason, there is a growing interest for partial laryngectomies (12, 13). Many centers, when publishing their treatment results, define their operations depending on pexy locations (cricohyoidoepiglottopexy or cricohyoidopexy), without clarifying the upper limits of the resection. This leads to confusion when comparing the treatment results of different centers.

When we retrospectively examined the horizontal partial laryngectomies performed in our clinic, we detected several differences between the new classification and the classification currently in use. Data included five CHEP and five CHP surgeries in the 45 partial horizontal laryngectomies. The new classification would file all of these operations under Type 2 APHL, but examining the detailed surgery notes revealed that, in three of these patients, a part of the cricoid cartilage was resected due to anterior subglottic extension; and their operation, dependent on the changes in lower margin of incision, was renamed as Type 3 OPHL. Additionally, "a" and "b" classifications were introduced in Type 2 and Type 3 laryngectomies of the new classification regarding the superior margin of the resection and depending on whether or not epiglottis was included in the specimen. This addition clarifies if epiglottis was resected or not. We did not determine an incompatibility when we rearranged our classification according to this addition.

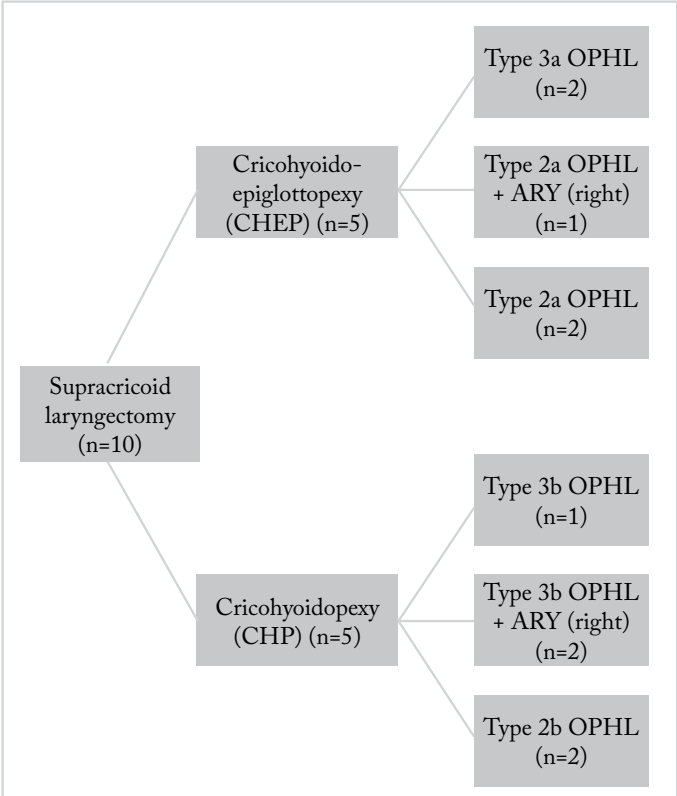

Figure 2. Distribution of 10 patients that underwent supracricoid laryngectomy operation according to the new classification
OPHL: open partial laryngectomy; ARY: arytenoid

Supraglottic laryngectomy (SGL), defined by Alonso (14) in 1947, is a surgical technique designed for the treatment of cancer located in the epiglottis, aryepiglottic folds, and aryepiglottic bands. In the following years, research focused on extended SGL techniques (resection of the neighboring structures such as base of tongue, piriform sinus, arytenoids, and vallecular) for cases which the localization and the size of the tumor exceed the standard SGL limits (15-17). We determined that some of the aforementioned neighboring structures were resected in 11 of the 31 SGL patients that we operated on. We could only determine the resected structures by examining the surgical operation notes in detail. We concluded that adding the abbreviations of the new classification into the heading of the operation notes (+ARY/+BOT/+PIR) is exceedingly practical.

Near total laryngectomy is performed as a function-preserving surgery in laryngeal cancers with subglottic extension. In 1981, Pearson (8) defined his subtotal laryngectomy technique. In the nineties, Laccourreye et al. (18) performed a modification of the conventional supracricoid laryngectomy by including the cricoid ring to the resection in glottic tumors with anterior subglottic extension and pioneered functional supratracheal partial laryngectomies which Rizzotto et al.(19) updated in 2006. Those above near-total laryngectomy and subtotal laryngectomy subtypes are Type 3 OPHLs according to the new classification with a single name. Cricoarytenoid unit resection is added by the modifier and showed as +CAU.

The new classification is criticized by some authors because it excludes the "horizontal glottectomy" technique which includes the excision of the glottic level as well as the partial resection of the thyroid cartilage. However, this new classification is suggested to be used only for commonly-performed, standardized, and widely-accepted procedures (20, 21). When we examined the operations performed in our clinic, we saw that "horizontal glottectomy" operation was not performed anyway.

The limitation of our study was the small number of patients. In a single-center study involving 191 patients, Wierzbicka et al. (21) discussed the contribution of the new classification to clinical practice. However, larger studies that compare multi-center data are required in the future to ascertain the contribution of the new classification to the literature.

Conclusion

In conclusion, the OPHL classification recommended by the European Laryngological Society in 2014 lead to renaming the performed operations because of the additional resection in 15 of the patients and the renewed lower incision margin as a result of removing a part of the cricoid cartilage in three patients. Even though long surgery notes were written to explain the additional procedures, no descriptive suffixes were included into the headings of the operation. In the new classification, the content of the surgery is suffixed into the heading. If widely-accepted, this plain classification can create a common nomenclature in laryngeal cancer surgeries and can be employed as a standard and practical tool in comparing the treatment results of various centers.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Şişli Hamidiye Etfal Training and Research Hospital (26/04/2016 658).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

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