Laryngeal Chondroma: A Case Report and Systematic Review

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Abstract

Objective: To review the current literature on laryngeal chondromas

Study Design: Systematic Review

Methods: A PubMed search was performed to obtain English language studies on laryngeal chondromas from 1950 to 2016. Bibliographies of the selected articles were also examined. A total of 158 studies and case reports were examined, of which 52 contained relevant information.

Results:

Fifty-two studies yielded 212 patients who have been described to have laryngeal chondromas. Of these 18.9% were female and 74.5% were male. The majority of cases, 50.5%, occurred between the ages of 40 and 60 years. The most common presenting symptoms were dysphonia (60.9%) and dyspnea (58.2%). The cricoid cartilage (48.1%) was the most common site of origin, followed by the thyroid cartilage (16.5%). The most common initial treatment is local excision (70.4%), of which 73.0% were external approach operations,15.5% were endoscopic, and 11.5% were unspecified. Of the cases collected 5.7% are recorded of dying of the disease.

Conclusion:

Laryngeal chondromas are rare and benign tumors resulting in airway obstruction. This review contains the largest data set of laryngeal chondroma cases to date. Our data suggests that laryngeal chondroma is 4 times more prevalent in males than females, and primarily afflicts individuals over the age of 40. External approach surgery is historically the most common treatment option, however endoscopic approach has been increasing in frequency recently.

Introduction

First described in 1822, laryngeal chondroma is a rare and benign tumor of the cartilage of the larynx.[1] Cartilaginous neoplasms of the larynx include both chondromas and chondrosarcomas, of which chondromas are much rarer. The two types of tumors are generally distinguished by histological methods. Chondroma replicates as either elastic or hyaline type of normal cartilage, with individual cells presenting with the same morphology as normal cartilage.[2] Chondrosarcoma is indicated by irregularity in size of cells and nuclei, multinucleated cells, and/or pronounced hyperchromatism.[2] Laryngeal chondromas are generally slow growing tumors. However, knowledge of laryngeal chondromas is clinically important due the possibility of airway obstruction, typically due to growth into the subglottic space. The impetus for our research of this subject was a case of chondroma of the cricoid that presented in 2011. Partial removal was performed in 2012. In 2016, he was found to have arytenoid chondroma and has undergone surgery to relieve dysphonia.

Methods

A systematic review, using the PubMed database was conducted for all cases of laryngeal chondroma from January 1950 to July 2016. Search criteria terms included “laryngeal chondroma,” “benign cartilaginous tumors of the larynx,” and “cartilaginous neoplasms of the larynx.” Search terms were then filtered for human subject research and English language. Subsequently identified abstracts were reviewed for selection and applicability. Further studies were obtained from bibliography searches of selected articles. A total of 158 studies and case reports were examined, of which 52 contained relevant information. Measures extracted included the following: age, gender, medical history, presenting symptoms, secondary symptoms, work up, size, site, treatment, outcome and length of follow up. Occasionally, clinical info was limited and classification by the reporting physician is assumed to be correct. Articles with aggregated data were included but citations were cross referenced in order to prevent repeat counts of individual cases.

Results

Summary of Individual Cases:

	n	%
Male	158	74.5
Female	40	18.9
Unknown	14	6.6
TOTAL	212	

Location	n	%
Cricoid	102	48.1
Thyroid	35	16.5
Arytenoid	15	7.1
Epiglottis	12	5.7
True Vocal	15	7.1
False Vocal	1	0.5
C,T,A,E	1	0.5
C,T,A	1	0.5
C,T	8	3.8
C,A	3	1.4
C, trachea	9	4.2
T,A	3	1.4
trachea	1	0.5
Not recorded	6	2.8
TOTAL	212	

Age	n	%
(0-10)	2	0.9
(11-20)	6	2.8
(21-30)	15	7.1
(31-40)	26	12.3
(41-50)	52	24.5
(51-60)	47	22.2
(61-70)	33	15.6
(71-80)	13	6.1
(81-90)	2	0.9
none	16	7.5
TOTAL	212	

Size (cm)	n	%
0.3-1cm	22	10.4
1-2cm	32	15.1
2-2.5cm	43	20.3
2.5-5cm	35	16.5
5-12cm	11	5.2
none	69	32.5
TOTAL	212	

The most common presenting symptoms were dysphonia (68.5%), dyspnea (60.9%), neck mass (23.4%), and cough (8.7%). The most common treatment consists of local excision (70.4%), of which 73.0% were external approach operations, 15.5% were endoscopic, and 11.5% were unspecified. 12.3% of cases were treated for the same tumor two or more times. 2.8% of cases were treated by laser resection or debulking, all within the past 10 years. Of the cases collected 5.7% are recorded of dying of the disease.

Case Report

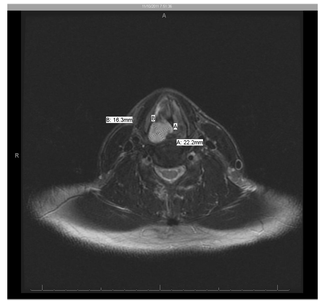

Figure 1: 1.6 x 2.2 x 2.2 cm lobular, T2 hyperintense mass arising from the right posterior cricoid cartilage with heterogeneous contrast enhancement and extension into the airway with associated mild airway narrowing. There is associated disruption of the cricoarytenoid joint with anterior and superior displacement of the right arytenoid cartilage.

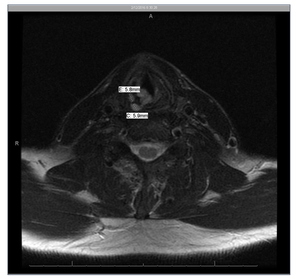

Figure 2: 4 years after surgery: residual cricoid chondroma appear as two small T2 hyperintense lesions in the right postcricoid region, approximately 6 mm each in maximal dimension

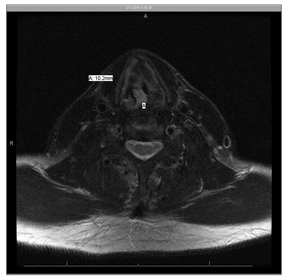

Figure 3: Arytenoid chondroma appears as 10mm T2 hyperintense lesion

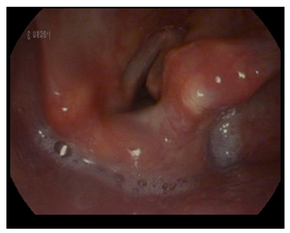

Figure 4: Minimal airway prior to excision of arytenoid chondroma

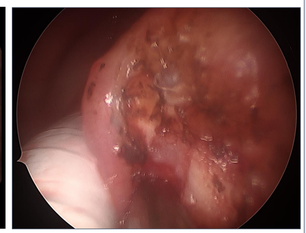

Figure 5: Intraoperative view of arytenoid tumor (dark) contrasted with lighter normal cartilage

A 56 year old male presented to clinic with a history of a right cricoid chondroma status post excision in 2011 and 2012. The patient had been doing well since 2012, but recently noted some mild voice changes as well as some trouble breathing, especially when diving/swimming or exerting himself. He did not notice any trouble swallowing and stated that although he used to have a breathy voice with no falsetto, he now has a stronger, but strained voice and got his falsetto back again. He was concerned about his shortness of breath. MRI shows interval enlargement of the chondroma since debulking in 2012. Flexible fiberoptic exam shows a large arytenoid mass as well as vocal cord fixation and narrowing of the glottic aperture. The patient had surgical excision of the chondroma and afterwards was breathing much better without loss of voice.

Discussion

Presentation:
Laryngeal chondroma can present with a variety of symptoms. In this review, a majority of cases presented with dysphonia and dyspnea. Given the common and nonspecific nature of these symptoms, diagnosis can be challenging. A strong male preponderance was found, with male laryngeal chondroma rate four times greater than female. Laryngeal chondroma is overwhelmingly located on the internal aspect of the cricoid cartilage, appearing endoscopically as a subglottic mass. Laryngeal chondroma on the external face of the cartilage can occur and presents as a neck mass, but is less common.

Disease course and prognosis:
Survival of laryngeal chondroma is high with just 5.7% of all cases dying of their disease. There was no reported metastasis and primary risk came from the closure of the subglottic space, blocking the airway.

Treatment:
While the most common treatment has been local excision via external approach or laryngofissure, endoscopic resection and debulking have also been reported, particularly in more recent literature. Although excision with clear margins, usually through a partial laryngectomy or laryngofissure, has proven to consistently eliminate the disease, the higher morbidity associated with these techniques must be compared to lower levels of morbidity associated with endoscopic debulking. While endoscopic debulking is associated with lower levels of surgical morbidity, the incomplete removal of the chondroma sometimes necessitates multiple surgeries throughout an individual’s life.

Conclusion

This review contains the largest data set of laryngeal chondroma cases to date. Laryngeal chondromas are rare and benign tumors of the cartilage of the larynx. Due to the benign nature of the tumor, laryngeal chondromas rarely are fatal and most commonly present as dysphonia or dyspnea associated with a subglottic mass. Local excision via external approach surgery is historically the most common treatment option, however advances in scope and laser technology has led to an increase in endoscopic approaches.

References

1. Tiwari RM, Snow GB, Balm AJM, Gerritsen GJ, Vos W, Bosma A. Cartilagenous tumours of the larynx. The Journal of Laryngology & Otology. 1987;101(03):266–275. doi:10.1017/s0022215100101628.
2. Hyam VJ, Rabuzzi DD. CARTILAGINOUS TUMORS OF THE LARYNX. The Laryngoscope. 1970;80(5):755–766. doi:10.1288/00005537-197005000-00007.