Acta Scientific Otolaryngology (ISSN: 2582-5550)

Volume 4 Issue 9 September 2022

Case Report

Chondroma Thyroid Cartilage and Review of Literature

Manzoor Ahmad Latoo[1], Jasif Nisar[2]*, Maheen[3], Irshad Manzoor[3] and Viqar Khursheed[3]

[1]Professor and Head of Department (HOD), Department of ENT and HNS, GMC Srinagar, India

[2]Senior Resident, Department of ENT and HNS, GMC Srinagar, India

[3]Resident, Department of ENT and HNS, GMC Srinagar, India

***Corresponding Author:** Jasif Nisar, Senior Resident, Department of ENT and HNS, GMC Srinagar, India.

Received: July 21, 2022

Published: August 22, 2022

Abstract

Chondroma of the laryngeal cartilage is a rare, benign neoplasm which can manifest as a neck mass or if situated within the airway, as slowly progressive obstruction, hoarseness or dyspnea. The most common location for chondroma is the posterior lamina of the cricoid cartilage; the next most common locations are the thyroid, arytenoid and epiglottic cartilages. Chondroma and low-grade chond rosarcoma are diff icult to distinguish from one another histologically. Although chondrosarcoma reportedly recurs, local surgical excision without radical margins and with long-term clinical follow-up is recommended. We report one case of thyroid cartilage chondroma and include a review of radiologic studies and histopathologic analysis results. A review of the English language biomedical literature on laryngeal chondroma is included.

Keywords: Head and Neck; Tumor; Cricoid Cartilage

Introduction

Chondrogenic tumors of head and neck region are very rare. Among them, laryngeal cartilage tumors comprise less than 1% of all laryngeal tumors [1]. The most common site for chondroma is posterior lamina of the cricoid cartilage followed by thyroid, arytenoid and epiglottic cartilages. In this report, we describe a case with right thyroid lamina chondroma misdiagnosed as a thyroid malignancy.

Case Report

A 62 year old Kashmiri man had a mass on anterior aspect of neck for almost 12 years, known hypertensive on treatment for 5 years, Performance status-1, no relevant personal or family history of malignancy. He had no hoarseness of voice/dyspnea/dysphagia/ restriction of neck movements.

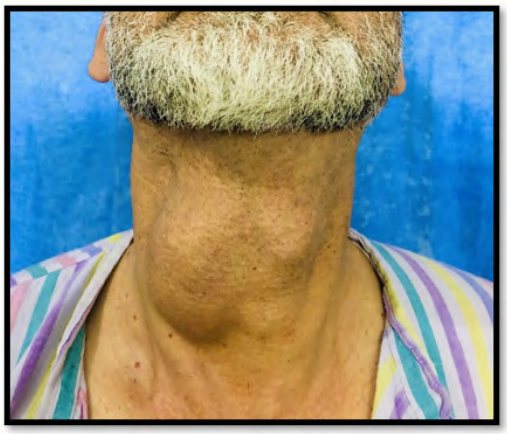


Figure 1: Globular swelling right side neck from hyoid to cricoid.

On examination, there was neck asymmetry, roughly 6*4 cm globular swelling on right side of neck as depicted in (Figure 1), non-tender, non-mobile, hard, fixed to underlying structure, moves with deglutition and margins were well defined and no palpable cervical lymphadenopathy.

FNAC shows a colloid goitre with calcification. CECT neck shows that 5.2*4.2*3.5 cm well defined oval soft tissue density/fluid density lesion arising from right thyroid cartilage lamina. Mass abuts right thyroid lobe inferiorly and right common carotid artery/internal jugular vein posterolaterally with no definite evidence of invasion as depicted in figure 2. No significant endoluminal component in airway. Fibro optic laryngoscope examination- showed bulge in the floor of right pyriform fossa with intact mucosa bilateral normal and mobile vocal cords.

Thyroid function test was 3.34 mIU/L.

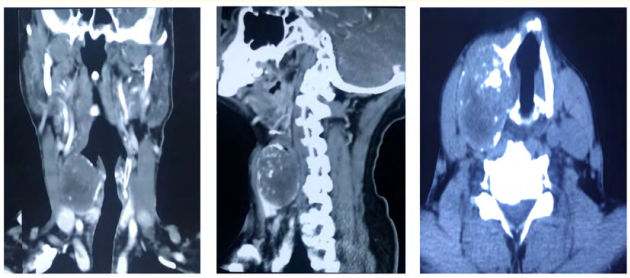


Figure 2: Showing 5.2*4.2*3.5 cm oval swelling arising from right thyroid cartilage lamina, calcifications, right pyriform fossa bulge with intact mucosa.

The patient underwent wide local excision of neck mass under general anesthesia. Intraoperative findings indicated a hard mass arising from right thyroid lamina, carotid artery, internal jugular vein, superior laryngeal nerve identified and preserved. Mass was dissected out from surrounding structures without breach of pharyngeal mucosa and sent for histopathological examination (Figure 3a, 3b, 3c).

Postoperatively-voice was normal, no features of aspiration and no pharygocutaneous fistula.

Histopathological examination showed chondroma (lamina right thyroid cartilage). Patient doing well and on regular follow up.

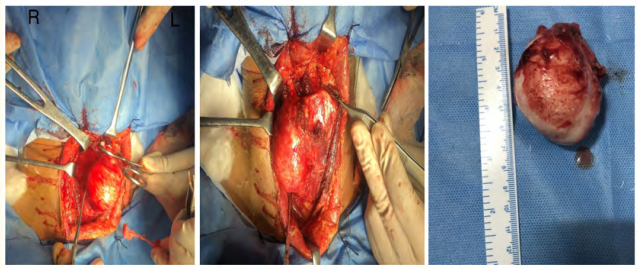


Figure 3: Showing intraoperative wide exposure, smooth walled oval mass arising from right thyroid cartilage lamina.

Discussion

Chondroma is very rare lesion in the laryngeal area: with unknown incidence, although less than 1% of all laryngeal tumors are cartilaginous [2]. At least 200 cartilaginous tumors (of all types) have been recorded in the English language biomedical literature since 1822.Male-to-female incidence ratio for cartilaginous tumor ranges from 10:1 [3] to 3:1 [4]. Our review of the biomedical literature on benign chondromas (Figure 4) yielded a ratio of 2:1. The cricoid cartilage is the most common site of tumor origin (70-78%). Thyroid cartilage lesions account for 15-20% and far fewer of these tumors arise from the epiglottic and arytenoid cartilages. Our review of benign chondromas showed 51% were of cricoid and 17% were of thyroid origin but we did not include subglottic tumors or tumors extending to both the cricoid and thyroid cartilages. Chondroma recurrence rate was 10%; mean time until recurrence was nine years. In four patients (7%), chondroma progressed to chondrosarcoma. Hyams and Rabuzzi [4]associated an increased incidence of malignancy with increasing age and noted that their patients with chondroma were 15 to 80 years old, whereas their patients with chondrosarcoma were 53 to 85 years old and most of the chondrosarcomas occurred in patients 50 to 60 years old. Our review showed patients with chondroma were 24 to 79 years old; mean age was 56 years. However because Hyams and Rabuzzr [5] did not detail individual cases and included other cartilaginous tumors their data were not incorporated into our review.

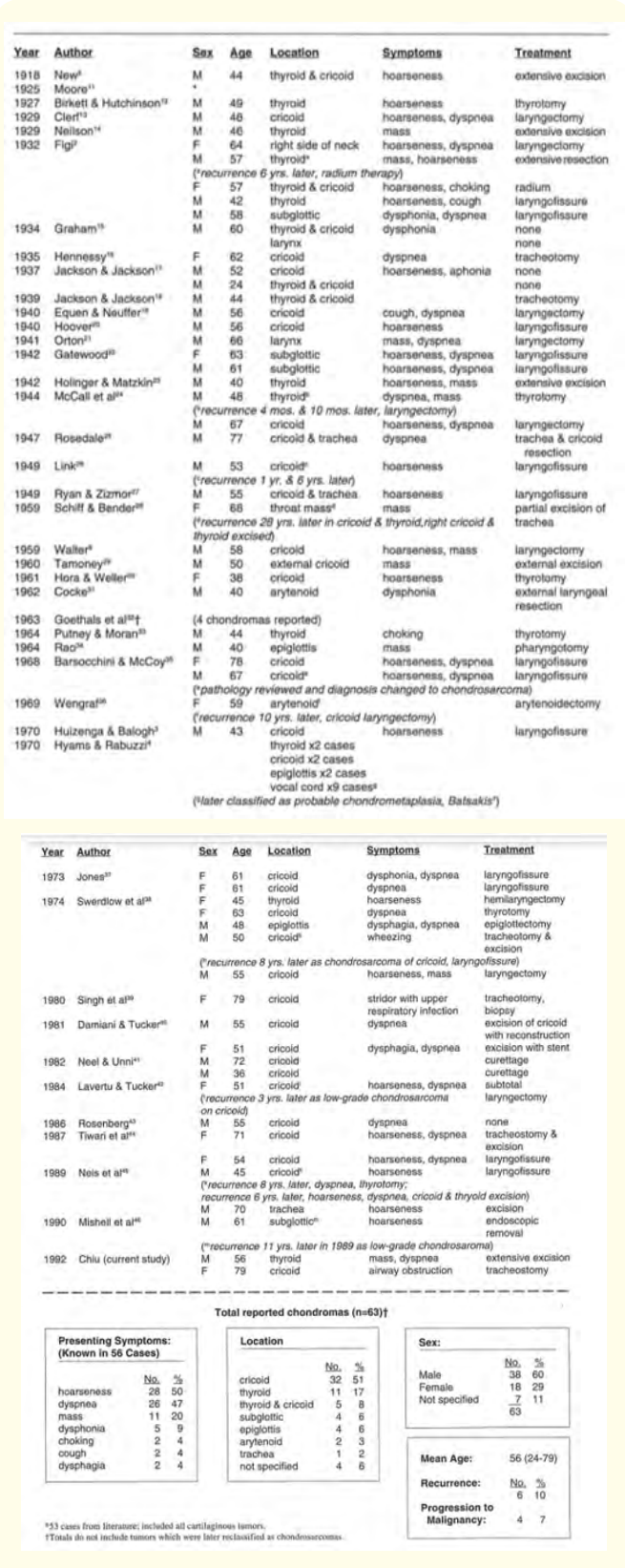
Thorough history-taking and physical examination may suggest chondroma or chondrosarcoma patients may describe slowly progressive airway obstruction if the mass is within the larynx, or gradual enlargement of a neck mass if the mass is external. However, they usually have no pain or sign of acute inflammation. The mass

is discrete, rounded, smooth and hard. Usually, it is adjacent to the laryngeal cartilage and has normal overlying mucosa or skin. Because of the tumor' s close proximity to the laryngeal airway, hoarseness or dyspnea are common symptoms. Initial symptoms found in our analysis were hoarseness (50%), dyspnea (47%), presence of a mass (20%), change in voice (9%), dysphagia (4%), and cough (4%). Without intervention, symptoms worsen, and the chondroma eventually obstructs the airway. If the lesion lies over the surface of the external laryngeal cartilage, a firm, fixed, rounded mass is apparent. Signs of an internal laryngeal mass include an obvious mucosa covered, smooth subglottic mass. Clerf [6] noted that a fixed vocal cord was an early sign of a subglottic mass in his patients. At direct laryngoscopy, biopsy may be difficult because the mass is hard and cartilaginous. Nodal metastasis is rare but has been reported [7,8].

If specimens can be obtained, fine-needle aspiration and biopsy may be helpful. However, even if the pathology report describes normal chondrocytes or cartilage, the interpretation of these findings may be problematic for the surgeon. Differentiating between chondroma and chondrosarcoma can be difficult because characteristics may vary within the same specimen. For this reason. Surgeons must be wary of diagnosing chondroma on the basis of biopsy results and should consider excising the entire lesion. Radiographic diagnosis of chondroma or chondrosarcoma can be made in 80% of cases [9]. Plain, lateral, soft tissue views of the neck show typical coarse calcification points throughout the mass in 75% of these lesions. In addition, plain films may show extrinsic airway narrowing caused by the mass [10], Linear tomography and barium studies of the swallowing process can be useful in diagnosis, depending on the size and location of the lesion.

CT and magnetic resonance imaging (MRI) are excellent methods of evaluating tumor origin, location and extent in presurgical planning. Findings include a rounded, encapsulated, noninvasive mass with or without faint calcifications. Both CT and MRI show that the lesion is expansive instead of invasive. However, MRI provides multiplanar imaging and better soft tissue detail. Signal intensity of the tumor is similar to that of normal cartilage [10].

Chondroma and chondrosarcoma are believed to derive nourishment from lymphatic vessels, enabling them to survive



Year	Author	Sex	Age	Location	Symptoms	Treatment
1918	New[8]	M	44	thyroid & cricoid	hoarseness	extensive excision
1925	Moore[11]	*				
1927	Birkett & Hutchinson[12]	M	49	thyroid	hoarseness	thyrotomy
1929	Clerf[13]	M	48	cricoid	hoarseness, dyspnea	laryngectomy
1929	Neilson[14]	M	46	thyroid	mass	extensive excision
1932	Figi[9]	F	64	right side of neck	hoarseness, dyspnea	laryngectomy
		M	57	thyroid*	mass, hoarseness	extensive resection
		(*recurrence 6 yrs. later, radium therapy)				
		F	57	thyroid & cricoid	hoarseness, choking	radium
		M	42	thyroid	hoarseness, cough	laryngofissure
		M	58	subglottic	dysphonia, dyspnea	laryngofissure
1934	Graham[15]	M	60	thyroid & cricoid larynx	dysphonia	none none
1935	Hennessy[16]	F	62	cricoid	dyspnea	tracheotomy
1937	Jackson & Jackson[17]	M	52	cricoid	hoarseness, aphonia	none
		M	24	thyroid & cricoid		none
1939	Jackson & Jackson[18]	M	44	thyroid & cricoid		tracheotomy
1940	Equen & Neuffer[19]	M	56	cricoid	cough, dyspnea	laryngectomy
1940	Hoover[20]	M	56	cricoid	hoarseness	laryngofissure
1941	Orton[21]	M	66	larynx	mass, dyspnea	laryngectomy
1942	Gatewood[22]	F	63	subglottic	hoarseness, dyspnea	laryngofissure
		M	61	subglottic	hoarseness, dyspnea	laryngofissure
1942	Holinger & Matzkin[23]	M	40	thyroid	hoarseness, mass	extensive excision
1944	McCall et al[24]	M	48	thyroid*	dyspnea, mass	thyrotomy
		(*recurrence 4 mos. & 10 mos. later, laryngectomy)				
		M	67	cricoid	hoarseness, dyspnea	laryngectomy
1947	Rosedale[25]	M	77	cricoid & trachea	dyspnea	trachea & cricoid resection
1949	Link[26]	M	53	cricoid*	hoarseness	laryngofissure
		(*recurrence 1 yr. & 6 yrs. later)				
1949	Ryan & Zizmor[27]	M	55	cricoid & trachea	hoarseness	laryngofissure
1959	Schiff & Bender[28]	F	68	throat mass*	mass	partial excision of trachea
		(*recurrence 28 yrs. later in cricoid & thyroid,right cricoid & thyroid excised)				
1959	Walter[4]	M	58	cricoid	hoarseness, mass	laryngectomy
1960	Tamoney[29]	M	50	external cricoid	mass	external excision
1961	Hora & Weller[30]	F	38	cricoid	hoarseness	thyrotomy
1962	Cocke[31]	M	40	arytenoid	dysphonia	external laryngeal resection
1963	Goethals et al[32]†	(4 chondromas reported)				
1964	Putney & Moran[33]	M	44	thyroid	choking	thyrotomy
1964	Rao[34]	M	40	epiglottis	mass	pharyngotomy
1968	Barsocchini & McCoy[35]	F	78	cricoid	hoarseness, dyspnea	laryngofissure
		M	67	cricoid*	hoarseness, dyspnea	laryngofissure
		(*pathology reviewed and diagnosis changed to chondrosarcoma)				
1969	Wengraf[36]	F	59	arytenoid*		arytenoidectomy
		(*recurrence 10 yrs. later, cricoid laryngectomy)				
1970	Huizenga & Balogh[3]	M	43	cricoid	hoarseness	laryngofissure
1970	Hyams & Rabuzzi[4]			thyroid x2 cases cricoid x2 cases epiglottis x2 cases vocal cord x9 cases[a]		
		([a]later classified as probable chondrometaplasia, Batsakis[1])				

Year	Author	Sex	Age	Location	Symptoms	Treatment
1973	Jones[37]	F	61	cricoid	dysphonia, dyspnea	laryngofissure
		F	61	cricoid	dyspnea	laryngofissure
1974	Swerdlow et al[38]	F	45	thyroid	hoarseness	hemilaryngectomy
		F	63	cricoid	dyspnea	thyrotomy
		M	48	epiglottis	dysphagia, dyspnea	epiglottectomy
		M	50	cricoid*	wheezing	tracheotomy & excision
		(*recurrence 8 yrs. later as chondrosarcoma of cricoid, laryngofissure)				
		M	55	cricoid	hoarseness, mass	laryngectomy
1980	Singh et al[39]	F	79	cricoid	stridor with upper respiratory infection	tracheotomy, biopsy
1981	Damiani & Tucker[40]	M	55	cricoid	dyspnea	excision of cricoid with reconstruction
		F	51	cricoid	dysphagia, dyspnea	excision with stent
1982	Neel & Unni[41]	M	72	cricoid		curettage
		M	36	cricoid		curettage
1984	Lavertu & Tucker[42]	F	51	cricoid	hoarseness, dyspnea	subtotal
		(*recurrence 3 yrs. later as low-grade chondrosarcoma on cricoid)				laryngectomy
1986	Rosenberg[43]	M	55	cricoid	dyspnea	none
1987	Tiwari et al[44]	F	71	cricoid	hoarseness, dyspnea	tracheostomy & excision
		F	54	cricoid	hoarseness, dyspnea	laryngofissure
1989	Neis et al[45]	M	45	cricoid*	hoarseness	laryngofissure
		(*recurrence 8 yrs. later, dyspnea, thyrotomy; recurrence 6 yrs. later, hoarseness, dyspnea, cricoid & thryoid excision)				
		M	70	trachea	hoarseness	excision
1990	Mishell et al[46]	M	61	subglottic*	hoarseness	endoscopic removal
		(*recurrence 11 yrs. later in 1989 as low-grade chondrosarcoma)				
1992	Chiu (current study)	M	56	thyroid	mass, dyspnea	extensive excision
		F	79	cricoid	airway obstruction	tracheostomy

Total reported chondromas (n=63)†

Presenting Symptoms: (Known in 56 Cases)

	No.	%
hoarseness	28	50
dyspnea	26	47
mass	11	20
dysphonia	5	9
choking	2	4
cough	2	4
dysphagia	2	4

Location

	No.	%
cricoid	32	51
thyroid	11	17
thyroid & cricoid	5	8
subglottic	4	6
epiglottis	4	6
arytenoid	2	3
trachea	1	2
not specified	4	6

Sex:

	No.	%
Male	38	60
Female	18	29
Not specified	7	11
	63	

Mean Age:	56 (24-79)	
Recurrence:	No.	%
	6	10
Progression to Malignancy:	4	7

*53 cases from literature; included all cartilaginous tumors.
†Totals do not include tumors which were later reclassified as chondrosarcomas.

Figure 4: Review of Laryngeal Chondroma Reports in the Biomedical Literature.

and grow in relatively avascular areas [11]. Malignant progression was evident in about 7% of the cases we reviewed, but we did not include cases in which the original diagnosis changed after histologic review.

The current biomedical literature indicates that local, conservative excision by thyrotomy or laryngofissure is preferred for treating chondroma and low-grade chondrosarcoma. More radical procedures such as laryngectomy are reserved for high-grade chondrosarcoma, recurrent lesion, or a large, extensive lesion which infiltrates multiple cartilages [9]. A lesion large enough to require resection of most of the cricoid cartilage is treated with laryngectomy or resection with cricoid ring reconstruction [12,13]. When a patient refuses or is too unstable for more definitive surgery, tracheostomy may relieve airway obstruction. All cartilaginous tumors are considered radioresistant [14], and radium or radiation therapy offers only temporary benefit. Both chondroma and chondrosarcoma can recur, and long-term follow-up is mandatory because these lesions grow slowly. The development of chondrosarcoma at a chondroma excision site may represent either a change in tumor histology or incorrect classification of the original tumor. Development of a low-grade chondrosarcoma at a chondroma excision site has been reported years after initial resection [13,15-17], further emphasizing the need for long-term follow-up.

Conclusion

Chondromas and chondrosarcomas of the laryngeal cartilage are uncommon. Where as chondroma is considered benign, both chondromas and low- grade chondrosarcoma follow a similar clinical course and are treated similarly. Long-term follow-up is crucial because either lesion can recur, although it may not manifest clinically for many years.

Bibliography

1. Franco RAJr., *et al*. "Laryngeal chondroma". *Journal of Voice* 16 (2002): 92-95.

2. Brown DH., *et al*. "Laryngeal chondrosarcoma: Gross pathological, histologic and electron microscopic characteristics". *Canadian Journal of Surgery* 28 (1985): 534-536.

3. Walter WL. "Chondroma of the larynx: Report of a case and a review of the literature". *Annals of Otology, Rhinology and Laryngology* 68 (1959): 114458.

4. Cantrell RW., *et al*. "Conservative surgical treatment of chondrosarcoma of the larynx". *Annals of Otology, Rhinology and Laryngology* 89.6 (1989): 567-571.

5. Hyams VJ and Rabuzzi DD. "Cartilaginous tumors of the larynx". *Laryngoscope* 80 (1970): 755-767.

6. Clerf LH. "Chondroma of the larynx". *Archives of Otolaryngology* 10 (1929): 241-247.

7. Jacobs RD., *et al*. "Chondrosarcoma of the epiglottis with regional and distan t metastasis". *Laryngoscope* 99.8 (1989): 861-864.

8. Sirota HH and Hurwitz A. "Chondrosarcoma of the larynx". *Archives of Otolaryngology* 56 (1952): 290-293.

9. Barsocchini LM and McCoy G. "Cartilaginous tumors of the larynx:A review of the literature and a report of four cases". *Annals of Otology, Rhinology and Laryngology* 77 (1968): 146-153.

10. Zizmor J., *et al*. "Radiologic diagnosis of chondroma and chondrosarcoma of the larynx". *Archives of Otolaryngology* 101 (1975): 232-234.

11. Rosedale RS. "Laryngeal chondroma". *Annals of Otology, Rhinology and Laryngology* 56 (1947): 543-549.

12. Damiani KK and Tucker HM. "Chondroma of the larynx: Surgical technique". *Archives of Otolaryngology* 107 (1981): 399-402.

13. Neis PR., *et al*. "Cartilaginous tumors of the trachea and larynx". *Annals of Otology, Rhinology and Laryngology* 98.1 (1989): 31-36.

14. Lichtenstein L and Jaffe HL. "Chondrosarcoma of bone". *Journal of Pathology* 19 (1942): 553-586.

15. Swerdlow RS., *et al*. "Cartilaginous tumors of the larynx". *Archives of Otolaryngology* 100 (1974): 269-272.

16. Lavertu P and Tucker HM. "Chondrosarcoma of the larynx: Case report and management philosophy". *Annals of Otology, Rhinology and Laryngology* 93.5 (1974): 452-456.

17. Mishell JH., *et al*. "Chondrosarcoma of the larynx: Diagnosis with magnetic resonance imaging and computed tomography". *Archives of Otorhinolaryngology-Head and Neck Surgery* 116 (1990): 1338-1341.