

## A Silent Thrombus and a Cord Palsy: A Sinister Combination

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### Abstract

**Background:** A multitude of causes have been attributed to unilateral recurrent laryngeal nerve palsy. In the absence of a local or a regional cause for palsy, it is prudent to look into distant and rarer causes. **Case Report:** A 70-year-old male presented with the complaints of hoarseness of 3 months that was insidious in onset and progressive. Contrast enhanced computed tomography of neck and thorax showed left vocal cord palsy with silent thrombus in arch of aorta extending to ascending aorta. The results of cardiac auscultation and electrocardiography were normal. **Conclusion:** Cardiovascular causes have to be kept in mind, for they may lead to grave complications if missed when vocal cord palsy is the only presenting complaint. This underscores the importance of the knowledge of these rarer but sinister causes. Here we present a rare case of isolated left vocal cord palsy being the only presenting feature of a silent aortic arch thrombus.

**Keywords:** Coronary Thrombosis, Radiography, Recurrent Laryngeal Nerve, Unilateral Paralysis, Vagus Nerve.

### Introduction

A silent aortic thrombus presenting as hoarseness is a rare clinical condition. Tumors of the lung, oesophagus and thyroid are the most common causes of vocal cord paralysis. Vocal cord paralysis may result from the complications of cardiovascular diseases like mitral stenosis, pulmonary artery hypertension, patent ductus arteriosus and atrial septal defect. Impaired function of the nerve could be due to stretching or compression of the nerve due to the enlargement of the aortic vessel at the site where the nerve passes.

### Case Report

A 70-year-old male patient presented to our outpatient department with complaints of hoarseness of voice for the last three months. It was insidious in onset and progressively worsened with time. There was no history of dyspnoea, dysphagia, odynophagia, symptoms of aspiration or any neck swelling. There was no history of any

known co-morbidities. On indirect laryngoscopy, the patient had left vocal cord palsy with the cord in the intermediate position. There was bowing of left vocal cord [Fig.1a] and which was at a higher level than the right vocal cord. The left arytenoid cartilage was tilted anteriorly [Fig.1b] with a persistent phonatory gap [Fig.2]. There were no signs of aspiration and no evidence of any local cause of vocal cord palsy. Rigid laryngoscopy revealed left vocal cord palsy. The right cord was mobile. Swallowing evaluation showed only minimal aspiration with a PAS score of 2. The radiological examination was done to rule out the causes of unilateral left vocal cord palsy including ultrasonography of the neck which showed no thyroid gland pathology or neck nodes. Computed tomography (CT) of the neck showed features of left vocal cord paralysis without any other regional abnormality.

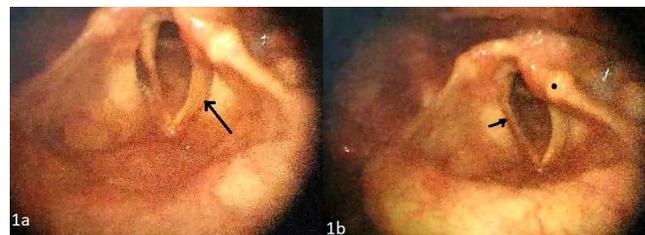
Contrast enhanced CT of the thorax revealed revealed a 5.4×5×7 cm silent thrombus

in the arch of aorta extending into ascending aorta [Fig.3b; red dot] The patient did not have any cardiac symptoms or symptoms of vascular compromise. The results of cardiac auscultation and electrocardiography were normal. Then the patient was referred to a cardiothoracic surgeon for further evaluation. Patient underwent a stenting of the aortic arch with left subclavian artery bypass.

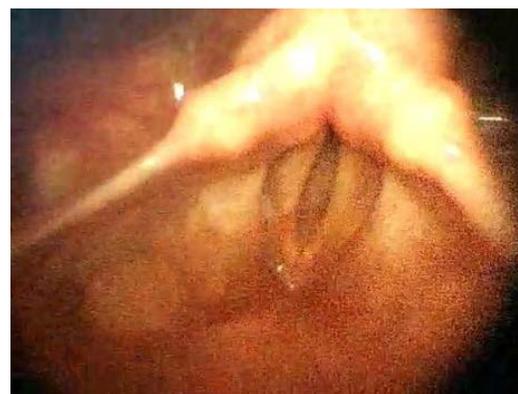
## Discussion

Hoarseness is a common symptom seen by the otolaryngologist. Causes for vocal cord paralysis are divided into supranuclear (lesions involving nucleus ambiguus and supra-nuclear tracts) and infra-nuclear (main trunk of vagus or recurrent laryngeal nerve) [1]. Of all the causes, peripheral neuropathy is the most common cause for unilateral cord palsy. Unilateral vocal cord palsy causes approximately 48% of all vocal cord paralysis [2]. It presents with a breathy voice with aspiration, dysphonia and sometimes dyspnoea. Left recurrent laryngeal nerve is more vulnerable to palsy due to its course into the mediastinum and includes cardiovascular causes, mediastinal masses, or intrathoracic surgery.

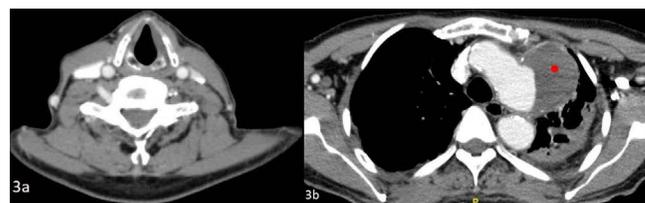
On the right side, the vagus nerve crosses the first part of the subclavian artery to enter the thorax. Right recurrent laryngeal nerve arises from the vagus nerve in front of the first part of the subclavian artery where it winds behind the common carotid artery and ascends into the neck. The left vagus nerve enters the thorax between the left common carotid artery and the left subclavian artery. Left recurrent laryngeal nerve arises from the main trunk of the vagus in the mediastinum anterior to the aortic arch, loops around arch lateral to ligamentum arteriosum and courses cranially and medially towards the larynx in the tracheoesophageal groove where it is intimately related to the medial surface of the thyroid gland before it passes under the lower border of inferior constrictor muscle. It enters the larynx behind the articulation of inferior cornu of thyroid cartilage



**Fig.1 (a):** Video laryngoscopy showing bowing of left vocal cord (black arrow); **(b):** Normal right vocal cord (small black arrow) & anterior tilting of left arytenoid (black dot).



**Fig.2:** Video laryngoscopy showing phonatory gap.



**Fig.3 (a):** CECT showing the normal position of vocal cords; **(b):** thrombus at the level of aortic arch extending into ascending aorta (red dot).

and cricoid cartilage. Around 11% of patients present with hoarseness due to idiopathic causes, including cardio vocal syndrome [3]. This term describes recurrent laryngeal nerve palsy due to any cardiovascular disease [4]. It was initially described by Ortnier in 1897 as nerve palsy due to left atrial enlargement secondary to mitral stenosis. Many case reports have been published highlighting this cardiac cause. To the best of our belief, this picture of aortic thrombus causing vocal palsy has not been reported.

Aortic arch thrombus can occur in a normal or minimally atherosclerotic vessel [5]. This is a rare disease that usually presents with symptoms of distal embolism to the axillary artery or iliac vessels. It usually presents with life-threatening cardiovascular events with distal embolization into cerebral, visceral, or peripheral areas with significant morbidity and mortality. Hoarseness is an exceedingly rare presenting complaint given the fact that many times the diagnosis would be made serendipitously.

Aortic thrombus is commonly seen in aortic aneurysm and aortic dissection [6]. However, thrombosis in a healthy aorta is very rare because the high velocity of blood flow that prevents clotting from happening [7]. Thrombus formation in a healthy aorta may follow atrial fibrillation and other arrhythmias. Our patient's ECG and echocardiography did not reveal any such pathology. Hyper-coagulable states like essential thrombocytosis and protein C deficiency can also result in a similar presentation. In our patient, there was no family history of vascular disorders or significant history suggestive of vascular disorders. The investigation also did not reveal any such presentation.

Vocal cord palsy resulting from an aortic arch thrombus is a rare phenomenon. It occurs due to the compression of the recurrent laryngeal nerve in the aortopulmonary window which is the space between the pulmonary artery and ligamentum arteriosum. Previous autopsy studies have shown the distance between the aorta and pulmonary artery within the aortic window is only 4 mm and is a potential space of nerve compression [8,9].

CT angiography followed by transoesophageal echocardiography is mandatory for diagnosis of aortic arch thrombosis. Various treatment modalities like anti-thrombolysis and surgery exist for the management of aortic thrombus. Conservative management should be considered in high risk and surgically unfit patients.

Few cases have been reported of the recovery of vocal cord palsy in cardio-vocal syndrome after treating underlying cardiovascular disease but it usually depends on the degree and duration of nerve injury [9].

## Conclusion

Aortic arch thrombus should be ruled out and considered as one of the causes of isolated left recurrent laryngeal nerve palsy. Hoarseness may recover once the underlying pathology has been treated provided no further damage to the nerve occurs. Early diagnosis and intervention help in the reversal of hoarseness and preventing serious life-threatening thromboembolic events.

We highlight this rare cause of unilateral left vocal cord palsy which has to be kept in mind when all common causes have been ruled out. The patient presented to us with only hoarseness as the primary complaint but was finally diagnosed to have a slow-growing asymptomatic thrombus that is potentially life-threatening.

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