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Case Study

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# RARE CASE OF THROMBOSED GIANT DUCTUS ANEURYSM

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## ABSTRACT

Saccular aneurysm of ductus arteriosus is uncommon and in adults show an obliterated pulmonary end of the ductus. Aneurysm of ductus arteriosus may occur spontaneously or may follow surgical treatment for patent ductus arteriosus. Commonly presents with hoarseness of voice due to stretching of recurrent laryngeal nerve by enlarging aneurysm. Most common complication is rupture and dissection.

**KEYWORDS:** Ductus arteriosus, aneurysm, aorta, isthumus, traumatic aortic rupture.

## INTRODUCTION

Ductus arteriosus is a normal anatomical structure that provides communication between systemic and pulmonary circulation during fetal life and closes soon after birth.[1] An indentation of the aortic wall at the site of insertion of obliterated ductus arteriosus is seen in about 9-26% of adults on angiography and is referred as ductus diverticulum / bump. This region is predisposed for traumatic aortic rupture.[5,6] Aneurysm of ductus arteriosus may occur spontaneously or may follow surgical treatment for patent ductus arteriosus.

## CASE REPORT

We are presenting the case of a 75 year old female patient with complaints of gradually progressive dyspnea of one month duration. There were also few episodes of aspiration of food with coughing. No significant past clinical or family history except for hypertension detected 6 months ago for which the patient is on irregular medication. No cardiac evaluation was done till then.

Initial evaluation with chest radiograph showed features of a mediastinal lesion and hence the patient was evaluated with CT sections of thorax, which showed a contrast filled outpouching measuring 79x70x75mm (APXTRXCC), arising from inferior aspect of arch of aorta just after the origin of left subclavian artery and extending inferolaterally. Peripheral hypodense thrombus noted within the aneurysm which was extending to the main pulmonary artery with luminal bulge and also to left pulmonary artery, completely occluding it. Left lung showed mild reduction in volume with prominent bronchial arteries. Plain sections showed peripheral curvilinear wall calcifications. Multiple cavitating areas with surrounding areas of consolidation were noted involving superior segment of left lower lobe, possibly due to aspiration. The above features were consistent with partially thrombosed ductus aneurysm with thrombus extending to main pulmonary artery and complete occlusion of left pulmonary artery.

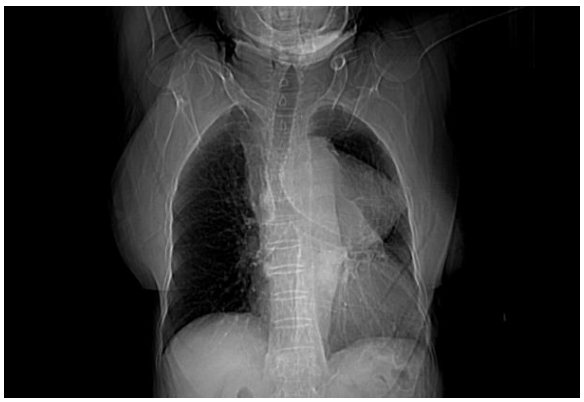
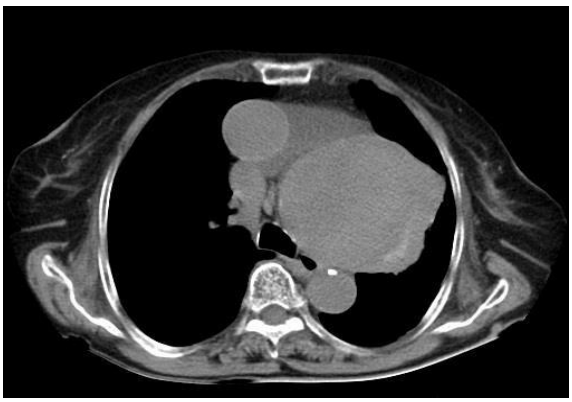


**Fig (1)**



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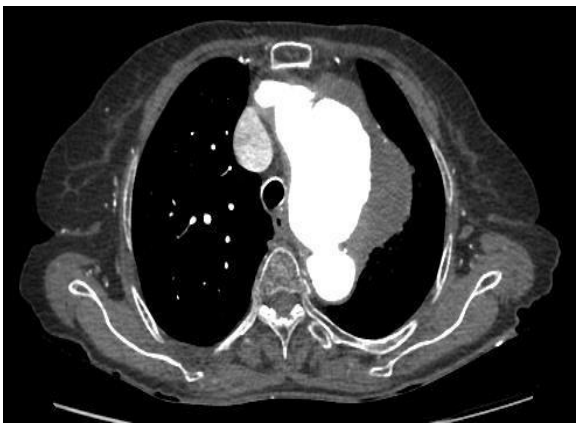
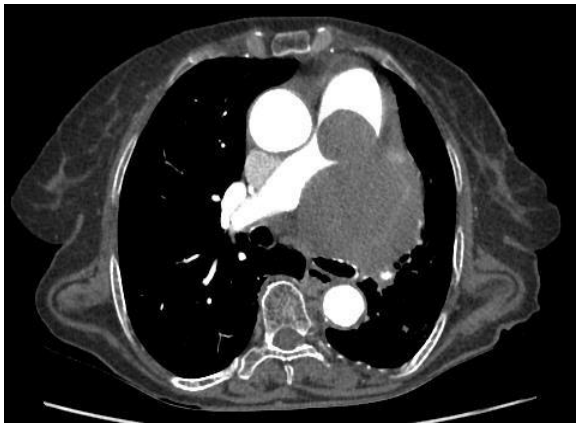


Fig (3)



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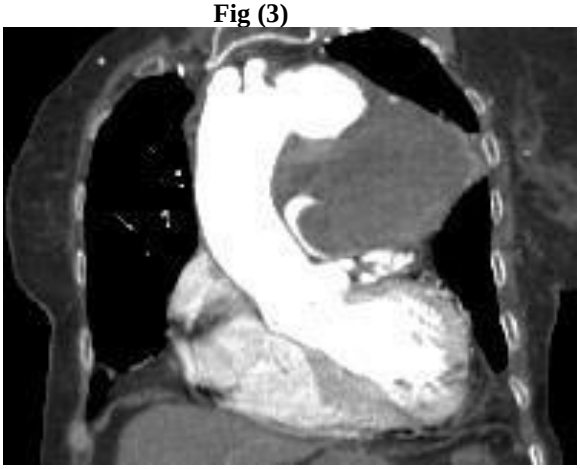

Fig (5)

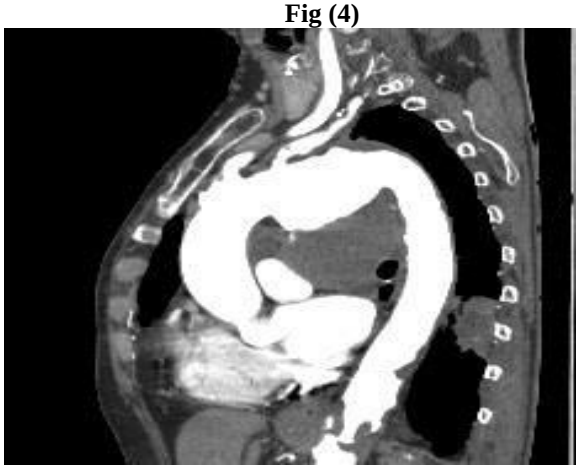

Fig (6)

**Fig (1) – Scout image showing features of a middle mediastinal mass with tracheo- bronchial compression. Fig (2) - Plain axial images showing hypodense mediastinal mass with peripheral curvilinear hyperdense area. Fig (3) – Axial angiogram sections at level of aortic arch shows saccular contrast filled outpouching from distal arch of aorta. Fig (4) – Axial angiogram sections at level of main pulmonary artery showing hypodense thrombus occluding left pulmonary artery with extension to main pulmonary artery. Fig (5) and (6) – Curved MPR coronal and sagittal reformatted image showing partially thrombosed aneurysmal dilatation distal to origin of left subclavian artery with thrombus extending to main pulmonary artery.**

## DISCUSSION

Saccular aneurysm of ductus arteriosus is uncommon and in adults show an obliterated pulmonary end of the ductus unlike aneurysm in pediatric age group which occurs in an open ductus arteriosus.[3] The presence of concomitant hypertension can be a contributory factor. Connective tissue disorder like Marfan and Ehler Danlos syndrome are known to predispose to ductus arteriosus aneurysm as well. A spontaneous aneurysm originating at ductus arteriosus is rare and as a well defined lesion is first reported by Martin-Saint-Ange in 1827. Commonly presents with hoarseness of voice (due to stretching of recurrent laryngeal nerve by enlarging aneurysm), cough, anorexia and chest pain in adults due to secondary involvement of adjacent organs and nerves. Compression of left main bronchus cause increased risk of atelectasis, pneumonia, lobar emphysema and diaphragmatic paralysis.[2]

Radiologically saccular aneurysm of ductus arteriosus can present as a mass lesion in aorto-pulmonary window. Radiographic margins will be obscured if the aneurysm is ruptured. Although the lesion seems to be congenital, conventional radiography sometimes demonstrate wall calcification. Contrast enhanced CT is the optimal imaging modality. The axial CT images through AP window shows the aneurysm as a third vessel displaying arterial phase contrast, apart from ascending and descending aorta. This is referred to as "triple star sign".[2] A temporary widening of the ductus in newborns is common and must be differentiated form a true aneurysm. The ductus bump may appear during the first few days of life and later disappear and is due to temporary dilatation of ductus before its obliteration.[1,4] This is present in about 10% of adults as ductus diverticulum.

**According to criteria by Cruickshank, ductus arteriosus aneurysm should be diagnosed only when –**

1) Aorta doesn't reveal any significant arteriosclerotic process in the area.
2) The aneurysm shows a definite bulge towards the ductus and or thepulmonary artery.
3) The ductus arteriosus shows occlusion in adults,

being represented by aclosed fibrous strand.[2]

The differential for ductus aneurysm would be a ductus diverticulum, which is seen as a small anteriorly directed conical bulge along the posteroinferior aspect of the aortic arch that extends to proximal descending thoracic aorta and is usually incidental and do not cause compression of recurrent laryngeal nerve. Another differential is traumatic aortic transection resulting in post traumatic pseudoaneurysm, which is found in patients with history of high velocity trauma.

At imaging, it arise from the anterior wall of aorta at the isthumus having an acute angle with aortic wall. The margins will be irregular and often have a visible internal flap. There may be a narrow neck that communicates with the aorta associated with periaortic and mediastinal hematoma.

Most common complication is rupture and dissection, which presents with hemoptysis and hemorrhage to left lung. Others include erosion to adjacent mediastinal structures (pericardium, bronchi and esophagus), endocarditis and thrombosis of pulmonary artery.[2]

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None DECLARATIONS

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**Conflict of interest** – None declared.

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