

# A Rare Presentation of Post Sternotomy Internal Mammary Artery Pseudoaneurysm

Dr. Rakesh Nallam

Final year PG, GSL Medical College & General Hospital, Rajahmundry, Andhra Pradesh, India

**Abstract:** A 62 year old female presented with complaint of pulsating swelling on right para sternal region. She is a post CABG patient for which sternotomy was done. Patient was advised CT Angiography of Thoracic Aorta for further evaluation. On CT Angiography of thoracic aorta, There is a pseudo aneurysm noted arising from internal mammary artery at right para sternal region of anterior chest wall, at the level of sternal end of 2<sup>nd</sup> rib, at sternotomy site. No evidence of any luminal thrombosis.

**Keywords:** Internal mammary artery, Pseudoaneurysm, Post sternotomy, Pulsating swelling, CT Angiography

## 1. Introduction

The internal mammary artery is a paired artery which runs on each side of the sternum.

It terminates as superior epigastric and musculophrenic arteries between 6<sup>th</sup> and 7<sup>th</sup> coastal cartilage.

Both blunt and sharp chest-wall trauma may lead to damage to the IMA, leading to bleeding into the mediastinum or pericardium.

Pseudoaneurysms are a disruption in the arterial wall continuity, which can be due to inflammation, iatrogenic causes or trauma, such as surgical procedures, percutaneous biopsy and drainage. Under the influence of sustained arterial pressure, blood dissects into the tissues around the damaged artery and forms a perfused sac that communicates with the arterial lumen (1) leading to pseudo aneurysm.

Pseudoaneurysm of Internal mammary artery can be spontaneous or can result from a variety of causes including systemic infection, local infection, central venous catheterization, and penetrating injury. (2)

Internal mammary artery pseudoaneurysm following sternotomy, vascular access procedures and trauma are very rare. (3)

IMA pseudoaneurysm may be noticed as a pulsatile swelling or present as mediastinal haematoma or haemothorax with or without haemodynamic instability. (4)

## 2. Case Report

**History:** A 62 year old female presented with complaint of pulsating swelling on right para sternal region. She is a post CABG patient for which sternotomy was done. Patient was advised CT Angiography of Thoracic Aorta for further evaluation.

**Examination:**

- BP-150/90 mm of Hg
- Other vitals normal.

- No tenderness

## 3. Investigations

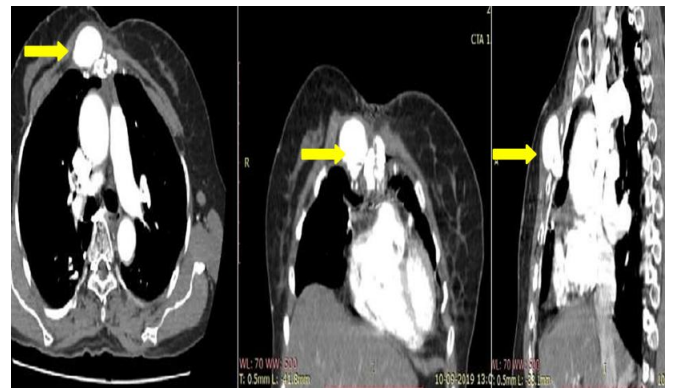
### CT Angiography of Thoracic Aorta:

There is a pseudo aneurysm measuring approx. 3.5 x 2cms noted arising from internal mammary artery at right para sternal region of anterior chest wall, at the level of sternal end of 2<sup>nd</sup> rib, at sternotomy site.

No evidence of luminal thrombosis seen.

Visualised carotid vessels and bilateral vertebral arteries are normal in course and calibre.

Ascending aorta, arch and descending thoracic aorta are normal in course and calibre.



There is a pseudo aneurysm measuring approx. 3.5 x 2cms noted arising from internal mammary artery at right para sternal region of anterior chest wall, at the level of sternal end of 2<sup>nd</sup> rib.(arrow)



3D image showing internal mammary artery pseudo aneurysm



3D image showing internal mammary artery pseudo aneurysm

#### 4. Discussion

The typical anatomical course of the IMA makes it vulnerable to cause penetrating injuries which can result in pseudoaneurysms of the IMA (5).

The internal mammary arteries are commonly used as the conduit to bypass major coronary artery stenosis, and have shown greater long-term patency rates and improved survival as compared to saphenous vein grafts (6).

In above mentioned case, pseudoaneurysm is mainly a complication of post sternotomy procedure done for CABG.

Digital subtraction angiography (DSA) is regarded as the gold standard in the evaluation of vascular structures, although its invasive nature significantly limits its role. With recent advances in multidetector computed tomography (MDCT) technology, even vascular structures with very small diameters can be assessed easily. As a result, the numbers of the invasive Digital subtraction angiography have reduced in number (7).

CT angiography with MDCT is mostly favoured for the diagnosis of IMA pseudoaneurysm(8)

MDCT helps to demonstrate the anatomical landmark of a pseudoaneurysm and to directly visualises its corresponding vascularity.

For the internal mammary pseudoaneurysm due to sternotomy, surgical repair in the form of ligation of the parent IMA and evacuation of the haematoma has been described (9).

Endovascular embolotherapy offers an effective and safe alternative to management and is currently the favoured form of treatment for the Internal Mammary Artery pseudoaneurysm (5).

- Internal mammary artery pseudo aneurysm, post sternotomy is a rare presentation.
- They mostly present as pulsatile swellings.
- CT Angiography MDCT is mostly done for diagnosis of the above.

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