

**Case Report:**

Coronary Artery Anomalies: Abnormal Origin of LAD, Circumflex from Separate Ostea from Right Coronary Cusp

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**Abstract**

Coronary artery anomalies (CCA) are a diverse group of congenital disorders whose manifestations & pathophysiological mechanisms are highly variable.

Anomalous origin of the left main coronary artery is a rare clinical entity that can present with symptoms across the clinical gamut, from asymptomatic to chest pain and possibly even sudden death. The clinical syndrome varies depending on the course of the aberrant left main. The anterior course where the artery runs between the aorta and the pulmonary artery can lead to compression of the left main, resulting in ischemia and possibly sudden death.

In this case female patient complaint of chest pain was underwent multislice CT. She has Absent left main (LM), left anterior descending (LAD), and circumflex artery (CX) abnormally originate from two separate ostea from right coronary cusp.

**Key Words:** Coronary artery anomalies – Multislice CT – LAD – CX.

**Introduction**

ANOMALOUS coronary artery origin is a rare clinical entity with varied clinical outcomes ranging from asymptomatic to sudden cardiac death. There has been an array of clinical as well as autopsy studies on this subject. Most of the studies show a relatively constant incidence of coronary anomalies in approximately 1.5% in the general population, with the CX and right coronary artery (RCA) being the most common anomalous vessels [1,2]. To date, there have been no definitive studies on the genetics of coronary anomalies and whether or not these anomalies are inherited [3]. According to my knowledge there is no similar condition like absent LM, origin of LAD & CX com from separate ostea, LAD run between Aorta and LA.

**Case Presentation**

47 female with past history of Diabetes mellitus, hypertension 17 years ago and dyslipidemia complaining of typical chest pain for 5 years, with no family history of ischemic heart disease.

Resting ECG: Showed small Q wave in septal leads other wise normal.

Echo Doppler study: Showed left ventricular hypertrophy, diastolic dysfunction, no wall motion abnormalities detected under resting condition.

**Multislice CT:** Was done to patient at Dar El Foad Hospital in Cairo during December 2013.

**Technique:** A non contrast enhanced scan was performed to determine the total calcium burden of the coronary tree (sequential scan with 32x 0.6mm collimation, tube current 60mAs at 120Kv).

Calcium scoring results are shown in Table (1).

<table>
<thead>
<tr>
<th>Coronary artery</th>
<th>Volume (mm³)</th>
<th>Ca score</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LAD</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LCX</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RCA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

(LM): Left main.  
(LAD): Left anterior descending.  
(LCX): Left circumflex.

**Ca score**

<table>
<thead>
<tr>
<th>Presence of plaque</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1-10</td>
</tr>
<tr>
<td>11-100</td>
</tr>
<tr>
<td>101-400</td>
</tr>
<tr>
<td>Over 400</td>
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</tbody>
</table>
Coronary CT angiography:

**Technique:** Multi-detector CT technology (Siemens Definition Dual Source 64 Slices Scanner) was employed. Spiral imaging with retrospective imaging with retrospective gating was performed following the intravenous admission of non-ionic low contrast material.

- The LM is congenitally absent.
- The LAD artery is congenitally arising from right cusp runs between Aorta and left atrium supplying small diagonal branch. LAD had no significant luminal stenosis.
- The LCX artery is congenitally arising from right cusp supplying two OM branches. LCX and its branches were normal.
- The RCA is dominate, large and normal vessel supplying rather normal PDA and PL branches.
- LV study: Normal LV systolic function and no resting wall motion abnormalities.

**Impression:**

- Normal coronary angiography.
- Congenital origin of the LAD and LCX from the right coronary cusp.
- Normal LV function.
- Coronary calcium score = 0 agatston units.

This figure showed that the LAD artery is congenitally arising from the right cusp runs between the aorta and left atrium.

![Fig. (3): Origin of LAD from right coronary cusp.](image)

This figure showed that the CX artery is congenitally arising from right coronary cusp supplying two OM branches.

![Fig. (4): Origin of CX from right coronary cusp.](image)

This figure showed large, dominant and normal right coronary artery.

![Fig. (5): Right coronary artery.](image)

**Discussion**

According to my knowledge there is no similar condition. Absent LM, LAD & CIX com from three separate ostea, LAD run between Aorta and LA.
Ran Baik, et al., [4] detected a case of a left main arising from the right coronary cusp that took a posterior course. There was a high-grade, proximal left anterior descending artery lesion that was treated with percutaneous intervention after defining the course of the aberrant left main.

Figure (6) showed that coronary computed tomodraphy reveals an anomalous origin of the left coronary artery from the right coronary artery, which is compressed between the aortic root and pulmonary trunk.

Anomalous origin of the left coronary artery arising from the pulmonary artery (ALCAPA) is a rare but serious congenital anomaly. ALCAPA was first described in 1866. The first clinical description in conjunction with autopsy findings was described by Bland and colleagues [5], so the anomaly is also called Bland-White-Garland syndrome. By 1962, Fontana and Edwards [6] reported a series of 58 postmortem specimens that demonstrated that most patients had died at a young age.

References


