

Rare Sinusal Variant of Truncus Arteriosus with Discontinuous Pulmonary Arteries

Arun Sharma¹ Shritik Devkota¹ Manphool Singhal¹

¹Department of Radiodiagnosis, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Indian J Radiol Imaging 2023;33:424–425.

Address for correspondence Arun Sharma, DM, Department of Radiodiagnosis, Postgraduate Institute of Medical Education and Research, Chandigarh 160012, India (e-mail: drarungautam@gmail.com).

Sinusal variant of truncus arteriosus is a rare preoperative diagnosis. Present case describes an unusual pulmonary arterial pattern in sinusal variant of truncus arteriosus, which, to the best of our knowledge, has not been reported so far in literature. Moreover, the case also highlights the importance of multidetector computed tomographic (CT) evaluation in accurate identification of such cases.

CT angiography images from a 20-year-old male patient with cyanosis showed presence of single arterial trunk supplying the pulmonary, systemic, and coronary circulations with single semilunar valve and large subtruncal ventricular septal defect. Pulmonary arteries were discontinuous with right pulmonary artery arising from the proximal ascending aorta and pulmonary artery segment from the right sinus close to the right coronary artery origin, continuing as left pulmonary artery with significant stenoses along its course (→ **Figs. 1**

and **2**). Coronary arteries were normal. No patent arterial duct, arch hypoplasia, or aortic interruption was seen.

The origin of pulmonary arteries in truncus arteriosus is inconstant and underlies various existing classifications (Collett and Edwards; Van Praagh and Van Praagh) and their limitations.¹ Collett and Edwards type I (Van Praagh and Van Praagh type A1) is the most common type with origin of pulmonary artery above (>2mm) the sinotubular junction. Truncus arteriosus with sinusal origin of pulmonary artery segment is a rare preoperative diagnosis, limited to few case reports.^{1,2} However, its incidence is not that uncommon and nearly one-fifth of patients with truncus arteriosus may have either low (≤2mm from the sinotubular junction) or sinusal origin of pulmonary arteries as shown by a study on the heart specimens.³ It assumes great importance considering proximity of the pulmonary artery segment to the right

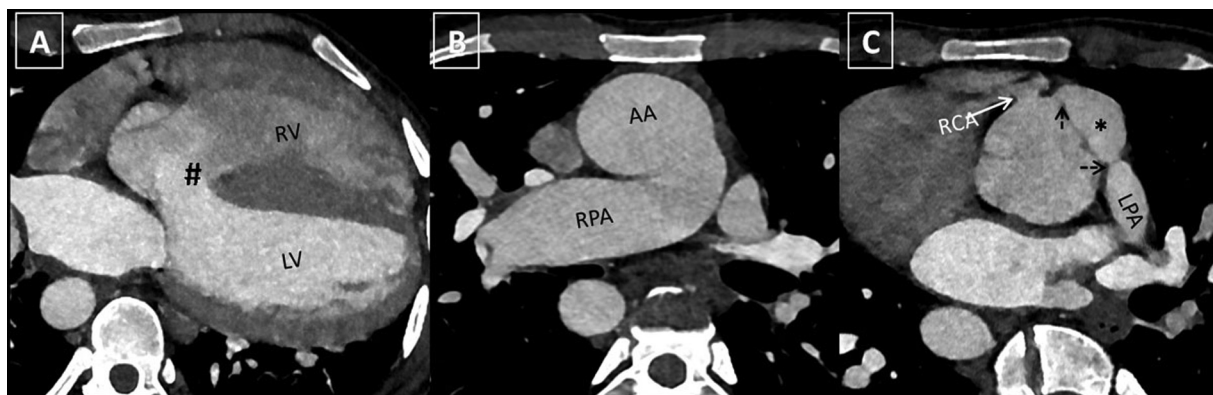


Fig. 1 Computed tomographic angiography images (A–C) in a patient with truncus arteriosus showing subtruncal ventricular septal defect (#) and discontinuous pulmonary arteries with right pulmonary artery (RPA) arising from the proximal ascending aorta (AA). Pulmonary artery segment (*) was seen arising from the right sinus close to the origin of right coronary artery (RCA), continuing as left pulmonary artery (LPA) with significant stenoses (dashed black arrows) along the course. LV, left ventricle; RCA, represented by white arrow; RV, right ventricle.

article published online
May 6, 2023

DOI <https://doi.org/10.1055/s-0043-1767693>.
ISSN 0971-3026.

© 2023. Indian Radiological Association. All rights reserved.
This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial-License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)
Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India



Fig. 2 Computed tomographic angiography volume rendered image depicting the detailed anatomy of sinusal variant of truncus arteriosus with discontinuous pulmonary arteries. * represents the pulmonary artery segment. AA, ascending aorta; LPA, left pulmonary artery; RCA, right coronary artery; RPA, right pulmonary artery.

ventricular outflow tract that may allow direct anastomosis in selected cases. Moreover, three-fourth of the hearts with sinusal variant may show close proximity ($\leq 2\text{mm}$) between the pulmonary and the coronary arteries (more commonly the left coronary artery), which warrants special attention to avoid injury during surgery.³

Multidetector CT evaluation allows detailed and accurate delineation of the anatomy and the pulmonary arterial pattern along with delineation of the associated anomalies

and the status of the coronary arteries, thereby helping in mapping the optimal management strategy.^{4,5} To the best of our knowledge, present pulmonary arterial pattern in truncus arteriosus with discontinuous pulmonary arteries and origin of pulmonary artery segment from the right anterior sinus, close to the right coronary artery, has not been reported in literature so far. Early accurate identification along with variability in the pulmonary and coronary arterial origins is important as they have obvious therapeutic implications.

Funding

None.

Conflict of Interest

None declared.

References

- 1 Gupta SK, Kothari SS, Gulati GS, Nair VV, Rajashekar P, Airan B. The trunk with a twist: right sinus origin of pulmonary arteries in a child with common arterial trunk. *World J Pediatr Congenit Heart Surg* 2014;5(04):615–619
- 2 Sharma A, Pandey NN, Kumar S. Atypical variant of truncus arteriosus: sinusal origin of pulmonary artery segment with non-confluent branch pulmonary arteries. *BMJ Case Rep* 2019; 12(04):e229547
- 3 Adachi I, Uemura H, McCarthy KP, Seale A, Ho SY. Relationship between orifices of pulmonary and coronary arteries in common arterial trunk. *Eur J Cardiothorac Surg* 2009;35(04):594–599
- 4 Sharma A, Priya S, Jagia P. Persistent truncus arteriosus on dual source CT. *Jpn J Radiol* 2016;34(07):486–493
- 5 Kumar P, Bhatia M. Role of CT in the pre- and postoperative assessment of conotruncal anomalies. *Radiol Cardiothorac Imaging* 2022;4(03):e210089