

**Title:** Negative Imaging, Positive Dissection - A Case of Type A Aortic Dissection

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## **Introduction**

Acute aortic syndrome (AAS) is described as comprising several conditions that demand urgent intervention owing to their emergency status. The Stanford Classification System categorizes based on whether the ascending aorta is involved in the dissection (Type A - surgical management), or only the descending aorta (Type B - medical management). We describe a young patient presenting with chest pain, although she only had a mildly ectatic aorta at 4.1 cm. While the presentation made us suspect diagnosis of Type A dissection, the patient had other elements making her distinct from the rest, including a pathological variant called limited intimal tear (LIT) that does not present a classical “flap” and is not visible in conventional imaging techniques.

## **Case:**

A 35-year-old female with a history of hypertension, type 2 diabetes mellitus, asthma, and morbid obesity presented with one day of acute shortness of breath and radiating chest pain. Physical examination was notable for tachycardia (105 bpm) and hypertension (SBP >170 mmHg). Initial computed tomography angiography (CTA) imaging revealed a 4.1 cm ectatic ascending aorta and increased soft tissue density in the pericardial recesses, suspicious for hemopericardium. A follow-up CTA showed similar findings and a subtle contour irregularity along the medial wall of the ascending aorta. Transesophageal echocardiography (TEE) was performed for further evaluation, but findings were inconclusive and the study was suboptimal.

Given the high clinical suspicion for AAS, a multidisciplinary decision was made to proceed with an exploratory thoracotomy under deep hypothermic circulatory arrest. Intraoperatively, a linear, full-thickness tear was identified approximately one centimeter above the left main coronary artery. The ascending aorta was replaced with a Hemashield graft. The patient recovered in the cardiac ICU and was discharged in stable condition for routine outpatient follow-up.

## **Discussion**

The primary challenge in this case was the ambiguous nature of the diagnosis due to the patient's morbid obesity and subtle finding of the lesion itself. In obese individuals, CTA usually shows a “quantum mottle,” which refers to the high level of noise in the images. Pulsation artifact in CTA may be also observed with tachycardia, which resembles or masks an intimal tear. On the other hand, TEE is generally inadequate for such patients because of poor acoustic window availability and the added hazards of conscious sedation.

With a high degree of clinical suspicion, the multi-disciplinary surgical team decided to proceed with an exploratory thoracotomy. During the operation, they observed a linear, full-thickness limited tear in the intima situated only one centimeter above the left main coronary artery. This type of lesion represents a rare manifestation of Stanford Type A AAS, which comprises a focal disruption of the intimomedial layer without the typical longitudinal separation between the aortic layers seen in complete dissection. To perform the repair of the lesion without any bleeding complication, deep hypothermic circulatory arrest was used during surgery. The defective segment was repaired using a Hemashield graft.

## Conclusion

This case emphasizes the significance of clinical decision-making versus radiological findings in assessing Stanford Type A AAS where the patient experiences major technical imaging challenges. Although traditional classification requires the identification of an intimal flap, intimal tear is a potentially lethal form of AAS where only minimal changes in contour are seen, as well as hemopericardium among other indirect evidence. In symptomatic patients with metabolic conditions and ectasia, surgery is still the best practice even with localized lesions since any involvement of coronary ostia will result in a fatal consequence.

## References:

1. Arora, A., Elsayed, A., Arora, Y., Elsayed, Y., & Ayoub, W. J. (2026). Motion-Artifact 'Pseudo-Type A Dissection' on Ungated CTA in a Morbidly Obese Patient with Resolution on ECG-Gated CTA: A Case Report. *ASIDE Case Reports*, 2(4), 1–5. <https://doi.org/10.71079/aside.cr.012126279>
2. Isselbacher, E. M., Preventza, O., Black, J. H., Augoustides, J. G., Beck, A. W., Bolen, M. A., Braverman, A. C., Bray, B. E., Brown-Zimmerman, M. M., Chen, E. P., Collins, T. J., DeAnda, A., Fanola, C. L., Girardi, L. N., Hicks, C. W., Hui, D. S., Jones, W. S., Kalahasti, V., Kim, K. M., . . . Volgman, A. S. (2022). 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. *Circulation*, 146(24), e334–e482. <https://doi.org/10.1161/cir.0000000000001106>
3. Madani, M. H., Turner, V. L., Hallett, R. L., Willeminck, M. J., Murillo, H., Chin, A. S., Berry, G. J., & Fleischmann, D. (2022). Limited aortic intimal tears: CT imaging features and clinical characteristics. *Radiology Cardiothoracic Imaging*, 4(6), e220155. <https://doi.org/10.1148/ryct.220155>