Teaching Framework – Persistent Left SVC (Absent Right SVC)

1. Start with anatomy, not labels

Before naming the anomaly, ask: Where should the right superior vena cava be in this sweep—and can I actively demonstrate that it is absent rather than simply not seen?

2. A dilated coronary sinus is a clue, not a conclusion

When the coronary sinus looks enlarged, ask: What are all the fetal causes of coronary sinus dilatation, and which have I systematically excluded?

3. Follow the venous return all the way to the right atrium

Trace the left-sided vessel inferiorly and ask: Does it clearly drain into the coronary sinus and then the right atrium, or could this represent anomalous pulmonary venous return?

4. Interrogate the pulmonary veins deliberately

Do not assume normality—ask: Can I confidently demonstrate four pulmonary veins entering the left atrium, or is further targeted imaging needed?

5. The three-vessel-and-trachea view should feel subtly 'wrong'

Ask: Is the normal right-sided SVC absent, and is mediastinal symmetry altered compared with a normal fetus?

6. Interrogate the brachiocephalic (innominate) vein and its flow direction

Ask: Is there a brachiocephalic connection, and is flow left-to-right or right-to-left?

7. Use flow direction as a discriminator

Left → right flow supports bilateral superior vena cavae with a dominant right SVC.
Right → left flow strongly suggests absence of the right SVC with a single persistent left SVC.

8. Confirm situs and laterality—even when everything looks normal

Ask: Have I formally documented atrial and abdominal situs, or am I relying on pattern recognition alone?

9. Actively differentiate from partial anomalous pulmonary venous return

Challenge yourself: Could a vertical vein or anomalous pulmonary vein be mimicking a left SVC on this clip—particularly if azygos drainage into the left SVC is visualised—and what definitively rules that out?

10. Screen carefully for associated cardiac anomalies

Even when this appears isolated, ask: Have I excluded atrioventricular septal defects, conotruncal anomalies, and rhythm-related associations?

11. Finish with clinical relevance, not just diagnosis

Ask: Does this isolated venous anomaly alter antenatal surveillance, location of delivery (local hospital vs surgical centre), postnatal imaging, or future central venous access—and have those implications been clearly communicated?

Doppler Interpretation Pearl

The video demonstrates a regurgitant jet across the right atrioventricular valve, with pulsed Doppler velocities of approximately 2.5–3.0 m/s. In the absence of structural valve abnormality or right ventricular dysfunction, this finding is most consistent with physiological regurgitation.

Bottom Line

This assessment is not about spotting a persistent left superior vena cava—it is about proving venous anatomy, understanding venous haemodynamics, and rigorously excluding look alike conditions, particularly anomalous pulmonary venous return.

Now for the report

Fetal Cardiac Screening Report (24 weeks' gestation) – Precise and to the point

Targeted fetal echocardiography demonstrates absence of the right superior vena cava with a persistent left superior vena cava draining into a dilated coronary sinus, which in turn drains normally into the right atrium. No right-sided superior caval structure is identified despite targeted imaging. Venous anatomy is otherwise consistent, with normal systemic venous return to the right atrium. Directional Doppler assessment across the brachiocephalic (innominate) vein demonstrates right-to-left flow, supporting the diagnosis of a single (isolated) left superior vena cava rather than bilateral superior vena cavae .Pulmonary venous return appears normal, with four pulmonary veins draining independently into the left atrium, excluding anomalous pulmonary venous connection. Cardiac situs and segmental anatomy are normal. No associated structural congenital heart disease is identified.

Colour Doppler demonstrates a mild regurgitant jet across the right atrioventricular valve, with pulsed Doppler velocities measuring approximately 2.5–3.0 m/s. In the absence of valve dysplasia or ventricular dysfunction, this is considered physiological, likely reflecting transient fetal haemodynamics and expected to resolve with postnatal reduction in pulmonary vascular resistance.

Conclusion
Isolated single persistent left superior vena cava with absent right superior vena cava, draining via a dilated coronary sinus. No associated cardiac or pulmonary venous anomalies identified.

Delivery in a local (non-surgical) hospital is appropriate.

Postnatal fetal echocardiography, including close evaluation of the right atrioventricular valve, is recommended.