Objective: To assess the distance between the right superior vena cava (SVC) and the aorta in fetuses with bilateral superior vena cava as a possible sonographic marker of bilateral SVC.

Methods: This was a nested case-control study including 20 cases of bilateral SVC and 40 gestational age-matched controls. The distance between the right SVC and the aorta was measured at the level of the three-vessel trachea view in stored images, as well as the diameters of the aorta and the right SVC.

Results: The distance between the aorta and the right SVC was significantly larger in the cases, \( p < 0.001 \). A distance of 2.0 mm or more was found in 70% of the cases and 5% of the controls, with a gestational-age adjusted area under the receiver-operating characteristics (ROC) curve for the diagnosis of persistent left SVC of 0.93 (95% CI 0.87-0.99). The aorta and the right SVC were significantly smaller in cases compared to controls, and there was a significant association with other cardiac and extra-cardiac abnormalities amongst cases of persistent left SVC.

Conclusion: An increased distance between the aorta and the right SVC is associated with the diagnosis of bilateral SVC and associated cardiac abnormalities.