# Persistent left and absent right superior vena cava

## Przetrwała żyła główna górna lewa przy braku prawej żyły głównej górnej – opis przypadku

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**Abstract**

Persistent left and absent right superior vena cava is a rare congenital anomaly, which is usually asymptomatic and discovered incidentally. A 57-year-old female patient was referred to this hospital for valvular surgery. Preoperative echocardiography and computed tomography revealed the diagnosis of persistent left and absent right superior vena cava. Mitral and aortic valve replacements were successfuly performed using aortic and single inferior vena cava cannulations with antegrade cardioplegic infusion. Cardiovascular surgeons or cardiologists should be aware of its presence in advance of a pertinent manoeuvre.

**Key words:** persistent left superior vena cava, superior vena cava, valvular replacement

**Streszczenie**

Przetrwała żyła główna górna lewa (ŻGGL) występuje w 0,3–0,5% populacji ogólnej, ale zwykle współistnieje z żyłą główną prawą, natomiast obecność samej tylko ŻGGL jest anomalią występującą bardzo rzadko. Taką odmianę anatomiczną stwierdzono u 57-letniej chorej, która została przyjęta do szpitala w celu operacyjnego leczenia wady zastawkowej. Przedoperacyjna echokardiografia i tomografia komputerowa pozwoliły na prawidłowe rozpoznanie anomalii i wykonanie skutecznego zabiegu.

**Słowa kluczowe:** przetrwała żyła główna lewa

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## Introduction

Persistent left superior vena cava (PLSVC) is not uncommon. It is estimated to occur in 0.3-0.5% of the general population and 3-10% of the patients had congenital heart disease [1]. PLSVC is usually coexistent with right superior vena cava (SVC), but rarely associated with absent right SVC [2].

## Case report

A 57-year-old female patient was referred to this hospital for valvular surgery. Echocardiography revealed the PLSVC draining into the right atrium through the dilated coronary sinus (Figure 1), as well as stenosed and regurgitant mitral valve and stenosed aortic valve. Computed tomography confirmed the diagnosis of PLSVC associated with an absent right SVC (Figure 2). Contrast-enhanced computed tomography demonstrated that the PLSVC collected from the left internal jugular vein and left subclavian vein, and directed to the dilated coronary sinus, while right SVC and left innominate vein were absent (Figure 3).

A selective operation was performed on 12 March 2008. Operative findings confirmed the preoperative diagnoses. Mitral and aortic valve replacements were favourably undertaken under cardiopulmonary bypass with aortic and single inferior vena cava cannulations and antegrade cardioplegic infusion. The patient had an uneventful postoperative course.

## Discussion

PLSVC with absent right SVC is a rare congenital anomaly, with fewer than 150 cases reported in world literature until 2003 [2]. A PLSVC is usually asymptomatic and discovered incidentally [3]. Modern imaging modalities including echocardiography, computed tomography, and magnetic resonance imaging provide precise diagnosis of

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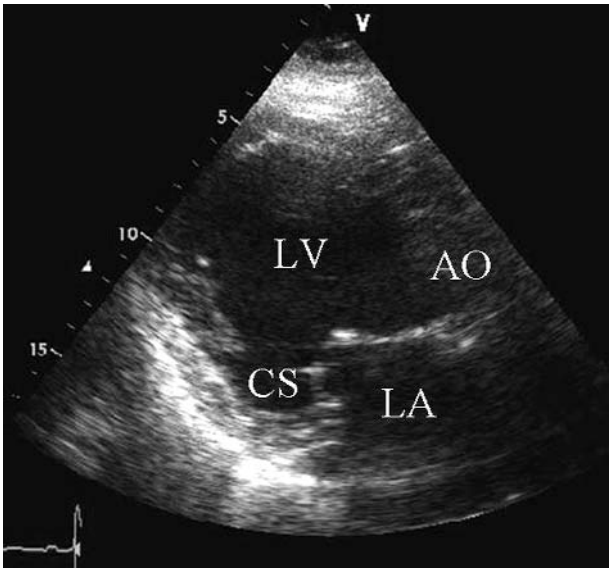


**Figure 1.** Echocardiography of a parasternal long axis view showed a dilated coronary sinus and a dilated left ventricle

*AO – aorta, CS – coronary sinus, LA – left atrium, LV – left ventricle*

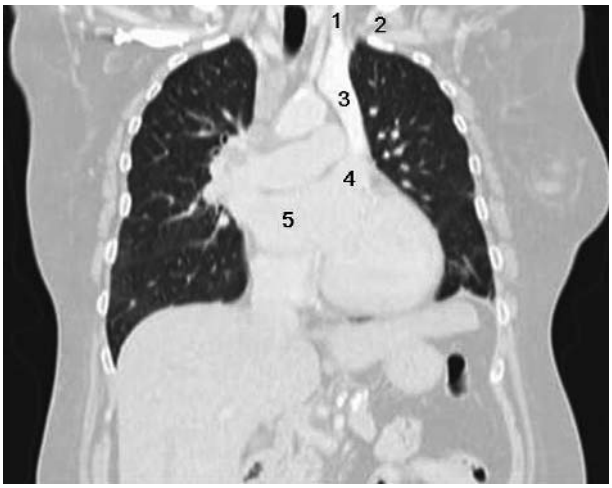


**Figure 3.** Contrast-enhanced computed tomography demonstrated that the persistent left superior vena cava collected from the left internal jugular vein and left subclavian vein, and directed to the dilated coronary sinus, while right superior vena cava and left innominate vein were absent

*1 – left internal jugular vein, 2 – left subclavian vein, 3 – persistent left superior vena cava, 4 – coronary sinus, 5 – right atrium*

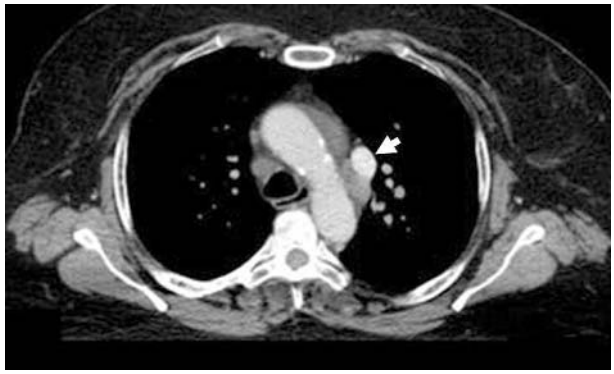

**Figure 2.** Computed tomography showed the persistent left superior vena cava (arrow) at the aortic arch level

this anomaly. It would not cause any haemodynamic derangement, as in the present patient; only in a few patients was it associated with dysrhythmias [4]. Nor would it have any clinical implications until a Swan-Ganz catheter insertion, pacemaker implantation, vena cava cannulation, or retrograde cardioplegic delivery is required and technical difficulty might be encountered such being the case [5].

## Conclusion

Cardiovascular surgeons or cardiologists should be aware of its presence in advance of a pertinent manoeuvre so that an undesirable dilemma could be avoided.

### References

1. Erdoğan M, Karakaş P, Uygur F, et al. Persistent left superior vena cava: the anatomical and surgical importance. *West Indian Med J* 2007; 56: 72-6.
2. Araújo Júnior CR, Carvalho TN, Fraguas Filho SR, et al. Persistent left superior vena cava with absent right superior vena cava: image findings. *Radiol Bras* 2003; 36: 323-6.
3. Fang CC, Jao YT, Han SC, Wang SP. Persistent left superior vena cava: multi-slice CT images and report of a case. *Int J Cardiol* 2007; 121: 112-4.
4. Bartram U, Van Praagh S, Levine JC, et al. Absent right superior vena cava in visceroatrial situs solitus. *Am J Cardiol* 1997; 80: 175-83.
5. Adulti K, Parmar JM. Persistent left superior vena cava – an anomaly to remember. *Br J Cardiol* 2003; 10: 207-10.