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The influence of left ventricle's torsion motion on the helical flow in the aorta

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The left ventricular torsion motion plays an important role for LV ejection and forming the complex structure of flow in the aorta.

The pressure in a rotating body i.e. left ventricle decreases from rotating walls to a center of rotation. The pressure gradient imparts the necessary centripetal acceleration. The fluids admit a motion on a curved path. The torsional motion influences to the pattern of flow in the left ventricle. It creates the condition for more quick filling of the left ventricle because the gradient of the pressure significantly greater.

The helical flow appears in the aorta in the second part of the systole. The intensity of primary and secondary (Dean-like) flows is more high then intensity oh the helical flow and, consequently, the pattern of flow doesn't have the clear evidence of existing this flow.

In conclusion, this study shows that the of helical blood flow is feasible, and essentially depends from features of blood flow in the LV.