An 82-year old man with history of diabetes mellitus, chronic renal failure, and permanent atrial fibrillation was admitted to the hospital with symptoms of a non-ST-elevation myocardial infarction. Selective coronary angiography demonstrated a single vessel disease with an additional fistulous flow from the left circumflex artery (LCX) towards the left atrium (LA) (see Figure 1A and Supplementary data online, Movie S1). Transoesophageal echocardiography for evaluation of a potential LA or left atrial appendage (LAA) clot revealed no visible thrombus or ‘smoky shadow’ in LA or LAA but with colour flow mapping and pulse wave Doppler interrogation, two turbulent narrow continuous jets directed from the tip of the LAA towards the LA were visualized (see Figure 1B–D and Supplementary data online, Movie S2). These jet-like small fountains supposedly washed out the LAA and potentially prevented significant stagnation of blood. The anomalous communication between LCX and LAA is a rare form of a coronary-cardiac chamber fistula that remains asymptomatic with no further clinical consequence unless they are associated with additional valve anomalies or they are large enough to produce cardiac ischaemia. We propose the term ‘LAA fountain sign’ as pathognomonic echocardiographic manifestation of this rare form of fistula with essentially no other differential diagnosis in the absence of previous intervention on LAA and mitral valve. In conclusion, this case clearly illustrates an easily recognizable anomaly related to LAA, and deserves more attention in the current emergent era of percutaneous transcatheter LAA occlusion, where comprehensive assessment of LAA structure and associated pathologies becomes increasingly imperative.

We would like to thank Ms Nadja Kindler, M.D. for her support in preparing the manuscript.

Figure 1A. Selective coronary angiography of the left circumflex artery showing a connection towards the left atrium in terms of a coronary—cardiac chamber fistula. The arrow marked the starting point of the fistula from circumflex artery.

Figure 1B. Transoesophageal echocardiogram in a 75° projection of the left atrial appendage (LAA) with colour-coded Doppler. The two white arrows show the origin of two jets in the tip of left atrial appendage in diastole. LUPV, left upper pulmonary vein.

Figure 1C. Transoesophageal echocardiogram in a 77° projection of the left atrial appendage. Continuous flow of the fistula demonstrated by pulse wave (PW) Doppler signal.

Figure 1D. Transoesophageal echocardiogram in a 122° projection of the left atrial appendage (LAA) with colour-coded Doppler showing the pathognomonic ‘left atrial appendage fountain sign’.

Supplementary data are available at European Journal of Echocardiography online.