AIM. The aim was to develop an efficient method for resolution of complex technical issues in open heart surgery and for deeper studying of pathophysiological disturbances of coronary circulation in clinics.

METHODS. Coronary blood flow (CBF) was registered with miniature intraoperative transducers functioning in a continuous wave spectral Doppler mode. Their design features allowed for a high quality signal on the working heart and provided high selectivity and accuracy of epicardial ultrasound due to the use of adaptors allowed for quantification of volume blood flow in coronary grafts.

RESULTS. Physiological peculiarities of spectral characteristics in human coronary arteries (CAs) were noticed. While in most cases in both vascular coronary beds, a normal CBF pattern has a two-phased curve with predominance of a diastolic component, valvular diseases of the left heart often causes significant changes of the curve as well as a redistribution of blood flow in the circulation of right and left CAs. CBF characteristics at presence of severe aortic valve disease before and after its surgical repair were identified.

CONCLUSION. Epicardial echoscopy allows for efficient monitoring of the quality of CBF restoration in the arteries of the heart during surgeries for the ascending aorta grafting with a valvular conduit and reimplantation of the coronary ostia into the graft. Visualization makes it easier to search for superficial heart arteries with the use of ultrasound probes.