

Off-pump Coronary Artery Bypass Grafting for an 88-year-old Man with Familial Hypercholesterolemia

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Familial hypercholesterolemia (FH) is a dominantly inherited disorder caused by mutations at the locus for the low-density lipoprotein receptor, and it is frequently associated with premature coronary artery disease.¹⁾

An 88-year-old man suffering from right lower abdominal pain caused by a right inguinal hernia was admitted to our hospital, and had been diagnosed with heterozygous FH receiving low-density lipoprotein apheresis therapy monthly from that time until age 86. The angiography revealed life threatening coronary artery lesions including at the left main coronary artery and severe calcification of the ascending aorta. However, echocardiogram showed satisfactory left ventricular wall motion with 70% ejection fraction, although the inferolateral area was akinetic.

At surgery, following a median sternotomy, the left internal thoracic artery was dissected full length, and the proximal site of the right internal thoracic artery was also dissected. After systemic heparinization, the right internal thoracic artery was anastomosed to the saphenous vein graft end-to-end as an I-composite graft. The I-composite graft was anastomosed to the right coronary artery, and then the left internal thoracic artery was anastomosed to the left anterior descending coronary artery. All anastomoses were performed without cardiopulmonary bypass. After the off-pump grafting, repair of the right inguinal hernia was performed. His post-operative course was excellent, and he is doing well.

FH affects systemic atherosclerosis, resulting in coronary artery disease and cerebral infarction, and it shortens the life span. Kaste and Koivisto reported that the

risk of brain infarction in heterozygous FH patients was at least 20 times higher than in the general population.²⁾ This patient had been receiving cholesterol lowering therapy including low-density lipoprotein apheresis and remarkably has lived to 88 years old, the highest age for a heterozygous FH patient to receive coronary artery surgery to our best knowledge.

Among perioperative complications, stroke is one of the most serious problems in coronary artery surgery. This patient had several risk factors which may cause perioperative stroke: age, the porcelain aorta, and FH. Ricci et al. found that patients 80 years of age and older undergoing off-pump coronary artery bypass grafting can experience significantly lower rates of perioperative stroke and overall complications compared with those undergoing the same procedure with cardiopulmonary bypass.³⁾ We believe that off-pump coronary artery bypass grafting is a safe procedure even in highly geriatric patients with systemic atherosclerosis.

References

1. Mabuchi H, Koizumi J, Shimizu M, Takeda R. Development of coronary heart disease in familial hypercholesterolemia. *Circulation* 1989; **79**: 225–32.
2. Kaste M, Koivisto P. Risk of brain infarction in familial hypercholesterolemia. *Stroke* 1988; **19**: 1097–100.
3. Ricci M, Karamanoukian HL, Abraham R, et al. Stroke in octogenarians undergoing coronary artery surgery with and without cardiopulmonary bypass. *Ann Thorac Surg* 2000; **69**: 1471–5.

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