Coronary Bypass Grafting Without Use of Cardiopulmonary Bypass for Dextrocardia

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Dextrocardia is a condition in which the heart is pointed toward the right side of the chest instead of normally pointing to the left. The rate of atherosclerotic heart disease in subjects with this condition is similar to that of the general population. We present a patient with situs inversus totalis with dextrocardia who underwent coronary artery bypass grafting without use of cardiopulmonary bypass (OPCAB). A 74-year-old man who was known to have dextrocardia with situs inversus was admitted to the hospital because of angina. Coronary angiography was performed and showed ostial occlusion of the left anterior descending artery (LAD) unsuitable for percutaneous coronary interventions but collateralised from the right coronary artery. Patient underwent OPCAB under general anesthesia. Right internal mammary artery was anastomosed to LAD on the beating heart with the surgeon standing on the right side of the patient. The patient’s post-operative course was uneventful, and he was discharged on the 6th postoperative day in good condition. Performing OPCAB surgery is not technically more demanding, and present no unusual challenge on patients with dextrocardia. **KEY WORDS:** DEXTROCARDIA, CORONARY ARTERY BYPASS GRAFTING, WITHOUT USE OF CARDIOPULMONARY BYPASS.

1. INTRODUCTION

Dextrocardia is a condition in which the heart is pointed toward the right side of the chest instead of normally pointing to the left. Hieronymus Fabricius first described situs inversus in 1606 (1), while Marco Severino described dextrocardia in 1643 (2). The exact etiology is unclear, the condition is thought to be autosomal recessive, with a prevalence of 1–2/10,000 normal population (3). The rate of atherosclerotic heart disease in subjects with this condition is similar to that of the general population (4). We present a patient with situs inversus totalis with dextrocardia who underwent coronary artery bypass grafting (CABG) without use of cardiopulmonary bypass (OPCAB).

2. PATIENT AND METHOD

A 74-year-old man who was known to have dextrocardia with situs inversus was admitted to the hospital because of angina (Figure 1). Three years earlier he had an anteroapical myocardial infarction and four years earlier an ischemic cerebrovascular insult. Coronary angiography was performed and showed ostial occlusion of the left anterior descending artery (LAD) unsuitable for percutaneous coronary interventions (Figure 2), but collateralised from the right coronary artery (Figure 3). Transthoracic echocardiography showed preserved left ventricular ejection fraction (50–55%), discreet anteroapical hypokinesia, mitral and tricuspid valve regurgitation of 1+. Elective operation was planned. Patient underwent OPCAB under general anesthesia. Right internal mammary artery (RIMA) was anastomosed to LAD on the beating heart with the surgeon standing on the right side of the patient. LIMA stitch was used for exposure (5), CTS pressure type retractor (Genzyme Corp., Cambridge, MA) for myocardial stabilization (Figure 4), and intracoro...
Coronary shunt 1.5 mm was used for coronary perfusion (6). Transit time flow measurement showed flow of 37 ml/min. before and 56 ml/min. after Protamin reversal of Heparin (7).

The patient's post-operative course was uneventful, and he was discharged on the 6th post-operative day in good condition. Six weeks later he remained asymptomatic and in excellent condition.

3. DISCUSSION

Dextrocardia with situs inversus is a rare anomaly and the incidence of coronary artery disease in those with this anomaly is similar to that in the normal population. There are few reports of this anomaly associated with coronary artery disease and CABG in the literature (8, 9). Most revascularization procedures on patients with dextrocardia have been performed with use of cardiopulmonary bypass. Only a few operations were performed without use of cardiopulmonary bypass (10). There are several significant points in this surgical method:

a) We performed the operation without any problems, mirror-image anatomy does not pose an unusual technical challenge.

b) Second is choice of conduit, we used RIMA instead of LIMA, partly because of the shorter conduit required with the RIMA and also to avoid crossing the midline with the conduit.

c) Third is position of surgeon, we performed operations with surgeon standing on the right side, without difficulty while standing on conventional side of the patient.

In conclusion we can say that performing OPCAB surgery is not technically more demanding, and present no unusual challenge on patients with dextrocardia.

List of abbreviations: CABG- coronary artery bypass grafting, LAD- left anterior descending artery, LIMA- left internal mammary artery, OPCAB- coronary artery bypass grafting without use of cardiopulmonary bypass, RIMA- right internal mammary artery

REFERENCES