

CORONARY VEIN ARTERIALIZATION: A NEW GATE FOR CORONARY SURGERY

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Elli iki yaşında erkek hasta, kliniğimize dispne ve göğüs ağrısı yakınmaları ile başvurdu. Yapılan ekokardiyografide ejeksiyon fraksiyon %45 , global hipokinezi mevcuttur. Koroner anjiyografi'de LAD %80 , Cx %95 ve RCA'da %99 diffuz darlık saptandı. Operasyonda sağ ventrikülün akinetik olduğu görüldü. Bu durumdan dolayı da kardiopulmoner bypassdan ayrılmasında sorun yaşandı. Bunun üzerine aorta ile sağ koroner ven arasına safen ven ile bypass yapıldı, anastemoz bölgesinin

proksimali bağlandı. Bu sayede sağ sistemin retrograt olarak beslenmesi sağlandı ve pompadan çıkmayı başardık.

Anahtar kelimer: Coronary artery bypass grafting, Coronary vein arterialization, Open heart surgery

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INTRODUCTION

The attempts for revascularization of the heart started since early 1900s. The development of coronary cineangiography gave a major impetus to direct revascularization of obstructed coronary arteries¹.

The rapid development and progression of technology helps in making the coronary artery bypass graft surgery safer and decrease the complication rate.

The idea of myocardial revascularization by means of grafting the coronary venous system is more than a century old². Here we present first turkish case of planned aorto-saphenous vein-coronary vein bypass graft for feeding of the right side of the heart.

CASE REPORT

A 52 years-old male patient presented to our clinic with history of dyspnea and chest pain. The patient had a history of coronary artery syndrome, hypertension, hypercholesterolemia and chronic obstructive airway disease. There was no significant findings on clinical examination and ECG ,a part from bradycardia which was mostly related to beta blockers. On echocardiography ejection fraction was 45% with global hypokinetic movement. On coronary angiography, there was

80% stenosis in both left anterior descending and circumflex artery with 95% stenosis in the right coronary artery. The right coronary artery seen very delicate and not suitable for bypass operation (Figure1).

Surgical intervention include left internal mammary to left anterior descending artery and aorta to first obtuse marginal artery (using saphenous vein) bypass. The patient was hypotensive on weaning from cardiopulmonary bypass demanding inotropic (dopamine 10 mcg/kg/min) and intra-aortic ballon pump support. On postoperative follow up patient developed recurrent sustained ventricular fibrillation which was resistant to medications and cardioversion. Emergency operation for revision of the coronary bypass performed. The left coronary artery and obtuse marginal bypass was working. The right side of the heart was akinetic and we failed in weaning from cardiopulmonary bypass. The right coronary artery was delicate and not suitable for bypass so we decided to perform an aorta to right coronary vein bypass with ligation of vein proximal to anastomosis site which gave the chance of retrograde feeding of the right system without creation of arteriovenous fistula (Figure 2). After aorto-right coronary bypass the patient weaned successfully with IABP and minimal inotropic support.

After revision, we followed up the patient in the intensive care unit with IABP and inotropic support. The case revealed very good clinical improvement with removing of IABP in the 2nd day and stopping the inotropic support by the 3rd postoperative day. Post-

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Figure 1: The angiographic picture of the delicate unypassable right coronary artery



peratively the chronic obstructive lung disease complicated the follow up. Hypoxia and agitation ended with a tragedy of self extubation; patient extubated himself. The result of this tragedy was hypoxic encephalopathy. At tenth postoperative day; we lost the patient without confirming our operation by angiography.

DISCUSSION

The attempts for revascularization of the heart started since early 1900s. The rapid development and progression of technology helps in making the coronary artery bypass graft surgery safer and decrease the complication rate. One method that is being used more frequently for myocardial protection perioperatively is the retrograde technique. This approach originated with a concept developed by Pratt in 1898, who suggested that oxygenated blood could be supplied to the ischemic heart via the coronary venous system³. Sixty years later, Lillehei et al used retrograde coronary sinus perfusion to protect the heart during aortic valve surgery⁴. Today, it is an accepted method for delivering a cardioplegic solution and is used frequently as an adjunct to antegrade cardioplegia. In 1975, Benedict and colleagues⁵ published a series of three clinical cases of saphenous vein grafting from the aorta to a coronary vein in patients with intractable angina and previous unsuccessful revascularization procedures. Postoperative coronary angiograms revealed patency in two of the four grafts constructed.

Figure 2: Aorto-anterior coronary vein bypass graft (illustrated by L.QARADAGHI)

We tried to discuss the ability of feeding of the cardiac tissue retrogradly by aorto-venous bypass after ligation the vein proximal to the bypass site. Inadvertent distal anastomosis of bypass graft to a coronary vein is considered one of the serious complications of coronary artery bypass graft surgery⁶. Potentiation of myocardial ischemia is a significant concern in this patient population and arterialization of the coronary venous system has not been shown to result in retrograde perfusion of the myocardium⁷. We think that this is true if we do not ligate the vein proximal to the bypass site and on non-ischemic myocardium. Our case was patient with chronic ischemic cardiac syndrome and we did ligate the proximal of the vein to prevent the possibility of aortocoronary vein fistula. Using an aorto-saphenous vein-coronary vein bypass graft; we can feed the right side of the heart retrogradly.

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