

CASE REPORT**Coronary artery bypass grafting in a kidney transplant patient****M Gopisanth¹, I Wijemanna², M De Silva³, D Gunasena³, M Kothalawala⁴****INTRODUCTION**

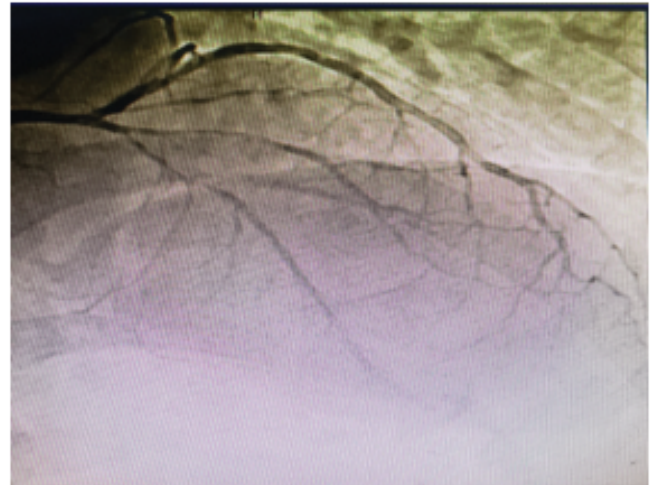
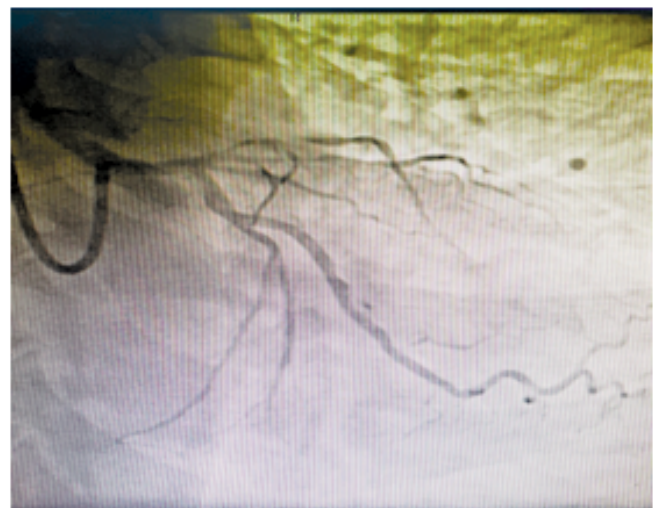
Renal transplant improves the outcome and quality of life in end stage renal disease patients. However, these patients are more prone to develop atherosclerosis and cardiovascular disease due to use of immunosuppressive therapy. Coronary artery bypass graft (CABG) surgery in renal transplant patients carries a higher risk of post-operative complications such as perioperative infection, graft rejection and impairment of renal function.

CASE REPORT

A 66 year old male patient who had undergone renal transplant in 2022 with diabetes mellitus and hypertension was referred to our unit for CABG by cardiology unit. He had an acute coronary event and was managed as NSTMI in February 2023. He was on prednisolone 5mg mane, tacrolimus 2g bd and mycophenolate 500mg bd for the renal graft.

On physical examination, blood pressure was measured 115/72mmhg and pulse rate was 78/min and regular in rhythm. There was a non-functional brachio-cephalic arteriovenous fistula on left upper limb. Cardiac and pulmonary auscultations were normal.

His preoperative blood urea (BUN) and creatinine were 44mg/dl and 1.01mg/dl respectively. Other hematological parameters were within normal ranges. The electrocardiogram showed a normal pattern. On transthoracic echocardiography, the left ventricular ejection fraction was 60%. Percutaneous coronary angiogram showed moderate disease in left main coronary artery (LMCA), with proximal to distal severe disease in left anterior descending artery (LAD) and ostial to proximal disease in diagonal branch (Figure 1). There was ostial 70% stenosis in the left circumflex artery (LCX) (Figure 2). Right coronary artery was normal.

**Figure 1.** Lesion in LAD.**Figure 2.** Lesion in LCX.

He was given (IV) cefuroxime 750mg as prophylaxis. He underwent a successful CABG on cardiopulmonary bypass. Left mammary artery was anastomosed to LAD and venous

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grafts (RSVG) were anastomosed to diagonal artery and obtuse marginal artery respectively. He was treated with intravenous hydrocortisone 50mg 6 hourly till post-operative day two and then changed into prednisolone 10mg mane. He was continued with tacrolimus 2g bd and mycophenolate 500mg bd. The patient developed fever on post-operative day two. Antibiotics were changed to (IV) piperacillin tarzobactam and (IV) teicoplanin and mycophenolate was reduced to 250mg bd till C-reactive protein dropped below 50. He was discharged on the fourteenth post-operative day. There was no significant reduction in renal function. On discharge BUN and creatinine levels were 42mg/dl and 1.10mg/dl respectively.

DISCUSSION

Prevalence of chronic kidney disease is high in Sri Lanka, causing significant morbidity and mortality. Renal replacement therapy becomes imperative when patients reach end stage renal failure. Kidney transplant is the treatment of choice for the majority of patients with increased number of kidney transplants being done successfully in Sri Lanka. Patients with renal graft have a higher risk of developing coronary artery disease due to end stage renal disease and immunosuppressive therapy^{1,2}. In one case-series forty four percent of renal transplant patients had hyperlipidemia, a risk factor for atherosclerosis⁶. One of the reasons for hyperlipidemia in these patients is administration of exogenous steroid⁶. In another analysis of autopsy data of renal transplant recipient myocardial infarction was second leading cause of death in renal transplant patients and nearly 50% of patients had atherosclerosis of coronary arteries¹.

Calcification of coronary vessels is a common problem in end stage renal disease making percutaneous coronary intervention (PCI) difficult in post renal transplant patients³. Therefore, CABG is a better option for these patients⁴.

Post renal transplant patients undergoing CABG have a higher risk of developing post-operative infection, graft rejection and impairment of renal function⁵.

Perioperative infection is a serious complication in these patients due to immunosuppression. Early identification of infection and modification in immunosuppressive treatment with use of broad-spectrum antibiotic is effective and prevents development of sepsis in these patients. In our patient dose of mycophenolate was reduced and piperacillin tazobactam and teicoplanin were started aiming to manage post-operative infection. The response was assessed with serial monitoring of C-reactive protein. It was successful.

Performing CABG on cardiopulmonary bypass has additional risk of reduction in renal function due to activation of inflammatory markers, volume overload, and low perfusion pressure². Addition of mannitol and human albumin in hemofilter and priming solution, decreased transfusion of

blood products and less preparation of priming solution reduce the negative effects of cardiopulmonary bypass. In renal transplant patients, there may be severe aortic calcification making aortic cannulation difficult and hazardous. For above reasons, Off-pump CABG (OPCABs) would be a good option in renal patients². In our patient, who underwent cardiopulmonary bypass we have taken the above precautionary measures while priming and mean arterial blood pressure was maintained more than 70mmhg throughout the intra operative and post-operative periods.

SUMMARY

CABG is a safe option for revascularization in post renal transplant patients with coronary artery disease. Use of broad-spectrum antibiotics and appropriate adjustment of immunosuppressive drugs would be necessary to prevent sepsis and graft rejection in post renal transplant patients undergoing CABG. Negative effects of cardiopulmonary bypass on the renal graft may be avoided following OPCAB technique.

Learning points

- Broad spectrum antibiotics should be started promptly in post-operative infections in post renal transplant patients who undergo CABG.
- Immunosuppressive treatment needs to be adjusted in case of post-operative infection in these patients to prevent sepsis and graft rejection.

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