*Case Report*

# Management of In-Stent Restenosis in a Patient with a Drug Eluting Stent on Hemodialysis awaiting Renal Transplantation.

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***Abstract***
*This brief report describes the dilemma of managing significant in-stent restenosis in a diabetic patient of end stage renal disease on regular hemodialysis awaiting renal transplantation within a paclitaxel eluting stent in his proximal left anterior descending artery with moderately impaired left ventricle systolic dysfunction. In view of the imminent renal transplantation procedure the patient underwent percutaneous coronary intervention with a cobalt chromium bare metal stent and was subsequently taken up for successful renal transplantation after 6 weeks with temporary discontinuation of antiplatelet therapy.*
***Key words:*** *Chest pain, coronary angiography, coronary artery spasm.*

## INTRODUCTION

The management of a patient with end stage renal disease (ESRD) awaiting renal transplantation with haemodynamically significant late in-stent restenosis (ISR) occurring within a drug eluting stent (DES) accompanied with moderately impaired left ventricular systolic dysfunction continues to evolve. Surprisingly despite recognizing increased cardiovascular (CVS) mortality in patients with ESRD[1-3] few randomized studies on cardiac revascularization procedures have included such cohorts. Treatment of ISR consists of plain balloon angioplasty (recurrence rates of 39 to 67%), intracoronary irradiation (recurrence rates of 16 to 23%) and implantation of DES with rates of ISR of 20%[4,5]. There is however little or no data on tackling tight ISR within a DES in a patient awaiting renal transplantation.

## CASE SUMMARY

A 50 year old diabetic and hypertensive male with ESRD on regular hemodialysis (HD) for the last one and a half years was found to have severe reversible ischemia in the left anterior descending artery (LAD) territory while being evaluated for imminent renal transplantation by dobutamine stress echocardiography. His global left ventricle ejection fraction was 35%. He had earlier ( 3 years ago in a different institution) undergone coronary angioplasty and stenting of his proximal LAD with a 2.5x12 mm paclitaxel DES. Current coronary angiography revealed a 90% proximal edge in-stent restenosis (ISR) with extension into the proximal vessel and no significant disease in the remaining coronary vessels. He had no evidence of latent or indolent infection such as hepatitis B or C, HIVor tuberculosis. The donor was to be his wife.

The lesion was stented with a 2.75x13 mm cobalt chromium bare metal stent (BMS) (Pro-Kinetic) after negotiating a 0.014 inch floppy wire across the tight block and predilatation with a 2x10 mm balloon (Elect). The BMS was deployed at 20 atmospheres with its distal end 3 to 4 mm inside the earlier DES. Brisk antegrade flow was achieved with no residual stenosis nor any dissection (Figures 1-3). The patient had been pretreated with aspirin 325 mgm, and 300 mgm of clopidogrel. He also received a bolus injection of Eptifibatide. He was discharged after 3 days during which he underwent one sitting of hemodialysis. Post PCI he was kept on triple antiplatelet regimen consisting of aspirin 150 mgm, clopidogrel 75 mgm and cilostazol 100 mgm for the next 5 weeks. In the sixth week, he underwent allograft renal transplantation with the donor kidney being removed laproscopically. Lopidogrel and cilostazol were withheld 4 days prior to and aspirin was stopped one day before renal transplantation. The patient's renal functions improved substantially following transplantation. By the fifth day, his drain, CVP line and Foley's catheter were removed. There were no bleeding problems and no evidence of graft rejection. Aspirin 325 mgm and clopidogrel 75 mgm were resumed one day post transplantation and the patient was discharged soon after in stable condition on 3 immunosuppresives – prednisolone, cyclosporine and mycophenolate mofetil.

## DISCUSSION

This report describes the dilemma of treating a patient of end (ESRD) awaiting renal transplantation with haemodynamically significant late ISR occurring within a DES deployed in his proximal LAD. This patient being a diabetic with ESRD, was exquisitely vulnerable to both ISR and late stent thrombosis (ST)[6-8]. His lesion was predominantly focal in nature and therefore relatively easier to treat than a diffuse proliferative restenotic lesion. Cardiac surgery was not considered in this case because of single vessel involvement and poor left ventricle function.

A BMS was selected keeping in mind the imminent renal transplantation from a willing live donor. The uncoated stent enabled the next major procedure of kidney transplantation to be done as early as 6 weeks post stenting by stopping the antiplatelets

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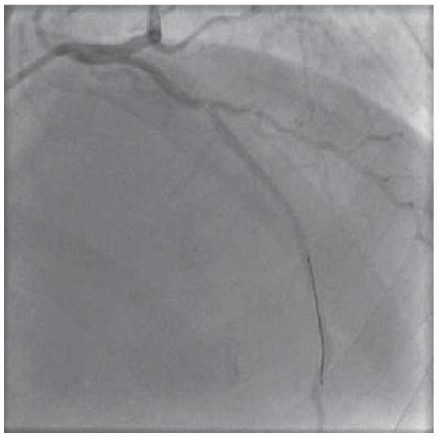

*Figure 1. Selective coronary angiogram in antero-posterior with cranial angulation view showing a tight 80% proximal instent restenosis in a paclitaxel drug eluting stent deployed in the proximal left anterior descending coronary artery. A floppy 0.014 inch guide wire has been negotiated across the block.*

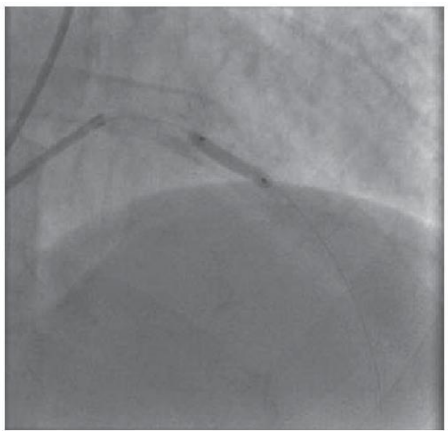

*Figure 2. A bare metal stent is being deployed proximal to the earlier paclitaxel eluting stent ensuring minimal overlapping of the 2 stents.*

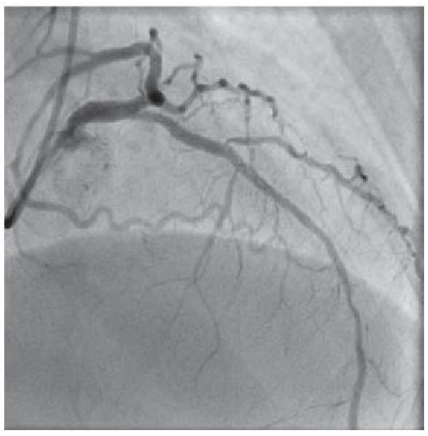

*Figure 3. Post bare metal stent deployment check angiogram demonstrating TIMI 3 flow and no residual stenosis or dissection.*

clopidogrel and cilostazol 4 days prior to and aspirin, on the day of operation. Aspirin and clopidogrel were resumed one day after kidney transplantation. The transplant procedure was a success without any minor or major bleeding and the patient was discharged on triple immunosuppressive therapy along with the 2 antiplatelets. A DES if deployed on the other hand would have in this case necessitated prolonged anti-platelet therapy resulting in subsequent delay of the main procedure of renal transplantation. Moreover treatment of restenosis in DES with another DES can result in repeat restenosis upto 43%. and the added specter of late stent thrombosis. Prevention and treatment of ISR continues to be a challenge for interventional cardiologists. Most data based on studies of ISR in uncoated stents have however confirmed that drug eluting stents result in superior clinical and angiographic outcomes as compared to balloon angioplasty, another BMS and vascular brachytherapy. Brachytherapy is moreover logistically cumbersome, requiring a multidisciplinary team of cardiologists, radiation physicists and oncologists[9-12]. Superior results with deployment of a DES in ISR complicating BMS, in comparison to brachytherapy, have been observed as late as 3 years after the index procedure[13].

Another possible approach in this case would have been the use of a drug coated balloon, which besides reducing late luminal loss and restenosis would have also permitted withholding of clopidogrel after 4 weeks to permit future surgery[5].

Currently there is insufficient data on how best to manage (DES) restenosis and therefore optimal therapy remains to be established. Asmallobservationalstudyinvolving201lesionswithDESrestenosis concluded that repeat DES implantation was both safe and feasible without any significant difference in angiographic restenosis rates or target lesion revascularization between implantation of the same or a different DES[14]. Another small study observed that intravascular radiation therapy for DES restnesosis was comparable to repeat DES deployment[15] at 8 months in terms of mortality and Target Lesion Revascularization (TLR) rates. There were fewer major adverse cardiac events in the brachytherapy group than in the repeat DES patients.

More anecdotal information and subsequently randomized trials are imperative to confidently decide the best course of the treatment of a patient of ESRD awaiting kidney transplant with the additional problem of DES restenosis.

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