

Intra Vascular Ultrasound Guided Zero-Contrast Angioplasty in Chronic Kidney Disease Patients: Feasibility and Short Term Outcome

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Abstract

Background: Contrast induced acute kidney injury (CI-AKI) is a serious complication after percutaneous coronary intervention (PCI). and it is associated with poor short-term and long-term outcomes. With the advent of intravascular ultrasound (IVUS) imaging, zero-contrast PCI is feasible and it helps in preventing CI-AKI. Our study aims to assess the safety and short-term outcome of IVUS guided zero-contrast PCI in chronic kidney disease (CKD) patients with complex demographics or lesion morphology.

Methods: Patients underwent "Zero- contrast PCI" if they had indication for revascularization and they had met any of the following criteria: (1) eGFR<30 mL/min/m²; (2) eGFR<45 mL/min/m² with age >75 years and/or left ventricular ejection fraction (LVEF) <35%. Technical success was defined as minimal stent area (MSA) > 80% of average reference lumen with no significant edge dissections and plaque burden of <50% at landing zones. Procedural success was defined as technical success without in-hospital mortality.

Results: A total of 22 patients (40 vessels), all men (mean age, 69.3 ± 10.7 years), underwent zero-contrast PCI during the period of November 2019 to May 2020. The mean estimated glomerular filtration rate (eGFR) and serum creatinine were 30.7± 12.1mL/min/1.73m² and 2.7± 1.4 mg/dL, respectively. The mean BMC2 risk for dialysis was 2.1 ± 1.1 %, mean SYNTAX score was 25.7 ± 15.3, and mean left ventricular ejection fraction (LVEF) was 43.5 ± 12.6. 12 (54%) patient had SYNTAX score ≥ 23. Complex PCI including Eight (20%) left main coronary artery (LMCA) PCI including three LMCA bifurcation PCI, two chronic total occlusion PCI and two rotational atherectomy were also done. In all except two vessels, procedure was completed with "Zero" contrast. Two patients required minimal contrast because of persistent chest pain and hypotension due to coronary perforation. Technical and procedural success were 95% without any periprocedural complications. On median follow-up of three months, no major adverse cardiovascular events (MACE) were reported.

Conclusion: Zero-contrast PCI guided by IVUS is safe in coronary artery disease (CAD) patients with moderate-to-severe CKD. High procedural success can be achieved even in cases with complex clinical characteristics and lesion morphology

Biography

Graduated in Medicine in 1988 from Government Medical College, Thiruvananthapuram, Dr. Prathap Kumar N acquired MD (Internal medicine) in 1992. A protagonist of the belief that heart matters most, he went on to learn the ills of the heart and obtained DM (cardiology) in 1997 with a Fellowship in Interventional Cardiology from University of Turin, Italy in 2002. Having had gained the know-how, and whetting his skill with overseas trainings, Dr. Prathap was instrumental in establishing the cardiology department in Benziger Hospital, an Interventional cardiology centre in Pariyaram Medical College and in PRS hospital, Thiruvananthapuram. He was a Director of Cathlab Services in Manipal Heart Foundation, Bengaluru. All along, Dr. Prathap nurtured a passionate desire to have dedicated cardiac centres across India to render specialized and affordable heart care. Dr. Prathap Kumar N is the Chief Interventional Cardiologist of Meditrina Group of Hospitals headquartered at Kollam, Kerala, India with units at Thiruvananthapuram, Kollam, Kottarakara, Hyderabad, Bhubaneswar & Jamshedpur. To his and his team's credit, nearly 10000 angioplasties, half of them complicated, were performed.