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Latest Angioplasty technique - A boon for renal failure patients

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With newer technological advancements in the field of angioplasty and intracoronary imaging, it is possible to do angioplasty safely in these patients with no or minimal dye



Coronary Angioplasty is a well-established treatment for blockages in the coronary arteries. When performed by an experienced operator in a center where it is routinely done, it is safe and has good long-term results.

An iodine contrast dye is used during coronary angioplasty. This dye is removed from the body by the kidneys. In patients with renal insufficiency or dysfunction, the dye can further damage the kidneys, hence caution should be excised in these patients.

- In patients with acute renal failure or Acute Kidney Injury (AKI), the use of this dye is contraindicated.
- In patients with chronic renal insufficiency or Chronic Kidney Disease (CKD) it can be used with caution, safely upto a creatinine value of 2mg/dl.
- In patients with a creatinine above 3 mg/dl it is better avoided. There is a chance of landing up with acute renal failure needing dialysis.

With newer technological advancements in the field of angioplasty and intracoronary imaging, it is possible to do***angioplasty safely in these patients with no or minimal dye***.

Intravascular Ultrasound (IVUS) is a device which can image the coronary artery lumen and tell the operator about the extent of the blockages, length of the lesions and diameter of the coronary artery to be stented, without using contrast.

One such patient with Chronic Renal Failure who had multiple blockages in the coronary arteries, was presented by cardiologists Dr. Karthik Vasudevan, Senior, Consultant – Cardiology & Dr. Prabhakar Shetty, Consultant - Cardiology from Columbia Asia Referral Hospital Yeshwanthpur performed a Zero Contrast /minimal contrast complex two vessel angioplasty using 3 stents without causing further damage to the kidneys.

The extent of the blockages within the coronary artery, the length of the artery where the stent had to be deployed, the diameter of the artery to choose the right diameter of the stent was measured by IVUS without giving contrast.

The proximal & distal extent of the stent was marked by placing a wire in the branches of the artery above & below the lesion. Using these as anatomical landmarks, the stent was deployed after predilating the lesion with a balloon.

IVUS was performed to confirm the position of the stent and to see whether the stent had expanded well and was opposed to the vessel wall well. Post dilatation with a balloon was done in areas where it was not opposed well, as shown by the IVUS to optimize the result. No dye was used throughout other than the initial angiogram pictures.

After confirming the result with the IVUS, minimal contrast (6 ml) was used to document the final result.

Patient had a creatinine of 3.2 mg/dl at the beginning of the procedure, which became 3.1mg/dl, the next day after the procedure, in view of good hydration given during and after the procedure (close to 3 litres of Normal Saline) and the minimal amount of contrast used. It came back to 3.2 mg/dl at the end of 5 days and remained at the same level at one-month follow-up says Dr Karthik Vasudevan who is a senior interventional cardiologist at Columbia Asia Referral Hospital Yeshwanthpur.

Contrast induced nephropathy (CIN) or Kidney damage due to dye usage during coronary procedures usually happens during 3rd to 5th day of the procedure and if the creatinine is normal at the end of 5th day, it means that we have avoided this complication.

Image guided angioplasty with minimal dye usage is a promising option for renal failure patients who need to undergo angioplasty. Earlier these patients were managed medically or would land up on dialysis after the procedure. This procedure brings a new option for this subgroup of patients.

-**Dr. Karthik Vasudevan, Senior Consultant – Cardiology, Columbia Asia Referral Hospital Yeshwanthpur**