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Research Article

**CHRONIC KIDNEY DISEASE (CKD) INCIDENCE PATIENTS  
AND CORONARY REVASCULARIZATION WITH ITS  
ASSOCIATED CLINICAL FINDINGS**<sup>1</sup>Dr. Ali Shan, <sup>1</sup>Dr. Hussnain Mahmood, <sup>2</sup>Dr. Afzaal Majeed, <sup>3</sup>Dr. Aftab Azam<sup>1</sup>Services Hospital Lahore<sup>2</sup>BHU Sheikh Chogani, Gujrat.<sup>3</sup>PGR Nephrology, Sir Ganga Ram Hospital Lahore**Abstract:**

**Objective:** Two substitute methods for the restoration of the blood supply from heart are PCI and CABG operations but it is contentious that which one method is less dangerous with lowest medical results for the CKD known as chronic kidney disease sufferers. We resolute the method of restoration of the blood supply of heart which has lower dangerous aspects for the chronic kidney disease patients.

**Methods:** The method of this research is cross-sectional. One hundred and fifty-nine sufferers of chronic kidney disease were selected from the restoration of the blood supply from heart centre at Services Hospital, Lahore (January, 2016 to August 2017). All the participants of the research with chronic kidney disease had to face the percutaneous coronary intervention and coronary artery bypass graft. The most important result of this treatment was stroke, blockage of the blood supply due to narrowing of internal wall of the heart. The aim of this research is to know about which method of the restoration of blood supply from heart was linked with less medical sufferings.

**Results:** One hundred and fifty-nine suffers with chronic kidney disease were the parts of this study. Eighty-five patients received percutaneous coronary intervention and seventy-four patients received coronary artery bypass graft. The main outcome of this research proves that the patients with serious chronic kidney disease have to undergo percutaneous coronary intervention and patient with mild or normal chronic kidney disease have to undergo coronary artery bypass graft.

**Conclusion:** The sufferers with normal to serious chronic kidney disease have same medical results whether they have to face percutaneous coronary intervention and coronary artery bypass graft. Percutaneous coronary intervention can be satisfactory and less all-encompassing method as a substitute to coronary artery bypass graft in the sufferers of normal to serious chronic kidney disease.

**Key Words:** CKD, CABG, PCI, coronary, chronic, restoration, blood supply, stroke, blockage of blood supply.

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**INTRODUCTION:**

CKD is major health problem on global level which is increasing day by day due the increase of sugar and blood pressure diseases [1]. The sufferers who are getting treatment of restoration of the blood supply to blood due to artery abnormality or the narrowing of the myocardial the internal wall of the heart, chronic kidney disease is one of the strongest dangerous aspect for a small or large period mortality [2]. MI, recurring of restoration of the blood supply and difficulties related to bleeding are present in large quantity in the patients having restoration of the blood supply as compared with the sufferers of having healthy kidneys [3].

Chronic kidney disease is the cause of many complications single handily [4]. The confirmation is available that heart mortality is lessens by the restoration of the blood supply from heart and it promotes the prediction of course of disease [5]. PCI and CABG are to methods used for the coronary revascularization but it is hard to differentiate which method is beneficial with less bad outcomes. The research works on the same topic in the past proves that mortality rate is increased after the application of the coronary artery bypass graft [6] because of associated medical reasons. Percutaneous coronary intervention is very dangerous in the sufferers with chronic kidney disease because it has bad effects on the functioning of kidney [7]. It is able to double the mortality rate in one year [8].

The main purpose of this study to check the methods of the restoration of the blood supply from heart in the patients of chronic kidney diseases which has lower dangerous outcomes and less declination of the function of kidney.

**METHODS:**

Method of this research is cross-sectional. One hundred and fifty-nine sufferers of chronic heart kidney disease were selected Services Hospital, Lahore (January, 2016 to August 2017). The methods for the restoration of the blood supply are PCI and CABG. The sufferers who were also suffering of another dangerous disease were excluded from this research. One hundred and twenty-two participants of the research were male and thirty-seven participants were females. The age of the participants was from thirty-eight to eighty-eight years with an average age of sixty-five years.

The sufferers were arranged into 3 different classes based on the clearance of creatinine usually abbreviated as CrCl. Medical data for the all participants of the research was collected for record.

The ethical committee of the concern hospital checked and gave his approval for the conduction of this research. Creatinine in the serum was measured in all the participants from twenty-four to forty-eight hours before the restoration of the blood supply. CrCl was used for the evaluation of the function of kidneys with the help of a specific formula [9]. The sufferers having equal are greater CrCl than ninety ml/min were declared of having CKD. All the sufferers who faced the methods of restoration of the blood supply were thoroughly evaluated after the procedure in the hospital stay. All the adverse results were recorded during the stay of sufferers at hospital. MI was observed in the patients after seven days of the restoration of the blood supply [12]. Canadian Cardiovascular Society defined the stable angina which is the heart complication with severe chest pain due to the deficiency in oxygen amount [13]. Braunwald classification gave the definition for the unstable angina [14].

All the medical data and the results after the application of methods for the restoration of the blood supply were recorded by the use of SPSS software. Chi square test was used for the comparisons of all three arranged groups. ANOVA test was used for different variables.

**RESULTS:**

One hundred and fifty-nine sufferers of chronic kidney disease from thirty-eight to eighty-eight years of age with n average age of sixty-five years were the part of this research. One hundred and twenty-two were the male participants and the signs for the restoration of the blood supply were; non ST elevation MI was found in sixty-nine patients, MI with ST elevation was found in thirty-four patients, stable angina was found in thirty-one patients and unstable angina was found in twenty-seven patients. The method of restoration of the blood supply from heart was percutaneous coronary intervention for eighty-five patients and coronary artery bypass graft was used for seventy-four patients.

All the groups of the chronic kidney disease had defect in more than one artery vessels. Most of the patients were in the severe state of the chronic kidney disease. Different types of the lesions were also same in most of the participants of all groups. Percutaneous coronary intervention method was applied on the patients suffering of severe chronic kidney disease. Coronary artery bypass graft method was in action for the patients of mild or normal chronic kidney disease. The rate of the failure of both methods in all three groups was same but complete restoration of the blood supply is visible in mild to normal chronic

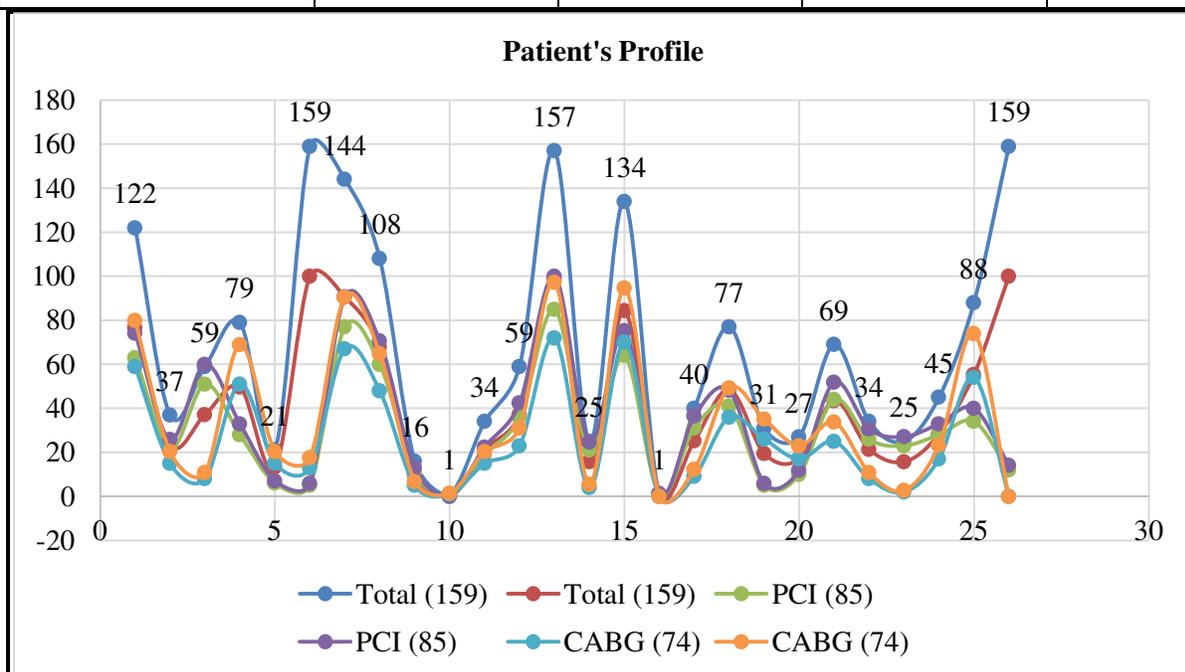
kidney disease. The hospital stay of the patients with chronic kidney disease after the application of the method is mentioned in table number one. There was not any disparity in the rates of MI, stroke and death in the patients of all groups after the application of

the methods either PCI or CABG as mentioned in table number two. The treatment plan of the patients from normal to serious chronic kidney disease is mentioned in table number three.

**Table – I:** Characteristics of patients with CKD after PCI and CABG

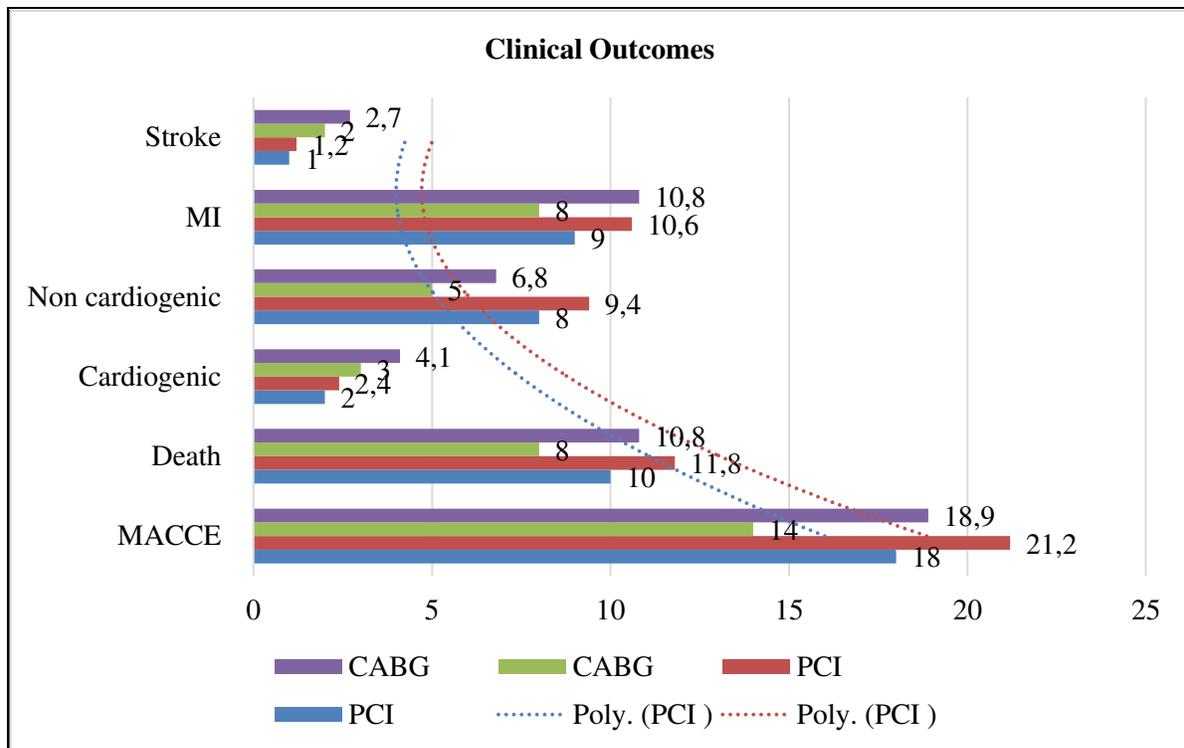
Characteristics	Total (159)		PCI (85)		CABG (74)		p value
	N	%	N	%	N	%	
Age (years)			67±9		63±9		0.003
Male	122	76.7	63	74.1	59	79.9	0.45
Female	37	23.3	22	25.9	15	20.3	
Hemoglobin	11.5 ± 1.76		11.4±1.8		11.6±1.6		0.66
WBC	11.1 ± 5.1		12.4±6.2		9.5±2.8		< 0.001
Baseline creatinine (mg/dl)	2.3 ± 1.5		2.7±1.7		1.7±0.9		< 0.001
Creatinine on admission (mg/dl)	2.6 ± 2.0		3.4±2.3		1.8±1.04		< 0.001
Creatinine Clearance (ml/min) < 30	59	37.1	51	60	8	10.8	<0.001
Creatinine Clearance (ml/min) 30-59	79	49.7	28	32.9	51	68.9	
Creatinine Clearance (ml/min) 60-89	21	13.2	6	7.1	15	20.3	
Current smoking history	159	100	5	5.9	13	17.6	0.02
Hypertension	144	90.6	77	90.6	67	90.5	0.99
Diabetes mellitus	108	67.9	60	70.6	48	64.9	0.99
History of ischemic stroke	16	10.1	11	12.9	5	6.8	0.27
History of hemorrhagic stroke	1	0.6	0	0	1	1.4	0.36
Valvular heart disease	34	21.4	19	22.4	15	20.3	0.84
Prior MI	59	37.1	36	42.4	23	31.1	0.18
Prior kidney disease	157	98.7	85	100	72	97.3	0.21
with dialysis	25	15.7	21	24.7	4	5.4	0.001
without dialysis	134	84.3	64	75.3	70	94.6	0.001
Peripheral vascular disease	1	1.2	1	1.2	0	0	0.99
Prior revascularization	40	25.2	31	36.5	9	12.2	<0.001
LVEF <40%	77	48.4	41	48.2	36	49.3	0.99
Indications for revascularization Stable angina	31	19.5	5	5.9	26	35.1	<0.001
Indications for revascularization Unstable angina	27	17	10	11.8	17	23	0.08
Indications for revascularization NSTEMI	69	43.4	44	51.8	25	33.8	0.02

STEMI	34	21.4	26	30.6	8	10.8	0.003
Number of diseased vessels 1	25	15.7	23	27.1	2	2.7	<0.001
Number of diseased vessels 2	45	28.3	28	32.9	17	23.3	<0.001
Number of diseased vessels 3	88	55.3	34	40	54	74	< 0.001
Creatinine after 48 hours of procedure	2.9±1.7		3.2 ± 2.1		2.5 ± 0.9		0.004
Required Hemodialysis after procedure	159	100	12	14.1	0	0	0.001
Length of stay(days)	7.8 ± 6.8		5.4 ± 3.9		10.6 ± 6.9		< 0.001



**Table – II:** Clinical outcomes among patients with CKD after PCI or CABG

Clinical Outcomes	PCI		CABG		OR	OR (95% CI)	p value
	No	Percent	No	Percent			
MACCE	18	21.2	14	18.9	1.2	0.52-2.51	0.72
Death	10	11.8	8	10.8	1.1	0.41-2.95	0.85
Cardiogenic	2	2.4	3	4.1	1.3	0.21-8.10	0.76
Non cardiogenic	8	9.4	5	6.8	1.4	0.44-4.59	0.54
MI	9	10.6	8	10.8	1	0.35-2.67	0.96
Stroke	1	1.2	2	2.7	2.3	0.20-26.26	0.49



**Table – III:** Multivariate analysis of factors predicting PCI among CKD patients

Factors	OR	95% CI	p value
Age	1.06	1.001-1.14	0.04
NSTEMI	18	3.22-100	0.001
STEMI	8.54	1.46-50	0.01
Prior revascularization	21	3.59-119.2	0.001
Complete revascularization	0	0-0.04	<0.001
Number of disease vessels 2	0.03	0.005-0.25	0.001
Number of disease vessels 3	0.01	0.001-0.04	<0.001

### DISCUSSION:

The main outcome of this research is that patients who are suffering of normal to serious chronic kidney disease underwent percutaneous coronary intervention and the patients suffering of mild chronic kidney disease underwent coronary artery bypass graft. But the medical outcomes were same for both methods. Chen YY stated that percutaneous coronary intervention has lowered the rate of the mortality as compared to the coronary artery bypass graft [15]. The outcome of the research done by Zhang Q is just opposite to the results of our study. The cases of low creatinine clearance underwent coronary artery bypass graft while cases with medium CrCl or mild kidney problem underwent percutaneous coronary intervention [16]. Same outcomes were found by the research work of Ix JH [17].

Research works of the past showed different results regarding the medical outcome of these methods. Szczech confirmed in his research that after percutaneous coronary intervention, two-year survival was about fifty-one percent and seventy-seven percent after coronary artery bypass graft in the sufferers with kidney malfunctioning [18]. Rubenstein found in his research work consequences after the use of stents and other related devices [20]. The medical outcomes for both groups are not different in our research. The bad condition of the kidney at the start was linked with the bad results after the application of the methods.

### CONCLUSION:

This research work is the first work done in the south part of Asia to check the method of restoration of the

blood supply from heart and the medical results of these methods in the sufferers of chronic kidney disease. The outcome of this research confirmed that sufferers with normal or serious chronic kidney disease have same small duration medical consequences by the use of both percutaneous coronary intervention and coronary artery bypass graft methods. Our research outcomes also prove that chronic kidney disease is very important dangerous aspect for the sufferers who are undergoing the restoration of blood supply from heart. Percutaneous coronary intervention can be satisfactory and low all-encompassing medical method as a substitute to coronary artery bypass graft. Further investigation is required on random cases to get the best outcome for the restoration of the blood supply from heart in the patients of chronic heart disease in this area on global map.

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