

## Outcome of off-pump coronary artery bypass graft (OPCAB) surgery: Analysis of 129 cases

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### Abstract:

Coronary artery disease (CAD) is a leading cause of morbidity and mortality worldwide, including Bangladesh. Besides medical and interventional treatment, coronary artery bypass graft (CABG) surgery in an effective modality for the management of a subset of CAD patients. Off-pump coronary artery bypass graft (OPCAB) surgery is a recent modification of conventional CABG surgery, which, like other parts of the world, is being increasingly practiced in Bangladesh. But the outcome of this relatively recent surgical approach in our setting is largely unknown. In this study, the outcomes of 129 cases off-pump CABG surgery done in

a tertiary cardiovascular centre and a private institute in Dhaka were analyzed. Majority (67, 54.2%) had triple vessel disease (TVD), while 4 (3.2%) patients had left main disease. One, two and three grafts were used in 17 (13.2%), 74 (57.4%) and 38 (29.4%) cases respectively. There was no mortality. Post-operative complications occurred in 17 (13.18%) patients; secondary wound infection in 10 (7.75%) and immediate respiratory distress in 7 (5.43%) cases. Ten (7.75%) patients needed secondary stitches.

*Key words:* Coronary artery disease, Cardiac Surgery, Coronary artery bypass graft, Off-pump.

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### Introduction:

Coronary artery bypass graft (CABG) operation has become the most completely studied surgical operation in the history of surgery and has been shown to be highly effective for the relief of severe angina.<sup>1</sup> In 1962 cardiac surgeon Dr. Sabiston conducted the first unsuccessful saphenous vein graft from the ascending aorta to the distal right coronary artery and the patient died 3 day later. The technique was then pioneered in Cleveland Clinic in USA in late 1960s. First successful CABG was done by Dr. Robest. H. Goetz and his team.<sup>2</sup> The major development was in 1970 when internal mammary artery was used as bypass conduit to the coronary artery. By mid 1970s, many centers in USA, Australia and Europe were performing CABG with low perioperativemortality and high rate of pain relief.<sup>3</sup>

Off pump coronary artery bypass graft or beating heart surgery was primarily developed in early 1990s by Dr.

Amno Atsushi and it reduces the number of complications related to cardiopulmonary bypass.<sup>4</sup>

In Bangladesh CABG and off-pump CABG started towards the end of last century. In this study short-term outcome of 129 cases of off-pump CABG was observed.

### Method and Material:

129 patients with coronary artery disease underwent off-pump CABG during July 2013 to December 2015 in the National Institute of Cardiovascular Diseases (NICVD) and a private institute in Dhaka. After proper pre anesthetic evaluation, Off-pump CABG was done in all patients maintaining standard procedures. Octopus or fixation was used in every cases to fix up the area of operation.

### Result:

Off-pump CABG was done in 129 patients with coronary artery diseases from July 2013 to December 2015. Clinical profile of the patients is shown in Table I.

Out of 129 cases undergoing OPCAB surgery, 121 were male and only 8 were female. Age ranged from 25 to 70 years and most of the patients were between the age of 40 and 70 years. (Table 2)

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**Table-I**  
*Clinical Profile of the patients undergoing off-pump CABG. (N=129)*

Total Cases	: 129
Male	: 121 (93%)
Female	: 08(07%)
Mean Age	
Male	: 51.6±8.32
Female	: 53.6±6.7
Clinical History	
Prior MI	: 58%(75)
Hypertension	: 35%(45)
Heart Failure	: 9.3%(12)
Diabetes Mellitus	: 12.5% (16)
Cigarette Smoking	
Present smoker	: 29%
Ex. smoker	: 46%
Non smoker	: 25%
Medication	
Long acting GTN	: 80(62%)
Beta Blockers	: 120(93%)
Anti-platelets	: 129(100%)
Lipid lowering drugs	: 105(81%)

**Table-II**  
*Distribution of patients by age and sex. (N= 129)*

Age range	Male	Female	Total	Percentage
21-30 years	01	00	01	0.8
31-40 years	08	01	09	6.9
41-50 years	44	02	46	35.7
51-60 years	47	02	49	37.9
61-70 years	21	03	24	18.7
Total	121	08	129	

Left main disease was present in 4 patients and 67 had triple-vessel disease. The pattern of coronary artery disease is show in Table III.

**Table-III**  
*Pattern of coronary diseases (N=129)*

Defects	Male	Female	Total	Percentage
SVD	09	03	12	9.3
DVD	41	02	43	33.3
TVD	67	03	70	54.2
Left main disease	04	0	04	3.2
Total	121	08	129	

Off pump CABG were done in all cases in standard procedures. Number of graft used are shown in Table 4.

**Table-IV**  
*Number of grafts used (N=129)*

Single graft	17	13.2%
Two grafts	74	57.4%
Three grafts	38	29.4%

There was no mortality. Post-operative complications were seen in 17 (13.18%) patients. Secondary wound infection were found in 10 (7.75%) cases and immediate respiratory distress were seen in 7 (5.43%) cases . All the patients were managed accordingly and in 10 patients secondary stitches had to be given for proper healing of the wound. Patients were discharged with advice of regular use of anti-platelets, beta blockers and statin among others.

**Discussion:**

Medical and surgical therapies for patients with coronary artery diseases have changed over last 20 years. Coronary artery bypass surgery is the treatment of choice for patients who have poorly controlled angina pain after adequate medical management. Majority of the coronary surgical procedures are performed for multiple vessels diseases and overall mortality rate is also very low i.e., around 2-3%.

In this series of 129 cases there was no mortality though majority i.e. 52.4% had triple-vessel disease and only 9.3% patients had single vessel diseases.

Now-a-days more than 25% of CABG operations are being done as off-pump CABG. It is safe as on-pump surgery and in experienced hands offers less early complications, particularly in those patients with significant comorbidity.<sup>7</sup>

This study demonstrates the feasibility and safety of OPCAB heart surgery in Bangladesh.

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