May 2012

Coronary artery bypass grafting after percutaneous coronary intervention

Syed Shahabuddin  
Aga Khan University

Syed Ahmed Sami  
Aga Khan University

Junaid Alam Ansari  
Karachi Institute of Heart Disease

Shazia Perveen  
Aga Khan University

Shumaila Furnaz  
Aga Khan University

See next page for additional authors

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Authors
Syed Shahabuddin, Syed Ahmed Sami, Junaid Alam Ansari, Shazia Perveen, Shumaila Furnaz, Saulat H. Fatimi, and Hasanat Sharif

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Cardiovascular disease including coronary artery disease are a leading cause of death worldwide. Coronary artery disease (CAD) is treated either with medical therapy, interventional therapy including percutaneous coronary intervention (PCI) or surgical revascularization in the form of coronary artery bypass grafting (CABG). The widespread popularity and use of percutaneous intervention (PCI) for coronary revascularization has brought substantial change in the patient population referred for surgical revascularization.1

However, after PCI, further interventions or surgery is required for restenosis, progression of disease and multivessel involvement. In this study, the patients with CABG done after PCI were evaluated to find out the reason for the need of surgical revascularization. From January to December 2006, 610 patients underwent CABG. Out of them, 34 patients had previous PCI/stenting. Coronary risk factors including hypertension in 85%, diabetes mellitus in 60%, dyslipidemia in 60%, tobacco use in 50% and a positive family history was present in 53% of the patients. All patients were symptomatic. Multivessel disease was present in 67% and single vessel in 4.7%. The extent of disease and stenosis of stents were responsible for reintervention. Careful selection of patients is required in presence of multiple risk factors for coronary artery disease to provide maximum benefit by either PCI or CABG.


1 Department of Surgery, The Aga Khan University Hospital, Karachi.
2 Department of Cardiac Surgery, Karachi Institute of Heart Disease (KIHD), Karachi.

Correspondence: Dr. Syed Shahabuddin, House No. A-115, Block I, Gulshan-e-Iqbal, Karachi.
E-mail: syed.shahab@aku.edu

Received July 04, 2011; accepted March 13, 2012.
the 4 patients had both progressions of the disease in the native coronaries as well as stent disease. The distribution of PCI and its type along with the reason for surgical revascularization is given in Table I. The median time from PCI to CABC was 3 years. Amongst all, Internal Mammary Artery (IMA) was predominantly used (94.1%), with an average of 3 grafts per patient. Postoperatively 2 patients developed atrial fibrillation and one patient required reopening for bleeding.

Table I: Identified reasons for revascularization (n=34).

<table>
<thead>
<tr>
<th>Type of stents</th>
<th>Total</th>
<th>Blocked</th>
<th>Extended</th>
<th>Blocked/ extended</th>
<th>Failed</th>
<th>No contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>DES</td>
<td>19</td>
<td>6</td>
<td>11</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Non DES</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Rotablade</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Balloon</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Failed</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>No contact</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>11</td>
<td>14</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

It has been shown that PCI did not reduce the risk of death in cases of myocardial infarction when added to optimal medical therapy.2 This large study supports recommendation of optimal medical therapy to begin with in patients with stable CAD. PCI has established role in patients presenting with acute coronary syndrome.3 CABC compared to medical treatment or PCI remains superior in terms of repeat revascularization and long-term relief of angina.4

This study has shown that the reason for reintervention is two fold, firstly patients presenting with primary (CAD) represent a group of patients in whom atherosclerotic process is already set in and is well established. However, aspirin, statins and other secondary preventive measures may have promising role to some extent in preventing the progress of the atherosclerosis. Secondly and the most important is the inherent risk of failure and restenosis of stents that may be attributed to thrombotic closure of the stent. In addition, there may be significant contribution by a variable local vascular immunologic and inflammatory reaction in each patient.5

There is a considerable literature investigating the effect of previous PCI on outcome after CABC and have shown difference of opinion with more inclination towards poorer outcome when compared to first time CABC. Therefore, to begin with optimal medical therapy for stable CAD is entirely acceptable and reasonable. The PCI stands as a valid option for acute coronary syndrome and refractory angina with discrete coronary lesion without multi-vessel involvement. The surgical revascularization has remained long lasting and superior to medical treatment and PCI. Even in large clinical trials patients do cross-over to surgical revascularization reinforcing that the CABC is complimentary to other forms of treatment.

The limitations of the study are that it was a retrospective review, having small sample and single centre study over a period of one year. Despite showing the reasons for CABC after PCI its results cannot be generalized. However, it will be useful for the awareness of our medical community and to guide patient in the right direction.

Percutaneous interventions are successful method of revascularization and delays surgery, but future reinterventions are common and both extent of disease and stenosis of stents are responsible for reintervention. This needs careful selection of patients especially in presence of multiple risk factors for coronary artery disease to provide maximum benefit.

REFERENCES


