


Dr. Chatterjee replies:

To the Editor:

We thank Dr. Hammermeister and Dr. Kennedy for their criticisms about our conclusions "that successful and uncomplicated aorto-coronary artery bypass surgery improved left ventricular function as revealed in the early postoperative study."7 because this gives us an opportunity to report our preliminary results of late postoperative studies.

We have been able to restudy 6 patients, 45 days to more than 1 year following surgery (likely to be free from sympathetic overdrive) who had successful and uncomplicated bypass surgery. The results appear to be quite comparable to those found during early postoperative study. Three patients had normal ejection fraction preoperatively, and there was no significant change following surgery. Three patients, however, had significant segmental wall motion abnormalities and consequently decreased ejection fraction preoperatively. All three patients had normal heart size and normal end-diastolic volume, preoperatively. But in all there was significant improvement in segmental wall motion as well as in ejection fraction, as can be seen in the following table.

<table>
<thead>
<tr>
<th>Ejection fraction</th>
<th>Heart rate</th>
<th>Stroke volume</th>
<th>Cardiac index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>Preop Postop</td>
<td>Preop Postop</td>
<td>Preop Postop</td>
</tr>
<tr>
<td>Normal Ejection</td>
<td>.75 .73</td>
<td>72 89</td>
<td>80 71</td>
</tr>
<tr>
<td>Preoperative</td>
<td>Reduced Ejection</td>
<td>Fraction</td>
<td>N = 3</td>
</tr>
<tr>
<td>.36 .54</td>
<td>78 81</td>
<td>38 54</td>
<td>3.1 4.6</td>
</tr>
</tbody>
</table>

These preliminary studies strongly suggest that significant improvement in left ventricular function may be observed late postoperatively when sympathetic overdrive is unlikely to be present.

Dr. Hammermeister and Dr. Kennedy have quoted the work of Dr. Boudoulas et al.2 in support of their hypothesis that improved left ventricular function observed in early postoperative studies is due to sympathetic stimulation. Unfortunately, in the abstract published by Dr. Boudoulas et al. information was not available regarding the duration of possible postoperative sympathetic overdrive and therefore, it is impossible to assess at the present time, the role of sympathetic stimulation as a mechanism of improved left ventricular function observed at least 2 weeks postoperatively in our study. Furthermore, none of our patients had pain or fever at the time of restudy. Admittedly, increased heart rates were observed postoperatively. However, tachycardia if anything, should decrease rather than increase ejection fraction. Furthermore, sympathetic overdrive by increasing heart rate and contractility in patients with continued and unrelieved ischemia, should precipitate or enhance left ventricular segmental wall motion abnormalities (asynergy) due to increased myocardial oxygen demand, because it has been documented that induced ischemia precipitates or exaggerates left ventricular asynergy and causes depression of LV function in patients with obstructive coronary artery disease.3 In our study, however, not only significant improvement but also normalization of segmental wall motion abnormalities was observed. Therefore, it is likely that improved left ventricular function that occurs following technically good, successful, and uncomplicated aorto-coronary artery bypass surgery is due to relief of ischemia by direct myocardial revascularization rather than increased postoperative sympathetic stimulation.

Kanu Chatterjee, M.B., M.R.C.P.
Myocardial Infarction Research Unit
Cedars of Lebanon Hospital
Los Angeles, California

References


Degree of ST Depression with Main Coronary Obstruction

To the Editor:

Have Kaplan et al., in their article in the February, 1973, issue of Circulation,1 analyzed their series of
patients with regard to more than 2 mm ST depression during submaximal treadmill stress tests, and if so, what percentage of this subgroup had main left coronary artery obstruction on coronary angiography? Admittedly, only 11 patients in their group had main left coronary disease so that the statistical significance of such an observation might be questioned. Nevertheless, if most patients with greater than 2 mm of ST depression on exercise stress testing have main left coronary disease demonstrated by coronary angiography, this subgroup of patients with coronary artery disease could be better suspected prior to coronary angiography. Because of the poor natural history, even asymptomatic patients with a prior myocardial infarction or prior angina should probably have coronary angiography performed and coronary vascular surgery if main left disease is demonstrated. It would also be useful for the coronary angiographer to be forewarned of the likelihood of main left coronary artery disease since Cohen’s series demonstrated an approximately 15% mortality of the cardiac catheterization procedure alone.

ALAN S. KING, M.D.
Assistant Professor of Medicine
The University of New Mexico
Albuquerque, New Mexico

References
2. Cohen MV, Cohn PF, Herman MV, Gorlin R: Diagnosis and prognosis of main left coronary artery obstruction. Circulation 45 & 46 (suppl), 1972

The authors reply:

To the Editor:

Unfortunately, we have not analyzed our data from the standpoint of how many patients had two millimeters or more ST-segment depression. We do, however, have the treadmill data on the eleven patients who had left main coronary artery disease. Of these eleven, as mentioned in the paper, one was unable to continue exercise to the point of ST segment change or achievement of 90% of his predicted maximal heart rate. Of the ten remaining patients, two had greater than 1 millimeter, but less than 2 millimeters of ST segment depression, and eight patients had 2 or more millimeters of ST segment depression and straightening. These obviously biased data seem very impressive at first glance. However, I would point out that we have seen some patients with normal coronaries who have had in excess of two millimeters of ST segment depression in the submaximal treadmill stress test. Also, one patient whom we have seen with clear-cut one vessel disease involving the anterior descending branch of the left coronary artery, had five millimeters of ST segment depression in his post-exercise tracings.

Finally, I would also call attention to the fact, that, at least in our series, all patients who had left main coronary artery disease had associated disease of the other vessels and that the degree of ST segment depression may be a reflection of the extent of the disease rather than localizing it to the left main coronary artery.

LEON STEIN, M.D.
ARNOLD ABERMAN, M.D.
JEAN-JACQUES BEAUD, M.D.
Department of Medicine
University of Southern California
Los Angeles, California

Dr. Scheinman replies:

To the Editor:

The comments of Drs. Leon Stein, Arnold Aberman, and Jean-Jacques Beraud are certainly well taken and the point made in our article relating pulmonary artery...
Degree of ST Depression with Main Coronary Obstruction
ALAN S. KING

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