How to Make A Failing Heart Pump Better

The Batista Procedure and Its Competitors

More than a year after the Batista procedure jumped into national headlines, experts at the 71st Scientific Sessions of the American Heart Association meeting in Dallas, Tex, reported both good and bad news about the radically different surgery. Patrick McCarthy, MD, cardiovascular surgeon at the Cleveland Clinic in Cleveland, Ohio, said 72% of patients who had the procedure have survived 2 years. “The good news is that it works well in some patients,” he said. “How often it will work well and how it will last remain undetermined.

“The troublesome news is that it sometimes doesn’t work,” said McCarthy. One reason is that although the procedure improves the way the heart contracts, it detracts from the muscle’s relaxation. In addition, fibrotic hearts will not respond as well with improved contractions. “Sometimes it is just too late for some patients,” McCarthy said. He predicted that the Batista procedure will become the Batista concept. Already, he said, one company is developing a device that will simulate the benefits of the operation without opening the chest or discarding heart tissue.

Akira T. Kawaguchi, MD, a Japanese surgeon from Tokai University who learned the procedure from Brazilian surgeon Rands Batista, MD, said the operation is used in his country, where transplant is virtually impossible because of laws governing organ donation. “It is used for socioeconomic reasons in Brazil and social reasons in Japan,” said Kawaguchi. Batista, who himself appeared at an AHA press conference, agreed, saying that in the United States, surgery and transplants benefit 270 million people, but that many of the world’s 6 billion people have no access to such care. “In countries like mine [Brazil], where we don’t have the facilities or equipment to work with, this procedure is very simple and available,” Batista said. US hospitals like the Cleveland Clinic can perform studies to explain why smaller hearts work better, he said. “I congratulate the other institutions for putting it in a better perspective,” he said. “In Brazil, we have only dying patients.”

A different method of achieving the same effect as the Batista procedure was described by Steven F. Bolling, MD, professor of cardiac surgery at the University of Michigan in Ann Arbor. He advises repairing the mitral valve in some patients with congestive heart failure. The mitral valve frequently weakens and is unable to close completely in patients with this type of heart failure. The inefficient mitral valve causes increased pressure on the heart, and allowed the heart to recover over time.”

According to Bolling, the procedure does not cure patients, but they are able to leave the hospital. “Part of the benefit is that we have changed the geometry of the left ventricle, reduced it, and allowed the heart to recover over time.”

The procedure unloads the extra pressure on the heart by abolishing regurgitation. “The myocytes have the ability to recover,” Bolling said.

But the Batista and similar procedures were not the only ones to show benefit for patients with refractory heart disease. Although Keith B. Allen, MD, of St. Vincent Hospital and Health Care Center in Indianapolis, Ind, was at a loss to explain why transmyocardial revascularization (TMR) seems to alleviate angina in patients for whom bypass is difficult, he said a multicenter study at his and other hospitals demonstrated an advantage to adding TMR to CABG surgery.

Patients in the study were scheduled for CABG surgery but had areas of the heart that were not suitable for bypass. In 106 of those patients, the areas not suitable for bypass received TMR; in the control group of 115, the areas unsuitable for bypass went without revascularization. Predicted early mortality in the doubly-treated group was 8.8%, whereas it was 8.4% in the group that received bypass alone. However, only 1 of the 106 patients who received both treatments died during the early period. By comparison, 8 of the 115 in the comparison group died. The mortality rate in the first group was slightly less than 1%, far below the expected mortality. In the second group, the 7% observed mortality rate was roughly equal to the expected mortality rate.

Early results from 3-month follow-up that did not include all patients showed that there were significantly fewer adverse

© 1999 American Heart Association, Inc.

Circulation is available at http://www.circulationaha.org
Making a Failing Heart Pump Better

846  

events, including death, myocardial infarction, or severe angina, in the doubly-treated group than in the group that received only surgery. "This is the first report showing a mortality advantage to TMR when used as an adjunct to coronary artery bypass grafting," said Allen.

During a press conference, Allen said that at present, TMR is approved only for patients with refractory angina and ischemia. "The question is whether we should reach a broader number of patients needing coronary artery bypass grafts," he said. "Would it be all such patients or a subset? Right now, the FDA has given approval for the use of laser procedure as sole therapy in someone with no other options. They can't have bypass or angioplasty."

However, Allen said, that represents 3% to 5% of patients with heart disease. A much larger group comprises those who undergo CABG but leave the operating room incompletely revascularized, said Allen. For those patients, TMR may provide an answer as an adjunct to surgery.

As for how the use of a laser to bore tiny channels in the heart muscle revascularizes the heart, Allen said there is only theory. "We argue among ourselves whether it is angiogenesis, channels that remain patent, or placebo." However, he said, it seems to have an effect. "There are a number of medications we take every day, but we don't understand the mechanisms by which they work." In the short term, he said, it appears that the channels remain patent long enough to get the patient through the recovery from a long and difficult operation. However, in the long term, there is evidence that angiogenesis could play a role.

Although science appears closer to an answer regarding the benefits of the controversial surgeries, other issues are less clear. In its advisory on homocyst(e)ine issued at the meetings, the AHA reflected mixed feelings about the chemical's importance. "This is a new area that is becoming increasingly studied," said Ronald M. Krauss, MD, of the Lawrence Berkeley National Laboratory, an author of the advisory. When his group evaluated the evidence, it found mixed results. Some studies were more compelling than others, Krauss said, "but not all have shown a predictive relationship between homocyst(e)ine and disease risk. Despite the fact that vitamin intake [of folate, B6, and B12] lowers homocyst(e)ine levels, there are no studies to prove that lowering homocyst(e)ine reduces the rate of cardiovascular disease."

For that reason, the advisory says that the public should increase its levels of folate by eating more vegetables, fruits, and grains that are now fortified with folate under a ruling from the US Food and Drug Administration (FDA). The recommended daily allowance (RDA) of folate is 400 μg/d, a level set to prevent birth defects because of insufficient folate intake by pregnant women. "The FDA and the AHA nutrition advisors are not ready to set an RDA based on heart disease risk," said Krauss. "It is reasonable, though, to have a diet high in folates."

Asked whether physicians should test for homocyst(e)ine, Krauss said he thought it was a matter for individual clinical judgment. He said the AHA does not recommend that the population at large receive such screening. Some patients may have an inadequate intake of food containing folate, and physicians may prescribe supplemental vitamins to provide this vitamin, he said.

However, another method of preventing heart attacks received the go-ahead from the American College of Chest Physicians in a statement released during the November AHA meetings. In a consensus statement, the college recommended that aspirin be considered as preventive heart therapy in people over age 50 who have even 1 major risk factor for heart disease. The risk factors include hypertension, high cholesterol, smoking, obesity, diabetes, physical inactivity, and a positive family history for heart disease.

However, the college cautioned that aspirin might not be the best medication for patients with atrial fibrillation, an important stroke risk factor. "It is clear that oral anticoagulation is very effective in decreasing the risk of stroke in patients with atrial fibrillation and that it is more effective than aspirin," said the statement. The college also called for the development of more potent agents for antithrombotic therapy.

While others were struggling with prevention and treatment, some at the AHA meetings were looking carefully at the "when" of heart attacks. On the basis of studies of the circadian rhythms of heart attacks, it appears that the Monday nights of winter spell the most danger.

C. Michael Gibson, MD, director of invasive cardiology at Allegheny General Hospital in Pittsburgh, Pa, compared 813 patients who came to his hospital's emergency department between 6 AM and 6 PM with 433 who came in between 6 PM and 6 AM. He found that the evening patients faced a risk of dying that was nearly double that of the daytime patients. Both groups underwent the same types of treatment. Patients underwent angioplasty at night as frequently as did those during the day, Gibson said.

The difference seemed to be a delay between the time patients recognized heart attack symptoms and the time they arrived at the hospital. Evening patients tended to arrive at least 30 minutes later.

Winter also seems to be a dangerous time, said Robert A. Kloner, MD, director of research at Good Samaritan Hospital in Los Angeles, Calif. His analysis of deaths due to heart disease in Los Angeles from 1985 until 1996 showed that most of the deaths occurred in December and January. Although winter has been blamed for an increase in heart disease risk before, the cause was thought to be the cold weather, snow shoveling, and attendant pressures on the heart. However, the mild Los Angeles winters indicate that something else might be at work.

Conversely, said Kloner, the fewest deaths occurred during June, July, August, and September. "The rates in December and January were 33% higher” than those in the hot weather months, he said. Kloner blames the stress of holidays for causing the increase in heart attacks.

But Michael K. Gruska, MD, a postgraduate student at Hanuschkrankenhaus in Vienna, Austria, had no easy explanation for his finding that heart attacks in his country occur most frequently on Mondays. One might think that going back to work caused the attack, he said. However, he said the risk of a heart attack was the same even in retirees. Whereas the stress of going back to work might trigger heart attacks in workers, Gruska theorized that retirees might suffer heart attacks because of their return to normal social activities after 2 days of leisure.

Ruth SoRelle  
Circulation Newswriter
How to Make A Failing Heart Pump Better: The Batista Procedure and Its Competitors
Ruth SoRelle

doi: 10.1161/01.CIR.99.7.845
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 1999 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/99/7/845

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Circulation can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Circulation is online at:
http://circ.ahajournals.org/subscriptions/