Left Ventricular Volume Reduced With Suturing

BY MITCHEL L. ZOLER
Philadelphia Bureau

MUNICH — A novel surgical method reduces the left ventricular volume of patients with cardiomyopathy without using ventriculectomy.

The surgery realigns the papillary muscles of the left ventricle and reduces left ventricular volume by placing three sutures through the trabeculae around the bases of the anterior and posterior muscles, Diane Barker, M.B., said at the annual congress of the European Society of Cardiology.

The procedure, which involves graded placation of the papillary muscles through a small, apical incision, usually takes about 15-20 minutes, said Dr. Barker, a cardiologist at Leeds (England) General Infirmary. The suturing also reduces functional mitral regurgitation. It is generally combined with coronary bypass grafting.

This approach was developed when surgeons in Leeds became dissatisfied with the morbidity and mortality associated with the Batista procedure, which involves resection of myocardium from the left ventricular free wall.

Unnikrishnan R. Nair, M.B., who developed the new technique, has used it to treat 30 patients in Leeds since 1998. Follow-up for the patients has ranged from 12 to 58 months, with a mean of 28 months. One patient died within 30 days of the procedure from sepsis. One other patient developed atrial fibrillation following surgery.

All of the other patients had improvements in their left ventricular function and in their clinical status, and none developed ventricular arrhythmias, Dr. Barker reported. Three additional patients died 4-24 months following surgery, but none of these deaths appeared related to surgery. The average age of the patients was 61 years, and three-quarters were men. All of the patients had ischemic cardiomyopathy.

The mean left ventricular volume of patients before the surgery was 271 mL; after surgery, the average volume was 230 mL. Before surgery, the patients had heart failure with an average New York Heart Association functional classification of 2.8; after surgery, the average functional class was 1.4.

To better assess the impact of this surgery, Dr. Barker and Dr. Nair compared the outcomes of 8 patients who underwent suturing of their papillary muscles plus bypass surgery with 32 similar patients who were treated with bypass surgery only. (See box.)

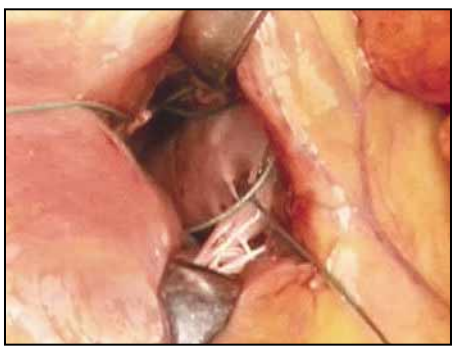
Improvement in Cardiac Function After Bypass Grafting, With or Without Suturing of Left Ventricular Papillary Muscles

Measure	Average increase after bypass grafting plus suturing (n = 8)	Average increase after bypass grafting only (n = 32)
Cardiac reserve	168%	14%
Peak cardiac power output	83%	11%
Peak cardiac output	35%	6%
Exercise duration	33%	18%
Peak VO_2	21%	9%

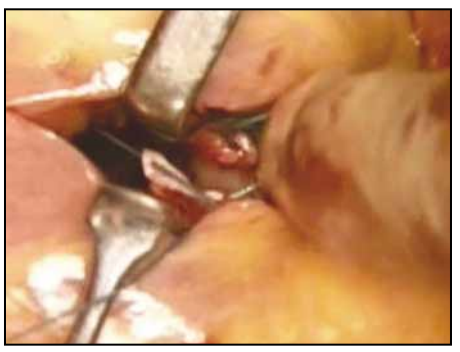
Source: Dr. Barker

Exercise duration improved by a mean of 33% from baseline among patients who underwent papillary muscle suturing, compared with a mean improvement of 18% among patients who had bypass surgery only. Peak oxygen capacity rose by a mean of 21% among patients treated with papillary muscle suturing, compared with an average rise of 9% among patients who had bypass surgery only. And cardiac reserve rose by a mean of 168% among patients treated with papillary muscle suturing, compared with a mean increase of 14% in the control patients.

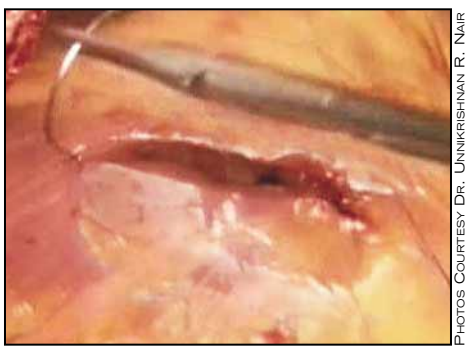
The next step in development of the surgery is to test its safety and efficacy in a randomized, controlled study, Dr. Barker said. ■



Three sutures are placed through the trabeculae during the novel procedure.



The sutures are being tied to realign the papillary muscles of the left ventricle.



The small, apical incision is being closed after the 20-minute procedure.

PHOTOS COURTESY DR. UNNIKRISHNAN R. NAIR

Standard Digoxin Nomogram Can Lead to Deadly Overdoses in HF

BY MITCHEL L. ZOLER
Philadelphia Bureau

MUNICH — Patients with heart failure who are treated with digoxin administered according to the standard nomogram risk getting an overdose that might kill them.

"We recommend treating patients who get digoxin with half the dose from the nomogram," said Kirkwood F. Adams, Jr., M.D., at the annual congress of the European Society of Cardiology.

Half the standard dosage gives most patients a serum level of 0.5-0.9 ng/mL. A post hoc analysis of data collected in the landmark Digitalis Investigation Group (DIG) trial showed that patients with a serum level in this range had a 15%-20% reduced risk of death during follow-up, compared with patients who did not receive digoxin, reported Dr. Adams, a cardiologist at the University of North Carolina in Chapel Hill.

In contrast, patients who had serum levels of 1.2-1.5 ng/mL had a death rate that was 33% higher than that of matched placebo patients.

This risk is believed to be due to the neurohormonal effects of a relatively high serum level of the drug. At lower serum levels, digoxin probably has a small inotropic effect that is safe and beneficial, Dr. Adams told this newspaper.

In the DIG trial, conducted from 1991 to 1995, the 6,800 patients with stable heart failure were randomized to treatment with digoxin or placebo on top of what was standard heart failure treatment at that time.

The primary finding of the study was that digoxin treatment had no effect on mortality compared with placebo, but it did reduce the hospitalization rate (N. Engl. J. Med. 1997;336:525-33).

The post hoc analysis by Dr. Adams and his associates focused on the 1,843 patients in the digoxin arm of the study who had their serum level of the drug checked after they had been on treatment for 4 weeks, an indicator of their steady-state level of the drug. Of the patients who had this test done and entered into their records, 1,458 had a detectable level of drug.

The relationship between serum levels of digoxin after 4 weeks of treatment and mortality was similar in men and women.

The standard nomogram for calculating a digoxin dosage dates to 1974 and takes into account a patient's body mass index and renal function.

But there can be substantial variability in the actual serum level that individual patients maintain from a particular dosage. With the nomogram, most patients receive a dosage of 0.25 mg/day. A better dosage based on these findings would be 0.125 mg/day, Dr. Adams said.

All patients with heart failure who receive digoxin should have their serum level checked after 4 weeks and then have their dosage modified if the level is outside of the 0.5-0.9 ng/mL range, he added. ■

TZD Use in Heart Failure: Not That Bad After All?

TORONTO — A retrospective analysis has shown no adverse effects of thiazolidinediones on diabetic heart failure patients.

Thiazolidinedione (TZD) use was associated with reductions in all-cause hospitalizations, heart failure hospitalizations, and total hospital days. The reduction in hospital days also was noted with TZD plus insulin.

The findings challenge recommendations against using TZDs in heart failure based on concerns about fluid retention, particularly when used in combination with insulin. No trials have assessed the impact of TZD therapy on heart failure.

"Perhaps the nonhypoglycemic cardiovascular effects of TZDs may have favorable clinical impact in heart failure patients," John S. Golden, M.D., said during a poster presentation at the annual meeting of the Heart Failure Society of America.

"I can't tell you on the basis of this study that it is something we ought to be doing as a therapeutic intervention at this point," said Dr. Golden of Mid-Atlantic Permanente Medical Group, Fairfax, Va. But the study "lends some clinical support to the biochemical mechanisms supporting not only the safety, but efficacy, of TZDs in this population."

Consecutively, 97 diabetic patients were referred with left ventricular ejection fractions of 35% or less and New York Heart Association (NYHA) class II-IV. A total of 37% were treated with a TZD and 15% with a TZD plus insulin. All received ACE inhibitors or angiotensin receptor blockers; 97% got β-blockers.

At 1 year, improvements in ejection fractions did not differ significantly between patients treated with TZDs and those who were not. TZD therapy led to reduced all-cause hospitalizations per patient (0.19 vs. 0.71), heart failure hospitalizations per patient (0.03 vs. 0.16), and total hospital days (0.67 vs. 2.72).

Patients on TZD plus insulin had a reduction in total hospital days per patient (0.07 vs. 2.30), compared with those not on the combination therapy.

—Patrice Wendling