Medical vs. surgical treatment of ischemic heart disease is a current clinical controversy. In most forums, surgeons have debated internists; however, the editorialists which follow have a different orientation. Although neither Dr. Russek nor Dr. Proudfit is a surgeon, their therapeutic postures are often in opposition. The editors are pleased to offer our readers the views of authoritative advocates of differing viewpoints.

EDITOR

Medical vs Surgical Therapy for Angina Pectoris

Surgical treatment for angina pectoris has gained wide popularity since proof of its efficacy has been established by clinical, anatomic and biochemical means. Although more than 2000 revascularization operations are already being performed yearly in the United States, this number has been assessed as a mere fraction of the total considered necessary to insure adequate care for the countless sufferers from coronary arterial disease.2

While similar enthusiasm for surgical revascularization prevails in many quarters, supportive evidence to justify its current widespread application rests on tenuous grounds. The immediate mortality from operative intervention varies from 5.0 to 24.4 percent depending on the complexity of the surgical procedure applied and the composite clinical and laboratory profile of the patients selected. In one study,8 for example, when one major coronary branch was significantly involved (ie occluded more than 70 percent of its diameter) the immediate fatality rate with a single artery implant was only 4.3 percent; when two major branches were involved in this manner and a double implant performed the mortality incidence rose to 12.1 percent. On the other hand, when triple coronary artery disease was present, the mortality risk soared to 53.3 percent. But, even within these well-defined categories, elevation of the left ventricular end-diastolic pressure, associated with fibrosis, hypertrophy or dilatation of the myocardium also appeared to contribute greatly to operative risk. It should thus be apparent that the hazard from surgery is prohibitive in those patients most in need of a more adequate myocardial perfusion. Certainly, more careful selection of patients in the light of past experience will appreciably reduce the mortality risk from these procedures. Nonetheless, it is sobering to note that of 506 patients "revascularized" at four outstanding clinics in the United States, more than 100 were dead less than one year following surgery!9 What results may be anticipated when "every medical community" is participating in this major effort?

The justification for any procedure in clinical medicine must be based on a clear demonstration of its capacity to improve the natural course of the disease for which it is employed, whether through the alleviation of symptoms, the prolongation of life or both. But proof of such benefit is not enough unless it can also be shown that the overall dividend clearly outweighs its cost. The achievement of success, however brilliant, if limited to a fortunate few, must be viewed in terms of its price-tag in morbidity and mortality for the many. Certainly reaping a windfall at the horse races occasionally has never established the practice of wagering as profitable. Although Diethrich and associates4 found that 27.6 percent of their surgically treated patients had died as compared with 36.6 percent of a medically treated group observed for similar periods of time, the fact that their control series consisted of subjects in whom disease was too far advanced for available operative techniques or in whom there was excessive age, marked left ventricular failure, or unwillingness to undergo surgery clearly precludes any valid basis for comparison. Moreover, even if it were to be assumed that
surgical revascularization of the myocardium is superior to conventional medical management in selected patients, recent dramatic advances in the medicinal therapy of angina pectoris require careful reassessment of the indications for surgical intervention. Striking response has been reported in angina patients resulting from a remarkable therapeutic synergism between propranolol, a beta adrenergic blocking agent and certain preparations of the nitrate series. Of a group of 130 patients receiving combined therapy consisting of propranolol (20 to 100 mg orally) before meals and isosorbide dinitrate (5 mg sublingually) after meals, 60 have been followed for a period of one year or more. Although the majority of these patients were considered to have a poor prognosis by all criteria, only 5.0 percent have died and 8.3 percent have suffered non-fatal myocardial infarction during the period of follow-up. This experience compares most favorably with our surgical group in which the mortality rate was 31.4 percent during a similar period of observation. In addition, of the 60 patients treated by this new medicinal approach, 53 (88.3 percent) experienced remarkable relief of symptoms throughout the period of study. Of even greater significance is the fact that subjective benefit correlated closely with the demonstrated capacity for increased exertion without pain and with improvement in electrocardiographic patterns. In sharp contrast it is well known that a wide disparity exists between subjective improvement and exercise performance in patients who have undergone surgery.

Most follow-up studies after revascularization operations indicate subjective clinical improvement in 60 to 80 percent of survivors. Nevertheless Kemp and Ellestad found that only 40 percent of patients could walk further on the treadmill after Vineberg surgery. More recently, Griswald and Kassebaum reported the reversal of positive exercise-electrocardiographic tests postoperatively in only two of 41 patients (4.9 percent). In contrast, we have observed the normalization of such patterns in 50 percent of patients receiving propranolol-isosorbide dinitrate therapy. Although it has been reported that approximately 80 percent of implanted internal mammary arteries show communication with the coronary system, not even one-third of operated patients have revealed both implants to be participating in such anastomoses. On the contrary, in a recent study, good collaterals were observed in only two of 30 patients studied by means of postoperative arteriograms.

Some have claimed that the rate of recurrent infarction may be significantly reduced among survivors of revascularization procedures. Since the most vulnerable subjects either die or sustain infarction during their hospital confinement, the subsequent morbidity and mortality should be expected to be lower in surviving patients than in those treated medically. Obviously, when the tree is shaken, the loose apples must fall leaving those more secure behind. By the very act of surviving the formidable trauma entailed in surgery, postoperative patients demonstrate the tenacity with which they cling to life. Indeed, they expose our misconceptions of prognosis even in patients with “intractable” angina pectoris and severe coronary arterial disease.

It should not be overlooked that while propranolol-nitrate therapy is attended by relatively minor side-effects, the complications associated with surgery cannot be so readily dismissed. In a series of 150 patients, for example, there were 22 instances of postoperative auricular fibrillation, 14 of non-fatal myocardial infarction, four of severe bleeding, four of thrombophlebitis, five of separation of the abdominal portion of the wound and three of acute heart failure. Other complications reported by various authors consist of wound infections, coronary fistulae, diaphragmatic herniae, sternal separations, serum hepatitis and a variety of less common disorders. The “cost” of surgery therefore must not be underestimated.

Beta receptor blockade in combination with nitrate therapy has proved invaluable for the treatment of “revascularized” patients with residual symptoms of angina pectoris. In many instances, “partial benefit” has been converted to complete success while “failure” has been replaced by varying degrees of improvement. It seems important therefore that the benefits of surgical therapy should not be unwittingly exaggerated as a consequence of the simultaneous application of new advances in medical management to the postoperative patient.

While the value of operative intervention in specific instances is undeniable, there is no acceptable proof that such surgical techniques are attended by overall benefits compared with conventional therapy in angina pectoris. The aim of surgical revascularization procedures is to prevent disabling angina, myocardial infarction, muscle damage, and death. Yet, it can be seen that even under the most favorable circumstances, the double arterial implant is almost immediately responsible for infarction, serious complication or death in at least one out of every five patients. Moreover, objective clinical benefit can be demonstrated in less than 50 percent of survivors and is noteworthy in only 20 percent.
stantly stand the test of critical comparison with new advances in medicinal therapy. At present, the administration of propranolol in combination with isosorbide dinitrate appears to be attended by a much lower mortality, significantly higher incidence of benefit, and greater freedom from complications than is observed following surgical revascularization. Further comparative studies will determine whether or not such advantages are maintained with the passage of years. For the present, in view of these considerations, the selection of patients for operative intervention should be attended by far greater circumspection than has prevailed in the past.

Henry I. Russek, M.D., F.C.C.P.*

*Senior Attending Cardiologist, St. Barnabas Hospital, New York, New York. Reprint requests: Dr. Russek, 176 Hart Blvd., Staten Island, New York.

REFERENCES

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Therapeutic Procedures for Angina Pectoris

The value of any therapeutic procedure must be determined by comparison of the risk and the objectives attained. The objectives in coronary arterial disease are relief of symptoms and prevention of myocardial infarction, congestive heart failure and death. Complete evaluation of the long term effect of any medical treatment of coronary disease has not been done, but it is common knowledge that some patients have pain which is difficult to control by medical measures and that complications and death do occur. There is some risk associated with the use of certain drugs.

Obviously if the mortality of operations for coronary artery disease is high, the therapeutic objectives are thwarted. The optimal mortality must be the lowest reported mortality in any large series. Otherwise, the risk is influenced by selection of patients, technical limitations and experience of the surgeon and the quality of postoperative care. The operative mortality in our institution is 4.5 percent for single implants and 6.2 percent for the double implant procedure. Most of the patients having double implants have “triple vessel disease.” Mortality for saphenous vein grafts of the right coronary artery is 4.5 percent in the entire series of 121 patients.

If the cardiologist, surgeon and patient are willing to accept mortality figures similar to those stated, decision relative to operation must be based upon the objectives likely to be attained. It will take years to evaluate the experience relative to prophylaxis of myocardial infarction, congestive heart failure and death. No decision regarding symptomatic benefit should be made in the early postoperative period. The psychotherapeutic effect of surgical treatment dissipates in time. Symptomatic response should be estimated prior to the performance of objective studies done postoperatively. If the correlation between these two is poor, surgical treatment has no place in the management of coronary disease. Some of our results are summarized elsewhere in this issue and the difficulty in selection of a controlled series is emphasized. With suitable candidates for operation, symptomatic results should be good.

Current medical therapy has not been shown specifically to result in increased blood flow to the myocardium. Adequate revascularization operations do increase coronary blood flow. Whether either form of treatment prevents serious or fatal complications is not known, but surgical therapy seems more likely to do so. Until the factors responsible for the initiation and progression of the disease are better understood, there will be no ideal treatment. The present question is not whether any patient should have operative treatment, but which patients are more safely treated in that manner and which are more suitable for drug therapy.

William L. Proudfoot, M.D.*

*From the Department of Clinical Cardiology, The Cleveland Clinic Foundation, Cleveland. Reprint requests: Dr. Proudfoot, Cleveland Clinic Foundation, Cleveland 44106.