CORRESPONDENCE

Cardiology's 10 Greatest Discoveries

To the Editor:

The recent article by Mehta and Khan in the *Texas Heart Institute Journal* (29:3), "Cardiology's 10 Greatest Discoveries of the 20th Century," was of general interest but particularly valuable because many young physicians are rather ignorant of medical history—or worse, not interested.

Although a list of the 10 greatest "hits" is a product of personal opinion, I would like to quibble over the inclusion of the automatic implantable defibrillator (#9 on the list). The AICD can certainly be considered an advance, but because it is relatively new and its clinical uses remain very much in evolution, I think that its inclusion in the list is premature. The implantable pacemaker, on the other hand, warrants inclusion: have we forgotten that the pacemaker has shown powerful clinical benefits since about 1960 and really was a breakthrough in the management of very lethal conditions? Indeed one might consider the AICD an outgrowth of the pacemaker.

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To the Editor:

In their historical review paper "Cardiology's 10 Greatest Discoveries of the 20th Century," Mehta and Khan state, "Vasilii Kolesov, a Russian cardiac surgeon, performed the 1st internal mammary artery–coronary artery anastomosis" in 1964.[1]

The 1st successful coronary artery bypass operation (anastomosis) was performed on 2 May 1960 by Robert H. Goetz at the Albert Einstein College of Medicine-Bronx Municipal Hospital Center.[2]

This case was mentioned in an addendum to a report of coronary artery anastomoses in dogs,[2] and has been cited by others, including Kolesov,[3] as the 1st successful human coronary artery bypass.[4-10] However, Goetz's case has also frequently been overlooked. Confusion has persisted for over 40 years and seems to be due to the absence of a full report and to misunderstanding about the type of anastomosis that was created. The anastomosis was intima-to-intima, with the vessels held together with circumferential ligatures over a specially designed metal ring.

Kolesov did the 1st successful coronary bypass using a standard suture technique in 1964, and over the next 5 years he performed 33 sutured and mechanically stapled anastomoses in St. Petersburg, Russia.[11]

At the time that Goetz planned this operation, the understanding of coronary artery insufficiency was considerably different from today's understanding. Despite many innovative efforts, surgical results were generally considered unsuccessful, and the very concept of surgical revascularization was in doubt. Selective coronary angiography and extracorporeal bypass were still under development. Due to these limitations, coronary revascularization was attempted using techniques that could be done quickly and without heart-lung bypass.

Goetz reasoned that a coronary artery bypass operation could be performed safely if the patient had a complete obstruction and a patent distal vessel. The concept of reduced flow with viable but ischemic muscle beyond was just becoming understood. The suggestion that a bypass operation could help selected patients precipitated an immediate and spirited controversy within the institution, with most members of the medical department vehemently opposed.

The procedure was done without extracorporeal support. Dr. Goetz completed the anastomosis in 17 seconds (Drs. Rohman, Haller, and Dee assisting); the postoperative course was uneventful. An angiogram on the 14th day showed the anastomosis to be patent. The patient resumed work as a taxi driver and was free from angina for approximately 1 year. He died of an acute posterior myocardial infarction on 23 June 1961, more than 13 months after surgery (not 8, as stated elsewhere).

Contrary to other reports, a limited autopsy was performed. The heart, with the anastomosis, was provided to Dr. Goetz. One of us (JDH) assisted him in performing angiograms of this specimen. The anastomosis was well healed and patent. There was an obstruction at the origin of the internal mammary from the subclavian; several large intercostal branches filled the distal internal mammary, kept the anastomosis patent, and provided blood to the heart. Despite the patent anastomosis and improvement of symptoms, we can attest to statements in Dr. Goetz's letter to Konstantinov[9,10] that resentment persisted not only in the cardiology department, but in the surgery department.

Shortly afterwards, all records—the hospital chart, angiograms, specimens, and photographs—disappeared and were never found. Dr. Goetz decided

that since documentation was no longer possible, it was just as well to omit the autopsy finding.*

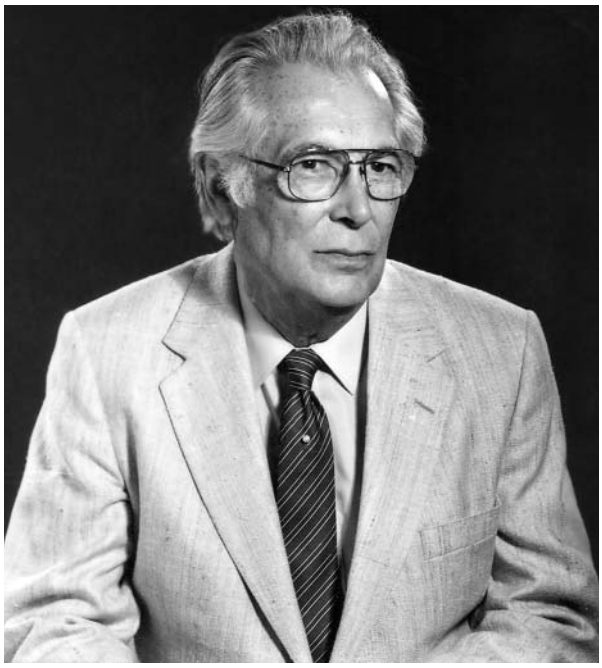
At a subsequent (circa 1968) meeting of the American Association for Thoracic Surgery, permission to present this case—within the context of a discussion of reports by others on coronary angiography and bypass surgery—was denied, with commentary by the society's president and secretary that the subject of coronary artery surgery was unimportant and would soon be forgotten. In 1967, similar statements from Russian cardiologic and surgical societies had appeared alongside Kolesov's report.[9,10]

Dr. Goetz was a kind and considerate man, very much concerned with the welfare of his family, his patients, and his students. His manner, however, remained very formal, official, and direct. He did not take time for foolishness or incompetence. His German accent seemed to become more pronounced through the years, although he spoke only English after he and his wife left Europe. He had a very wry and active sense of humor that was usually accompanied by an infectious gleam in his eye. He always saw the lighter side of otherwise depressing situations. Perhaps this aspect of his personality helped to provide him the strength to carry on.

In addition to his many accomplishments cited by others,[4,5,9,10] Goetz was one of the 1st big-game hunters to use a muscle relaxant to capture wild animals alive (giraffes) for study.** This method soon became the standard. He invented one of the most popular parlor games of the time, played with dice on a board. After the end of World War II, he was reconciled with a brother who had been conscripted into the German army. In Cape Town, Goetz was a Fellow in the Royal College of Physicians (FRCP). In the United States, he became a Fellow in the American College of Surgery (FACS). The Einstein faculty and staff later showed Goetz their appreciation and respect by electing him president of the faculty. In 1982, at age 72, he retired from surgery and bred prize-winning bulls as a hobby.

Konstantinov's paper on Goetz[9] was reprinted in the *Einstein Quarterly Journal* in 2001,[10] with the following editorial comments by Lloyd Fricker: "The coronary artery bypass operation is one of the most important surgical advances of the last 50 years. The history of this procedure is a fascinating reflection on the strengths and weaknesses of medical research. . . . The project was dropped because of the strong negative sentiment from Dr. Goetz's colleagues. . . . This lack of vision is still very much alive. . . ."[12]

Robert Goetz died on 15 December 2000 at age 90, in Scarsdale, New York.



Dr. Robert H. Goetz

(Photograph courtesy of Sylvia Perle-Goetz and Angela Goetz. From: Konstantinov IE. Robert H. Goetz: the surgeon who performed the first successful clinical coronary artery bypass operation. Ann Thorac Surg 2000;69:1966-72.[9] Reprinted by permission of Elsevier Science Ltd.)

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*Goetz RH to Konstantinov IE (1999–2000), Haller JD (1984–1994), Olearchyk AS (1985–1988). Multiple personal communications.

**His interest in giraffes concerned their regulation of blood pressure—specifically their ability to lift their heads from the ground to full height without fainting.

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To the Editor:

I read with great interest a recently published review by Drs. Mehta and Khan.[1]

The article is well written and informative. The authors mention that Dr. Vasilii Kolesov, a Russian surgeon, performed the 1st coronary artery bypass grafting (CABG) in 1964. This is, certainly, a fair statement. It was indeed Dr. Kolesov who 1st used the suture technique to perform CABG. Moreover, from 25 February 1964 to 9 May 1967, the division of surgery headed by Dr. Kolesov was the only place in the world where CABG was performed. Nevertheless, it should be added that the world's 1st successful coronary artery bypass operation was performed in the United States, by Dr. Robert Hans Goetz.[2] This fact is commonly overlooked.[2,3,4]

Dr. Goetz was born in Frankfurt-on-Main and studied medicine there. Although he was not Jewish, his anti-Nazi views obliged him to leave his native Germany for Switzerland in 1936.[5] The following year, he moved to South Africa and accepted a research position at the University of Cape Town, where he organized the surgical research laboratory at Groote Schuur Hospital. One of his students there was Christiaan Barnard.[5]

In 1957, Dr. Goetz joined the staff of Albert Einstein College of Medicine in New York City as head of cardiovascular surgery and of the research laboratories, and was affiliated with Bronx Lebanon Medical Center and Beth-El Hospital in Brooklyn. He retired from practice in 1982, as a clinical professor emeritus. In retirement, he spent much time at his Rosebank Farm in Germantown, N.Y., where he bred prize-winning Angus bulls.[5]

In the summer of 2000, Dr. Goetz began to experience frequent episodes of abdominal pain. A computed tomographic (CT) scan did not reveal any abnormality. Yet the pain continued. As an experienced clinician, Dr. Goetz suspected pancreatic cancer and underwent a second, higher-resolution CT scan that focused on the pancreatic area, which revealed a 1-cm mass compressing the pancreatic duct. On 5 September 2000, Dr. Goetz underwent the Whipple procedure at Memorial Sloan Kettering Hospital. The operation went well. I talked to Dr. Goetz on 1 October, before his discharge from the hospital. He was in high spirits and his optimism was admirable, which made him more of a hero in my eyes than ever before. Dr. Robert H. Goetz died on 15 December 2000 at his home in Scarsdale, N.Y. The memorial service was held on 21 December, in the Community Unitarian Church, White Plains, N.Y.

Dr. Goetz was a remarkable academic surgeon with profound knowledge in various branches of medicine. He was blessed with a large family and a long life in which to live out many of his dreams.

Dr. Goetz was survived by his wife of 67 years, Dr. Verena Bluntschli Goetz; 2 daughters, Sylvia Perle-Goetz of Detroit and Angela Goetz of Manhattan; 2 sons, Lionel Goetz of Fairfield, Conn., and Stephen Goetz of Los Altos, Calif.; 8 grandchildren; and a great-grandson.[5]

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