

Andreas Gruentzig — the life and death of a pioneer

The history of cardiology is rich with pioneers whose contributions paved the way to the advancement of invasive cardiology, but not all of them have been recognized and appreciated for their innovations and accomplishments. The late Andreas Gruentzig was a pioneer, who was acclaimed even in his lifetime, as were Forssmann, Cournand and Richards, who were even crowned by the Nobel Prize Committee. There were many other pioneers whose contributions are less recognized in history, like Otto Klein of Prague, while other outstanding clinicians whose contributions were widely known even during their life time, but in retrospect it seems that unfortunately did not receive enough official recognition as in the case of Charles T. Dotter and Mason Sones. The ground breaking contribution of Andreas Gruentzig: his life; his work; and his tragic death, are the subject of this article.

Andreas Roland Gruentzig was born in Dresden, Germany in 1939 and following WWII he was taken as a child by an uncle to Argentina, later returning to Leipzig, Germany. In 1957 he crossed through Berlin to Heidelberg in the West and in 1964 he graduated medical school. Becoming a fellow of the University Hospital in Zurich in 1969 Andreas took up angiology, which at that time was a sub-speciality of internal medicine. From the Angiology Department, headed by Dr. Bollinger, he continued to Radiology, headed by Dr. Wellauer. Working in this department, Andreas happened to visit Dr. Eberhard Zeitler [1] and observed a procedure of peripheral artery “angioplasty” using the “Dotter Method” [2]. Even though this particular procedure was unsuccessful, he felt confident enough to start performing intravascular angioplasties on selected patients. In 1974 Gruentzig’s commenced his formal training in cardiology in the Department of Cardiology headed by Hans Peter Krayenbuhl and Wilhelm Rutishauser.



The innovation of placing a latex balloon in an angiographic catheter belongs to Dr. Portman, and this triggered Dr. Gruentzig to use this method to dilate a constricted coronary artery. It took Andreas two years to solve “minor” technical problems from conceiving his idea till its true application. It is now legendary that Gruentzig worked, together with his wife Michaela, his assistant Maria Schlumpf and her husband Walter, in the family kitchen in the evenings trying many versions of the balloon catheter. The preparations included, among other things, cooperation with factories, chemists and many other technical experts. After hundreds of experiments, Gruentzig was satisfied with the technical details of the catheter and having also solved the problem of the “double lumen catheter”, he felt that the time was ripe for its use in humans as well.

January 23, 1975 was the date of the first successful use of a double lumen catheter in a patient’s iliac artery. Then back in the “kitchen”, it took another 6 months till Gruentzig was satisfied that his catheter was small and safe enough to be induced into the coronary arteries of dogs. In November, 1976 at the Scientific Sessions of the American Heart Association, Dr. Gruentzig presented his animal experiments in a poster session [3]. Here started the friendship and the scientific collaboration between Andreas and Dr. Richard Myler of San Francisco which resulted in several intra-operative balloon dilatations of coronary arteries during May, 1977 at St. Mary’s Hospital, San Francisco.

Gruentzig’s aim of course was to dilate an obstructed coronary artery on the catheterization table in a patient while he/she is awake. The search for a suitable patient, who was defined as one with a single vessel disease and good left ventricular function went on for several months, both in San Francisco and Zurich. Finally, and surprisingly, the patient who voluntarily agreed to this trial method

was found in Zurich. Gruentzig back in Switzerland, met the patient, a 38 year old insurance salesman, who suffered from severe angina, had a positive exercise test and in whom a severe proximal left anterior descending stenosis with good left ventricular function was found. A relatively short conversation between the patient and Dr. Gruentzig seemed to satisfy the ethical aspect of his consent, let us remember this was the year of 1977. Dr. Bernhard Meier, himself a resident physician at that time, witnessed the act of obtaining the “informed consent” from the patient for the first ever coronary dilatation procedure. Later, Dr. Meier called the patient’s eager consent to Dr. Gruentzig’s proposal “a lucky thing for the future of angioplasty” [4].

Dr. Gruentzig performed on this patient the first PTCA in a cath lab in Zurich Switzerland on September 16, 1977. As this patient became angina free immediately after the procedure and remained so for several weeks (and as a matter of fact, even 10 years later, when he was recatheterized at Emory Hospital in Atlanta, the artery dilated 10 years earlier, was found to be open, without restenosis) Dr. Gruentzig felt it proper to publish this case, with the other 4 “first” ones in *Lancet* [5]. His first cases were also presented in Miami Beach at the American Heart Association’s Scientific Sessions [6]. The writer of this article, who was at this meeting presenting his own paper, remembers how Dr. Gruentzig’s lecture was immediately accepted by the enthusiastically applauding audience as a breakthrough communication.

Looking back 40 years later, it is amazing to see the immediate huge interest in this procedure in the U.S. and the lack of enthusiasm on this side of the Atlantic Ocean. A certain “conservatism” which prevailed in European Medicine after WWII, a reluctance to accept the performance of a thoroughly invasive technique by a non-surgeon and maybe a lack of self-confidence by European cardiologists to perform a procedure which requires cardiac surgeons to stand-by, could all have played a part in the slow progress in performing PTCA’s in Europe. In the U.S., early co-workers and friends of Andreas Gruentzig such as Richard Myler, Simon Stertzer were excited about the success of the cases performed in Zurich and in March, 1978 they performed nearly simultaneously in San Francisco and New York the first American cath lab PTCA’s.

In the U.S. balloon dilatations for coronary artery disease spread like bush fire. Between 1978–1980 PTCA’s were performed in tens of Hospitals on hundreds of patients — and mostly successfully. Meanwhile Gruentzig made all the efforts to keep Zurich as the world center of PTCA’s, by organi-

zing there courses to teach his methods, but he was frustrated by the limitations his superiors placed on him in further developing “coronary angioplasty”, and by the relatively slow spread of PTCA’s in Europe. It is therefore easy to understand that he couldn’t resist an invitation from Atlanta’s Emory Hospital to resettle there, as Director of Interventional Cardiology and full professor. Dr. King described [7] Andreas’s hesitations before he decided to make this leap, yet he became convinced that working in America will promote his method and will influence centers all over the world to adopt PTCA, which, he knew was his life’s true achievement.

Andreas Gruentzig’s career in the US was extremely successful. Emory became a leading center of PTCA’s in America, and at the same time several important advancement’s using the balloon procedure, were made in other centers in the U.S. and Europe as well. Shortly angioplasty has been used in patients with acute myocardial infarction as pioneered by Meier et al. [8], and multi-vessel disease also became soon amenable with angioplasty, as shown by Hartzler et al. [9], all these parallel with technical improvements in the catheters and balloons used. At Emory, between 1980–1985 the team, headed by Drs. Gruentzig, King and Douglas, performed over 5,000 PTCA’s and spread the knowledge by organizing 10 angioplasty courses for American and overseas cardiologists.

A terrible tragedy and loss is the only way to describe the fate of Andreas Gruentzig. On October 27, 1985, at a time which could be seen as a zenith in his career, he was piloting his twin-engine plane between his two homes in Atlanta and Sea Island when over Monroe County, in an unexpected storm, the plane crashed. Andreas and his second wife Margareth Ann, were instantly killed. Andreas is survived by his only daughter.

Even so, Andreas Gruentzig could see that even during his cut-short life, his dream came true. He must have been aware of the great appreciation and admiration of his colleagues the cardiologists, of the whole medical establishment, and last but not least, of grateful patients who owed their improved quality of life and frequently even their life, to his unique pioneering achievements. After his death, Emory’s Cardiovascular Center and several other interventional laboratories in the world carry Gruentzig’s name, the International Andreas Gruentzig Society, launched in 1990, carries the torch for cardiac and vascular interventions, Fellowships on his name and many endeavors serve the noble aim of preserving Andreas Gruentzig’s memory and heritage.

Be this article a small token for his enormous achievements.

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