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Coronary Balloon Angioplasty is due to two physicians born in Saxony, Germany

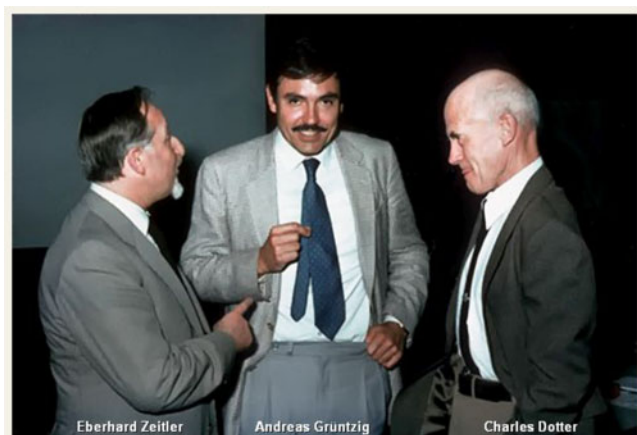
The History of the first Coronary Intervention by Andreas Grüntzig and Werner Porstmann in the same week of September 1977

Dedicated to the 80th anniversary of Andreas Grüntzig's birthday.

Coronary angiography was introduced by F. Mason Sones (1918–85). On 30 October 1958 at the Cleveland Clinic, Sones attempted to perform imaging of the aorta in a young man but in error injected contrast dye into the right coronary artery.¹ From this accidental procedure, Sones developed coronary angiography. In 1967, this technique provided the basis for Sones's friend and colleague René Favaloro (1923–2000) to perform coronary artery bypass surgery.



The principle of endovascular treatment of peripheral artery stenosis was present since Charles Th. Dotter (1920–85), together with his trainee Melvin P. Judkins (1922–85), performed the first dilatation of a femoral artery occlusion in Portland on 16 January 1964. This set the stage for transforming this experience to coronary arteries.



Two physicians, born in Saxony, Germany, Andreas Grüntzig (1939–85) and Werner Porstmann (1921–82) learnt the technique from Dotter, probably during a lecture in Frankfurt. However, it was clear that the classic method of dilatation by Dotter of stepwise introducing catheters with increasing diameters could not be used in coronary arteries. Therefore, they both pursued the idea of developing balloon catheters for dilatation of coronary artery stenoses since the end of the 1960s.

Andreas Roland Grüntzig (1939–85)

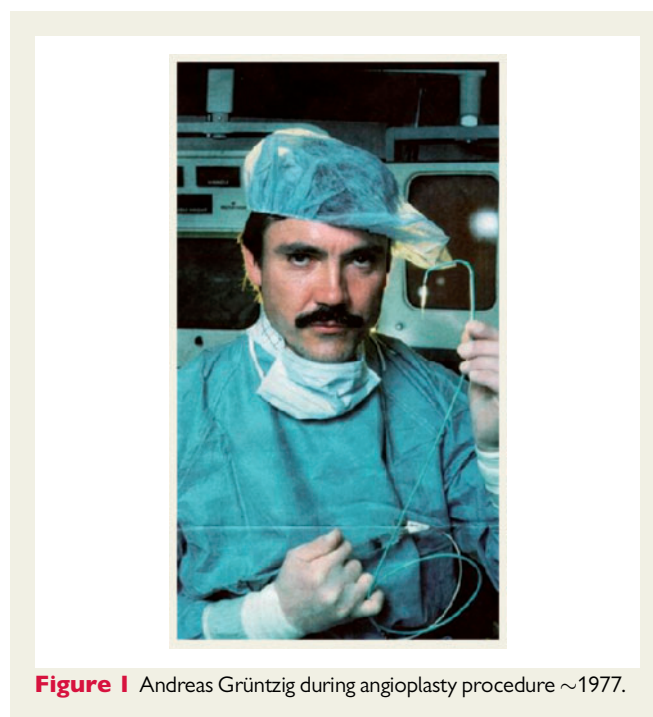


Figure 1 Andreas Grüntzig during angioplasty procedure ~1977.

Andreas was born in Dresden, the capital of Saxony and after high school in Leipzig and studies in Heidelberg, he moved to Zürich, Switzerland, because of bureaucratic resistance in Germany to his ideas on angioplasty techniques (*Figure 1*). His first balloons had a short fixed wire at the tip. He tested the balloons first in animals, then in peripheral stenoses in man. On 16 September 1977, Grüntzig performed a successful coronary angioplasty treatment on an awake person with a high-grade stenosis of the left anterior descending artery using a short 3-mm balloon in Zürich.² He presented the results of his first four angioplasty cases at the 1977 American Heart Association meeting.³ Later, Grüntzig moved to Emory University in Atlanta/USA. Grüntzig had a cardiac catheterization performed on himself in 1985. He dressed himself after the procedure and headed back to his office while compressing the puncture site with his hand in his pocket. He felt that if 'knowing the coronary anatomy via angiography was good for his patients, it would be good for himself.'⁴ He was under consideration for a Nobel Prize since 1978 together with Sones and Judkins, but Grüntzig died in an aircraft crash on 27 October 1985. Both co-candidates, Sones and Judkins, died in the same year.

Werner Porstmann (1921–82)



Figure 2 Werner Porstmann during angioplasty procedure ~1980.

Werner was born in Geyersdorf in the Ore mountains in southern Saxony, Germany (Figure 2). After studies in Leipzig, he performed invasive diagnostics at the Charité Hospital in Berlin as a radiologist. After a series of experiments with different materials for balloons, which were unstable in shape and diameter and often ruptured under higher pressure, he intended to start with a ‘corset’ catheter: a Fogarty balloon in a cage of lengthwise cut, but stiffer catheter material in 1967.⁵ This ‘corset catheter’ was more stable in diameter and was able to dilate peripheral stenoses safely.^{6,7} It allowed smaller diameters for the use in the coronary arteries. Porstmann and his colleagues Lech Wierny (1928–2010) and Paul Romaniuk (1937) prepared a patient with a high-grade left anterior descending artery (LAD) stenosis for first-in-human use in early September 1977. They started the planned first coronary intervention with the corset balloon on Tuesday, 13 September, 1977 in Berlin. After initially filling the left coronary artery with contrast dye, Porstmann observed that the LAD had occluded without symptoms during the ensuing few days following the first angiogram. Porstmann and his team did not continue with the planned angioplasty and discontinued the procedure.⁶ A few days later, they received the information of the first coronary dilatation performed by Grüntzig in Zürich.^{4,8} For his achievements, including procedures for congenital heart diseases, Porstmann was under consideration for a Nobel Prize since 1980,⁵ but he died on 5 April 1982 with heart failure after a serious myocardial infarction. Unfortunately, he never had a coronary angiogram himself.

Relationship between Grüntzig and Porstmann

Grüntzig and Porstmann knew each other well. Their active exchange of letters and their meetings during several congresses and symposia are well documented. While Grüntzig fled to Western Germany in 1956, Porstmann worked in Eastern Berlin and, therefore, travelling and access to materials were limited. Both scientists were aware that the other group intended to perform an angioplasty of a coronary stenosis in 1977. In later years, Grüntzig sent used balloons to Porstmann for re-use.

The development of coronary intervention is an excellent example of productive scientific exchange and competition: The idea of coronary dilatation was imminent in the years before 1977, but the first intervention in humans needed the development of new catheters. Two groups in Zürich and Berlin developed different catheters and were exactly at the same level to perform the first-in-man treatment in the same week in September 1977. The group of Andreas Grüntzig was successful on Friday, 16th, while the group of Werner Porstmann on Tuesday, 13th stopped because of an unexpected occlusion of the target vessel. Wierny and Romaniuk commented on their fate in later years with the question: ‘What would medical historians write, if we had achieved the recanalization of the LAD on this Tuesday in September 1977?’

Both scientists were proposed for a Nobel Prize, but both died too early. Their interaction was instrumental for their development of a treatment, which has significantly impacted on the daily practice of cardiology until today.

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References are available as [supplementary material](#) at *European Heart Journal* online.

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Fat but fit?

Dr Natalie Haywood from the University of Leeds speaks to Mark Nicholls about new research that suggests being ‘fat and fit’ is possible.

Being overweight and fit can seem something of a paradox. But a growing body of research is suggesting that this may be possible. However,

while evidence points towards this scenario, researchers—and heart charities—remain keen to ensure such findings are not misinterpreted