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Werner Forssmann
and the Beginning of Cardiac Catheterization

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Long before cardiology became a highly technological specialty, physicians were limited to listening with a stethoscope, watching symptoms, and hoping their interpretations were correct. The interior of the heart was inaccessible, and most cardiac diagnoses relied on indirect evidence or post-mortem findings. The idea of inserting an instrument into a living human heart was viewed with anxiety and disbelief. Even though catheter experiments in animals had been performed by Claude Bernard in the 19th century, physicians remained convinced that human application was too dangerous and morally questionable, especially in the absence of surgical safety standards and antibiotics at the time. In this environment of caution and tradition, the young German surgical trainee Werner Forssmann imagined something radically different. He believed that a thin catheter inserted into the venous system could reach the heart safely, allowing direct measurements and, eventually, targeted treatment. His supervisors rejected the idea repeatedly, but Forssmann was convinced that innovation often began with curiosity rather than permission. In 1929, at the Auguste-Viktoria Hospital of Eberswalde, he prepared to test his idea on the only willing volunteer he could find: himself.

Forssmann inserted a ureteric catheter into a vein at his left elbow under local anaesthesia and began advancing it toward his heart. The nurse, thinking he was attempting the procedure on her, had helped prepare equipment; when she realized he was catheterizing himself, she tried to stop him, and Forssmann tied himself to the operating table to prevent interruption. With the catheter partially inserted, he calmly walked to the radiology suite and under fluoroscopy advanced the tube into his right atrium. The X-ray confirmed the catheter's position, and history had been made. He felt no pain, no palpitations, and no collapse. What followed was not celebration but disapproval. His chief accused him of recklessness and suspended him from further research activity. Forssmann later wrote that this discovery "felt like a victory in a war that only I knew I was fighting". His idea gradually spread in Europe and then the United States, where André Cournand and Dickinson Richards expanded the technique into systematic measurement of cardiac pressures, flow, and oxygenation. Together, the three men would eventually share the Nobel Prize in Physiology or Medicine in 1956, indicating how something once perceived as irresponsible became a cornerstone of scientific progress.

The evolution of catheterization over the next decades transformed diagnosis and treatment. In 1958, cardiologist Mason Sones accidentally injected contrast dye directly into the coronary artery during an angiography procedure. Instead of causing cardiac arrest as expected, the patient survived, and a clear image of coronary arteries appeared on the screen. This unplanned incident became the birth of selective coronary angiography, a technique that allowed physicians to see blockages in the arteries that supply the heart muscle. Andreas Gruentzig's first successful percutaneous angioplasty in 1977 demonstrated that the coronary artery could not only be visualized but mechanically treated from within. Stents, drug-eluting coatings, pressure-wire measurements, and intravascular imaging have since reshaped how cardiologists evaluate and treat ischemic heart disease. What began as a controversial self-experiment led to life-saving interventions that now reduce mortality, shorten hospital stays, and allow millions to live with chronic heart disease in a functional and productive way. Today, cardiac catheterization is not a rare or shocking event but a daily routine in hospitals around the world. It is used for angiography, valve assessment, structural interventions, electrophysiology, device placement, and emergency reopening of occluded arteries. Medical students learn its history not as a story of recklessness, but as an example of visionary thinking, courage, and perseverance against institutional resistance. The technique's remarkable journey from disbelief to acceptance demonstrates how cultural views in medicine change with evidence. Forssmann's simple idea that the heart could be entered safely has truly reshaped the modern cardiology.

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Werner Forssmann

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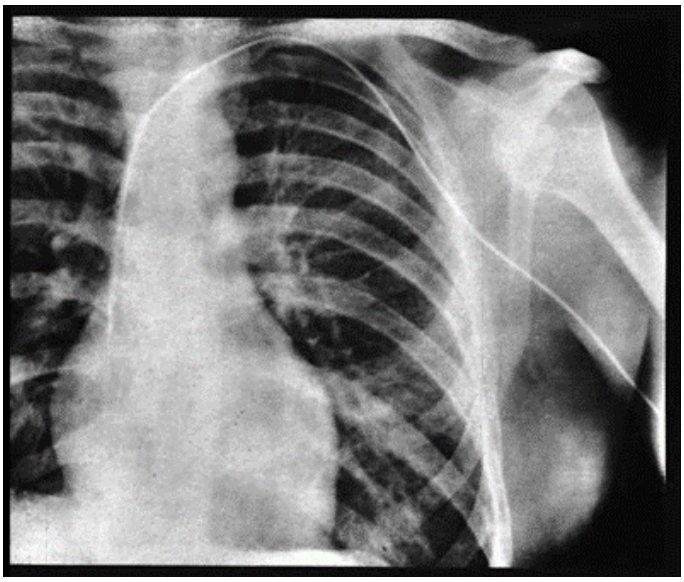

Radiograph of cardiac catheterization by Werner Forssmann 1929.

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