

## Vincenz Czerny (1842-1916)

Vincenz Czerny was a surgeon in the nineteenth century who specialized in cancer and women's surgical care. Czerny performed one of the first breast augmentations using a reconstruction method to correct asymmetry and disfigurement of a woman's breasts. Additionally, Czerny improved the safety and efficacy of existing operations, such as the vaginal hysterectomy, which involves the surgical removal of some or all of a woman's reproductive structures. He contributed to other surgeries involving the esophagus, kidneys, and intestines. He was also one of the first individuals to research alternative methods of cancer treatment and founded the Institut für Experimentelle Krebsforschung (Institute for Experimental Cancer Research), in Heidelberg, Germany. The institute became one of the first hospitals dedicated solely to the study of cancer. Czerny's development of the breast augmentation and vaginal hysterectomy, as well as his cancer research, helped shape the creation of modern-day surgical procedures.

Czerny was born on 19 November 1842 in the town of Trautenau, Bohemia, now known as Trutnov, Czech Republic. However, some sources disagree on the location of his birth, with some claiming his country of birth was present-day Austria rather than Czech Republic. He was the third of five children. His father owned a pharmacy that sold drugs and hand-collected plants, the latter of which they used to create powders and ointments. According to the American Medical Association, as a child, Czerny frequently observed his zoological and botanical specimen collections using a microscope and magnifying glass. Czerny also played piano throughout his childhood, and formed a duo with Adolph Barkan, who later became an ophthalmologist in San Francisco, California. According to the American Surgical Association, Czerny was determined to follow his father's footsteps and often spent his vacation time learning the skills of a pharmacist.

In 1860 at age eighteen, Czerny graduated from the Humanistic Gymnasium, a secondary school, where he studied zoology and physiology. That same year, Czerny then attended Charles-Ferdinand University, modernly known as Charles University, in Prague, Czech Republic, as a medical student. A year later in 1861, Czerny continued his study under Ernst Wilhelm von Brücke, a physician and physiologist, at the University of Vienna, in Vienna, Austria. According to Frank Willeke, an oncological surgeon in Heidelberg, Germany, Czerny's goal at that time was to become an ophthalmologist or physiologist. During the Austro-Prussian War in 1866, Czerny worked in the cholera wards in Vienna, and he later graduated *summa cum laude* with his medical degree from the University of Vienna on 19 December 1866.

After graduation, Czerny spent the summer of 1866 to spring of 1867 as a lab assistant studying under several physicians in Vienna as a medical fellow. He briefly worked for Ferdinand von Hebra, an Austrian physician who founded the New Vienna School of Dermatology, for Salomon Stricker, an Austrian histologist, or someone who studies tissues using microscopes, and for Johann von Oppolzer, an Austrian physician who advocated for treating individuals with a holistic approach. Czerny also became an assistant to an eye doctor named Carl Ferdinand von Arlt. By 1868, Czerny had published three articles on work he conducted while working under von Arlt. One of those articles details the damage caused to rabbit retinas when exposed to direct sunlight. Later in his life, Czerny damaged his eyes in the same manner by studying sunsets without eye protection in Heidelberg, Germany. Because of that, he developed a permanent blind spot in his right eye.

In 1868, Czerny took on a residency with Christian Albert Theodor Billroth, who was a lecturer of surgery at the University of Vienna, in Vienna, Austria. During the Franco-Prussian War in 1870, Czerny accompanied Billroth to the battlegrounds, providing medical care to injured soldiers. Under Billroth, Czerny shifted his medical focus from the study of eyes to include more surgical areas

of study. He focused on learning about spleen operations, nerve and skin transplantations, and surgical extractions of the esophagus, stomach, and larynx. According to the American Medical Association, despite Czerny's focus on learning various surgeries, he was most fascinated by the study of tumors, or the abnormal tissue growth that, in many cases, causes the development of cancer.

Czerny's early surgical career began after his return to Vienna in 1871. Czerny became an associate professor and instructor at the University of Vienna. Six months later, at age twenty-nine, Czerny became a surgeon at the University of Freiburg, in Freiburg, Germany. During his time there, Czerny married Luise Kussmaul, the daughter of a physician. In Germany, Czerny and his associate, Antoine Lembert, developed a suture technique used for connecting the bowel and stomach in numerous surgeries involving the gastrointestinal tract. The pair named the suture technique the Czerny-Lembert suture. Czerny later used those suture techniques in a variety of abdominal surgeries he went on to perform, including many involving the removal of tissues from the stomach and intestines. After six years at Freiburg, Czerny moved to Heidelberg, Germany, succeeding the deceased Gustav Simon, a physician who demonstrated that humans could survive the removal of one kidney, as surgical chair. In Heidelberg, Czerny oversaw a 120-patient hospital.

While a professor of surgery in Heidelberg, Czerny performed one of the first successful surgical removals of esophagus cancer. His patient was a fifty-one-year-old woman who had experienced difficulties swallowing for months prior to the surgery. During his operation, Czerny made a vertical incision from the woman's hyoid bone, a bone between the chin and the thyroid, to the sternum, a long bone located at the top of the chest. Czerny removed the tumor and approximately six centimeters of upper portion of the woman's esophagus. He began by closing the wound, then inserting a feeding tube into the wound before stitching the skin together around the tube. After four days, he replaced the tube with a larger, more permanent tube called a bougie. The woman fed herself through the tube for a year until her symptoms returned. At that point, Czerny performed another surgery, but the woman died shortly thereafter. Despite the woman's death, historians credit Czerny for performing one of the first esophagus operations without using imaging techniques, anesthesia, or antibiotics.

Czerny also began focusing on gynecology, the study of the female reproductive system, after becoming the surgical chair of Heidelberg. Before Czerny, surgeons rarely performed vaginal hysterectomy surgery, or the surgical removal of the uterus and other reproductive structures, due to a high patient mortality rate often due to blood loss and infection. After observing a German gynecologist named Wilhelm Alexander Freund perform the operation in 1878, Czerny published an article titled "Über die Ausrottung des Gebärmutterkrebs" (About the Extermination of Uterine Cancer), in which he described improvements to Freund's technique. In general, the female genitalia are structured so that the vaginal canal is connected to the uterus through a narrow passage called the cervix. Czerny's method of removing the uterus through the vaginal canal as opposed to previous abdominal methods was less invasive and allowed for a quicker operation and shorter recovery time for women. On 12 August 1878, Czerny performed his first vaginal hysterectomy to treat cervical cancer. The operation took two hours, and the patient later died on 19 January 1879, five months after the surgery, from a urinary tract infection. Czerny recorded his attempts at four more vaginal hysterectomies for cervical cancer in articles he published around that time, noting that only 32 percent of women died immediately during or after the surgery, compared to 70 percent in other surgical techniques. While all of those patients eventually died from complications at a later date, other physicians showed interest in Czerny's vaginal hysterectomy technique since the mortality rate of his technique was still lower than that of previous methods.

Aside from that hysterectomy technique, Czerny invented other surgical techniques and wrote articles on new methods and practices. In 1880, two years after he performed his first hysterectomy operation, Czerny introduced an operation to remove non-cancerous uterine growths, or fibroids, through the vaginal canal. Around that same time, he also succeeded in developing a complete operative cure for kidney stone disease. Czerny also published over 190 articles and mentored many students who went on to become physicians as well. In 1882, Czerny wrote a manuscript on the rare occurrence of sepsis, a condition characterized by extreme infection and blood poisoning, in his surgical department. He noted that those infections were frequently caused by non-sterile, or

unclean, conditions.

In 1893, Czerny performed one of the first breast augmentations, or breast enhancement surgeries, by moving a patient's benign fat-based tumor, known as a lipoma, into the breast to correct asymmetry. Czerny's patient was a forty-one-year-old singer who reported swelling and pain in her left breast, which had prompted her to seek medical attention. Czerny discovered that a tumor was causing the symptoms in her breast, which he had attributed to a constant, lingering infection of the breast tissue. After repeated consultations with Czerny and another surgeon, the woman agreed to the removal of her left breast. However, because the singer had very large breasts, the removal of one would result in significant asymmetry of her body. Upon further examination, Czerny discovered that the woman also had a fist sized growth on the right side of her lower back. During the operation, Czerny removed both the tumor in the woman's breast and the tumor on her back, and then used tissue from the tumor on her back to reconstruct her left breast. Half a year later, the woman still had tenderness around the operation site on her breast. By December 1894, about one year later, the patient had reported no more tenderness in her breast, and while her reconstructed breast was well-formed, she did note it was slightly smaller and firmer than her right breast. Czerny published his results in 1895.

Around 1904, over twenty years after being a surgeon in Heidelberg, Czerny began to focus on cancer care. He visited cancer hospitals in Moscow, Russia, and Roswell Park Comprehensive Cancer Center in Buffalo, New York, and then worked on establishing the Institute of Cancer Research in Heidelberg, which opened in October 1906 and as of 2020 is known as the Czerny-Klinik. In addition to a hospital, the institute also had a department of biology and chemistry, enabling therapy and research to be conducted by his students and researchers. During World War I, which lasted from 1914 to 1918, Czerny converted the Institute of Cancer Research into a military hospital and served once again as a surgeon in the army with the rank of General.

Czerny's success and achievements as a physician were recognized with many awards. He was elected president of the German Surgical Society, vice president of Heidelberg University, president of the International Society of Surgery, and president of the International Association of Cancer Research.

Czerny died 3 October 1916 of leukemia in Heidelberg, Germany.

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