A Brief History of Computed Tomography

In May 1974 Siemens became the first medical equipment vendor to bring a CT system on the market. Computer technology has come a long way since then and now allows for astonishingly rapid imaging of human anatomy that would have been unthinkable three decades ago. A brief look at the history of computed tomography.

By Peter Schmitt

The basic operating principle. Time has always been a key factor in computed tomography (CT). Whereas in the early days of CT imaging, where patients had to remain still for several minutes, the entire procedure now only takes a couple of seconds. These two extremes represent an evolution that spans the relatively brief period of only three decades, during which Siemens has been a leader in the development of reliable non-invasive diagnostic methods.

The 1970's. In May 1974, Siemens Medical Solutions (then known as Siemens Medical Engineering) presented the first commercially available computed tomography system. Two years previously, British engineer Godfrey Hounsfield and American physicist Allan M. Cormack had invented computed tomography by combining computer technology with X-ray technology. Hounsfield's discovery was all the more astonishing because he had previously worked for the British record company EMI which also manufactured electronic components.

Success in the making. This new technology was given a further boost two years later when Siemens began marketing its SIRETOM CT scanner, which provided physicians with cross-sectional images of the brain as well as with invaluable diagnostic information about tumors, hematomas and infarctions. At first, the SIRETOM did not achieve resounding commercial success: only two SIRETOM systems were sold in the year following the product's launch. But this soon changed.

Further advances. By 1977, Siemens had developed a system that integrated the radiation source and a detector system into what became known as a "gantry," a mechanism that rotates around the patient and allows for whole-body computed tomography examinations. By 1985, it became possible to image anatomical features such as bones in three dimensions, although the primary concern of the Siemens developers was to find ways to obtain ever thinner slices of human anatomy with ever greater speed.

Refinements. The world's first spiral scanner went on the market in 1989, making it possible to scan a patient's lungs during a single breath-hold. A few years later, further refinements in CT technology allowed for imaging of the inside of blood vessels, including diseased coronary vessels. This meant that calcifications and stenoses, which can be an early sign of possible infarction, could be visualized and treated in their early stages without the use of a catheter. Over the intervening decade and a half, CT technology has been refined to the point that it can now visualize minute pulmonary nodes as well as extremely small intestinal polyps, which can be an early sign of cancer, and which can be removed if detected early enough.

A revolutionary discovery. Three decades after the launch of the SIRETOM, Siemens has begun marketing yet another revolutionary medical imaging discovery. The SOMATOM Sensation 64 and SOMATOM Sensation Cardiac 64 can obtain 64 slices of a patient's body in only 0.33 seconds with a spatial resolution of less than 0.4 millimeters. This tremendously improves image quality, especially when imaging the beating heart. The first systems of the latest CT generation are now in operation at leading hospitals around the globe, e. g. at Erlangen University Clinic, Munich-Grosshadern Radiology Center, Erasmus Medical Center in Rotterdam, and the Mayo Clinic in Rochester.

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»Physicians can now obtain extremely clear images of even the smallest coronary vessels in less than ten seconds.«

Dr. Richard Hausmann, President of the CT Division, Siemens Medical Solutions

EXAMINATIONS were relatively slow procedures in the early years of computed tomography.