Clarence Walton Lillehei was flying high at the midpoint of the past century. The brash medical student had earned a Bronze Star in Europe with the Army Medical Corps during World War II.

The son of a Minneapolis dentist, he’d shucked his original plan to follow his father into cavity-filling. By 1950, Walt (as everyone called him because his dad’s name was also Clarence) was a full-time faculty member at the University of Minnesota’s Medical School.

That’s when he got the news that would shape a high-risk, innovative style and elevate him to become the father of open-heart surgery and “one of the surgical immortals,” according to his mentor, Dr. Owen Wangensteen, who ran the U of M surgery department from 1931-1967.
Lillehei had cancer in his neck. More specifically, he was diagnosed with lymphosarcoma in the parotid, or salivary, gland. His medical colleagues knew better than to sugarcoat things. They gave him a 10 percent chance of surviving five years. He was 31.

Wangensteen was among the surgeons who removed a chunk of his neck the day Lillehei completed his senior residency in 1950. Grueling radiation therapy followed and, although he recovered slowly and fully, the cancer left him disfigured with a crooked neck.

“From what I’ve learned, he told the surgeons to just cut the cancer out of his carotid artery, despite the risks. And that led him to take chances because he didn’t think he’d even be around,” said Tom Anderson, 56, a longtime funeral director in Alexandria, Minn.

“A big fan of Dr. Lillehei,” Anderson e-mailed to suggest a profile of the surgeon for this column. His admiration for Lillehei came from the heart. In 1963, Lillehei fixed a defect in Anderson’s 5-year-old heart. Fifty-one years later, he’s among the longest surviving open-heart surgery patients.

Fixing kids’ defective hearts became Lillehei’s passion in an era when such cardiac conditions were considered a death sentence for children.

Philadelphia surgeon Dr. John Gibbon had used a heart-lung machine in 1953 to correct a patient’s atrial problem. But the approach was fraught with complications. Enter Lillehei and his associates, who introduced the so-called cross-circulation method in 1954.

In layman’s terms, that involved using a donor sprawled next to the patient, whose blood was routed through the donor’s veins and lungs to give it oxygen during the open-heart surgery.

Lillehei’s team anesthetized the father of an 11-year-old boy with a ventricular defect and used that donor to oxygenate and keep his son’s blood pumping. Lillehei and associates Morley Cohen, Herb Warden and Richard Varco would perform more than 40 similar operations over the next 15 months — most on children under 2 whose conditions had previously been considered incurable.

The process was controversial, risking two lives to save one. So Lillehei also used hypothermia to chill patients’ tickers in early open-heart surgeries and helped develop a bubble oxygenator, which remained common until the late 1970s.

In 1957, Lillehei reached out to Earl Bakken, then an obscure electrical technician at the U. With Lillehei’s vision and Bakken’s handiwork, they came up with the first pacemaker, which looked like a transistor radio and could be worn on patients’ belts. Bakken went on to form Medtronic.

Lillehei was a risk taker, especially after the cancer in his neck. He knew he was working on borrowed time and had overcome steep odds in his own case.
When his eyesight deteriorated, probably as a result of the radiation treatment, Lillehei hung up his scalpel in 1973 at age 55.

Following his death, family members donated more than $15 million from Medtronic and other royalties to help create the Lillehei Heart Institute at the U.

“He was vulnerable to flaws and errors in judgment,” Cooley acknowledged. “But as one of cardiac surgery’s most productive innovators, he will be remembered for his ingenuity, imagination and boldness.”

Curt Brown’s tale on Minnesota’s history appears each Sunday. Readers can send him ideas and suggestions at mnhistory@startribune.com