BUILDING A SPINE

MEDICINE

NEWSWEEK

It was the most formidable surgical task that Dr. Charles C. Edwards had ever faced. First, he had to remove a cantaloupe-size tumor from a woman's spine. Then he had to replace a 6-inch section of her spine with metal and plastic. "The mandate," the 37-year-old orthopedist said last week, "was to solve two previously unsolvable problems."

The desperately ill Jessie Thomas, 33, first saw Edwards last May at the University of Maryland Hospital. The Baltimore housewife was paralyzed from the waist down. The reason, Edwards discovered, was a massive malignant tumor wrapped around her spinal column, pressing on the delicate nerves of the spinal cord as well as the body's two largest blood vessels—the aorta and the inferior vena cava. Without surgery to remove the tumor, Mrs. Thomas would die within a year or two. But no one had ever tackled such a case before.

In July, Edwards took the first dramatic step. In a fifteen-hour operation, he and his team carefully cut the huge cancer away from the cord and blood vessels. To make sure that all traces of the malignancy were removed, they also had to take out three and a half vertebrae from Mrs. Thomas's lower spine. "She was left without a spine or spinal muscles from the rib cage to just above the pelvis," Edwards says.

STEEL RODS: Now, Mrs. Thomas lay immobilized in a special frame so that she wouldn't twist, and further damage, her exposed spinal cord. Edwards knew she could spend only a limited time in such a posture before developing potentially fatal pneumonia. The challenge was to figure out how to rejoin the top and bottom parts of her spine so that she could sit up. Utilizing his experience in replacing the shattered bones of accident victims, he drew up plans for a metal-and-plastic spine substitute and flew to Warsaw, Ind., where engineers at Zimmer U.S.A., Inc., constructed it. The main part of the prosthesis was a cylinder of chrome, molybdenum and cobalt alloy inserted between the vertebrae above and below the gap in Mrs. Thomas's spine. To protect the cord, Edwards designed two slender steel rods that would be attached to the vertebral processes, the bony projections at the rear of the vertebrae.

By Aug. 31, Edwards was ready to put the artificial spine in place. He and his colleagues made a huge double incision, one part extending around from the middle of the patient's abdomen to the middle of her back, the other running along the spine.

After exposing the ends of Mrs. Thomas's spine, Edwards and his team started to install the prosthesis. They cut holes in the vertebral processes and put the two narrow, threaded steel rods in place behind the spinal cord. The rods were secured at each end with hooks that had been placed in the holes. To make the spine rigid, Edwards put polyethylene-plastic sleeves into the natural crevices of the vertebral processes to hold the rods.

Next, Edwards began implanting the 6-inch alloy cylinder in front of the spinal cord. He placed the device in the gap between the upper and lower vertebrae and, using a special tool, pushed retractable rods at each end of the cylinder into the center of the vertebrae, top and bottom. Each rod was supposed to extend about 2½ inches into the vertebrae and was to be further secured by a set of horizontal screws and cement. But Edwards ran into trouble.

It was hot in the operating room and the cement set too quickly. As a result, the prosthesis was not properly seated. Edwards couldn't extend the retractable rods far enough into the vertebrae, nor could he screw them into place. He now had to decide whether to start over, adding time to an already traumatic operation, or settle for an undesirable fit.

Edwards decided to take a chance. He removed the cylinder, scraped out the cement and began again with the installation of the device. This time, however, he cooled the cement so that it wouldn't harden prematurely. He inserted the cylinder with the rods fully extended and cemented and screwed them into place. "It was a perfect placement," he says.

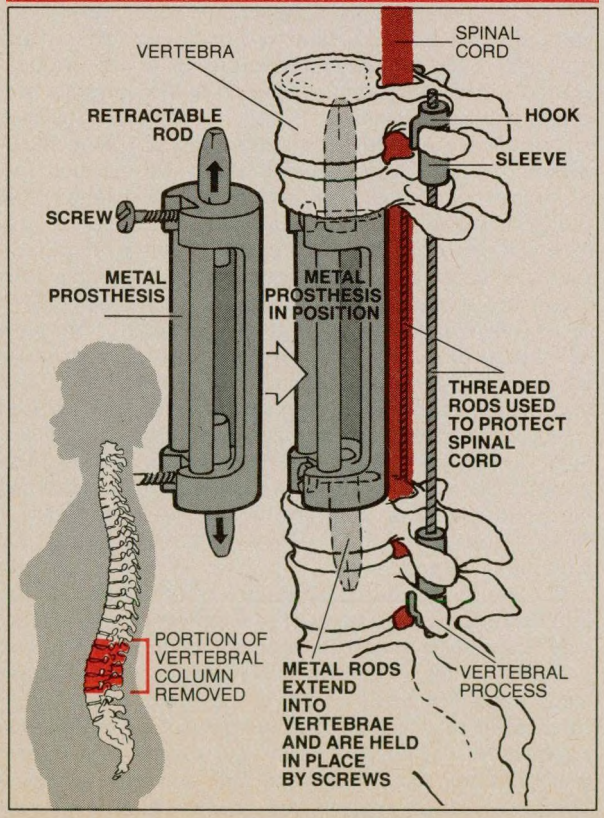
SUPPORT: For the finishing touch of the sixteen-hour operation, Edwards placed a strip of metal mesh along the front of the spine and grafted bone from Mrs. Thomas's pelvis along the prosthesis to provide additional support. Edwards expects that another bone graft may be necessary later.

Last week, Mrs. Thomas remained in intensive care, receiving antibiotics to prevent infection. If all goes well, she will be able to sit up, use a wheelchair and possibly regain some feeling in the lower half of her body. Her first operation saved her life. Her second operation, Edwards believes, will improve the quality of her life.

MATT CLARK with MARY HAGER

Ib Ohlsson—Newsweek

A SPINAL BRIDGE



ICY AID FOR CANCER VICTIMS

Effective cancer-fighting drugs often produce harsh side effects, including dizziness and nausea. But perhaps the most embarrassing result of chemotherapy is the loss of hair. To spare patients this indignity, researchers have come up with a promising technique: covering the head with an ice pack while the drugs are being administered.

Two nurses at the University of Arizona Health Sciences Center used the treatment on 33 cancer victims. The patients were taking Adriamycin, which usually causes almost total hair loss. But the ice pack cooled the scalp to 77 degrees Fahrenheit and prevented the hair follicles from absorbing the drug. Seventy per cent of the patients retained most of their hair, nurses Judith Dean and Katherine Griffith reported at a recent meeting of the Oncological Nursing Society.

The procedure is remarkably simple. Under the supervision of Dr. Sydney Salmon, a cancer specialist, the nurses fashioned a cap from plastic bags filled with crushed ice. Shortly before beginning intravenous drug therapy, they put the cap on the patient and secured it with an Ace bandage. Infusion of the drug takes only a few minutes, but the ice cap is left in place for an additional half hour to maximize the treatment. Patients were screened to exclude those known to have circulating cancer cells, such as leukemia victims. In such cases, Dean explains, any interference with the drug's absorption might prevent it from reaching some of the malignant sites.