

Doctors: Transplant advance in windpipe cancer

August 1 2010, By COLLEEN BARRY , Associated Press Writer

(AP) -- Doctors have successfully transplanted windpipes into two cancer patients in an innovative procedure that uses stem cells to allow a donated trachea to regenerate tissue and create an organ biologically close to the original, they said Friday.

The 31-year-old Czech and 19-year-old British patients are in good condition and have been released from the hospital in Florence just weeks after the surgery. The British woman was speaking after only three or four days, said Dr. Walter Giovannini, the director of the AOU Careggi hospital where the surgeries took place on July 3 and 13.

"This is a unique solution for a problem that had none, except the death of the patient," Giovannini said.

Surgeons have been making advances in the transplant of windpipes, but previous cases have mostly focused on patients whose windpipes have been physically damaged due to trauma.

While trachea cancer is rare, it is very difficult to treat because it is resistant to [chemotherapy](#) and radiation and [transplants](#) of mechanical devices to replace the windpipe have not been effective, Giovannini said.

The new technique is extraordinary, said Alessandro Nanni Costa, the director of Italy's National Transplant Center, who was not involved in the research. "What is new about this procedure is combining a surgical technique with biotechnology, through the use of [stem cells](#)," he said.

The hospital did not release the patients' identities or more details about their cases due to privacy concerns. Giovannini said the Czech woman is the mother of a 6-month-old.

The surgical team was headed by Dr. Paolo Macchiarini, who participated in a windpipe transplant in Spain nearly two years ago. In that case, doctors gave a Colombian woman a new windpipe with tissue grown from her own stem cells, eliminating the need for anti-rejection drugs.

A similar procedure was followed in this case. The donor windpipe was stripped of all cells until it was just a tube with no [organic material](#). Just before being transplanted, Dr. Macchiarini injected the donor trachea with the stem cells. In the Spanish case, the stem cells were grown on the trachea before the transplant.

It takes two to three months for the stem cells to completely cover the trachea, creating a new organ, Giovannini said.

In the meantime, the windpipe is functional without the cells - acting as a sort of mechanical device before the stem cells transform it into an organ, Giovannini said.

Because the new trachea contains no organic substance foreign to the patient, no anti-rejection drugs are needed.

Macchiarini told a press conference in Florence the procedure could in the future be applied to other organs.

"I'm thinking about the larynx or surgeries involving lungs," Macchiarini said.

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