

American doctors make new esophagus using stents and skin

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American doctors have made a new esophagus for a young man, using donated skin tissue and metal stents, in the latest example of scientists creating body parts in the lab to help patients with few other options.

After the 24-year-old man was paralyzed in a car crash seven years ago, doctors struggled to repair his esophagus. Normally, they might have attempted to make a new one using a tube from the patient's digestive system, but that wasn't possible because of the man's extensive injuries.

Instead, doctors decided to try a technique previously tested only in dogs, to reconstruct the upper esophagus with stents and skin tissue approved by the U.S. Food and Drug Administration.

"It's quite remarkable what they were able to do," said Dr. Simon Hoerstrup, director of the Institute for Regenerative Medicine at the University of Zurich, who had no connection to the research. He said the results suggest it's possible the human body can regrow certain organs once the basic structure is implanted.

The man, whose name has not been released, was unable to eat and relied on a feeding tube. To remedy that, physicians inserted an endoscope containing a wire through the man's stomach and up through what remained of his esophagus, leading to his mouth. Guided by the wire, they then inserted three stents to recreate the structure of the esophagus and covered it with skin tissue. The tissue was then sprayed with a gel made from the patient's own blood, which contained natural substances

to attract stem cells.

Although the doctors wanted to remove the stents about three months after the surgery, the patient refused, fearing he wouldn't be able to eat and drink; he was also worried about possible scarring. Nearly four years later, doctors removed the stents after the man had trouble swallowing when a problem arose with the lower stent.

One year after that, doctors examined the man's esophagus and found that all five layers of the esophagus had regrown, closely resembling a normal one. The patient hasn't needed a feeding tube and hasn't reported any other complications.

The research was published online Friday in the journal, *Lancet*.

"We initially thought (the results) were too good to be true," said Dr. Kulwinder Dua, a gastroenterologist at the Medical College of Wisconsin, who led the surgery. "But the proof in the pudding is that this guy is now eating and drinking normally."

Scientists have previously made body parts including windpipes, blood vessels and nostrils; doctors have also made an esophagus using stents and pig tissue.

Dua cautioned there are still many unknowns about the process he and his colleagues used, emphasizing it has only been used on a single patient so far.

"This is not a recommendation for mainstream use," he said, adding that more animal and human trials are needed. "There are still a lot of unanswered questions."

More information: *The Lancet*, www.thelancet.com/journals/lan...

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