

[News in Science](#)

News in Science - Replacement jawbone grown on patient's back - 27/08/2004

[This is the print version of story
<http://www.abc.net.au/science/news/stories/s1186625.htm>]

Replacement jawbone grown on patient's back

Agence France-Presse

Friday, 27 August 2004

A German man, whose jaw was removed because of cancer, has been able to eat his first solid meal in nine years thanks to a replacement jawbone which was incubated in a muscle on his back.



The pioneering surgical technique, performed on the 56-year-old man by a team of surgeons led by Dr Patrick Warnke of the [University of Kiel](#), is reported in this week's issue of *The Lancet*.

The operation, which built on previous experimental work using pigs, is the first in which doctors have used a patient's own body to incubate and synthesise a substitute for lost bone tissue.

The replacement jawbone was grown on the patient's back, just under his shoulder – this shows the jawbone growth after three weeks (*Image: The Lancet*)

The surgeons carried out a 3D computer scan of the patient's face to build a small cage of titanium mesh, shaped to act as a substitute for the missing jaw.

The cage was filled with tiny blocks of bone mineral and seeded with a human bone protein and liquid bone marrow, then transplanted into the latissimus dorsi muscle in the patient's back, just under his shoulder.

Seven weeks later, filled with fresh-grown bone, the cage was removed from his back, along with a piece of the adjoining muscle, an artery and a vein. The assemblage was then transplanted into his face.

A month after the operation, the man was able to eat, using the toothless replacement jaw to chew his dinner. Until then, he had survived on soup and soft food.

The patient's celebratory dinner of bread and sausages marked the first time he had been able to chew since he had had his lower jaw removed because of a cancer.



The conventional method for rebuilding defects or damage to the jaw and face is to try to graft a bone taken from tissue from elsewhere, a procedure that leaves a hole in another part of the body and can cause major health problems in its own right.

In this patient's case, a large chunk of bone, muscle and veins would have had to be taken from his lower leg.

A 3D computer scan after transplantation of jawbone replacement (*Image: The Lancet*)

Warnke hopes that, a year after the graft, the titanium scaffold can be removed and the new bone gently shaped and smoothed as a preliminary to inserting false teeth.

But some serious challenges remain. In a commentary, also published in *The Lancet*, Australian stem-cell expert Dr Stan Gronthos of the [Hanson Institute](#) cautioned that there was still no long-term evidence that the operation had worked or that the substitute bone was as strong and resilient as normal jaw tissue.

But he hailed Warnke's work as a "proof of principle" and noted that the patient's quality of life had clearly improved because of it.

Related Stories

[Tissue engineers grow new breasts, News in Science 15 Aug 2003](#)
[Rabbit penis grown in laboratory, News in Science 9 May 2003](#)
[Fat useful for tissue engineering, News in Science 11 Apr 2001](#)

© 2004 Australian Broadcasting Corporation
Copyright information: <http://abc.net.au/common/copyrigh.htm>
Privacy information: <http://abc.net.au/privacy.htm>