

## NEWS FROM:

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### **UCT mechanical engineers invent device to grow bone and tissue in upper jaw**

**See video feature on YouTube:** <http://www.youtube.com/watch?v=-HSImGyk2fU>  
**Broadcast media: Visual images of the surgery available on request from Nawaal Dean: 082 040 5880**

Two University of Cape Town engineers and a surgeon have adapted simple mechanical engineering principles to develop groundbreaking maxillo-facial surgery. The team uses a plate-guided distractor (basically a hose clamp made to work as a crawler on a track) to grow new bone in the upper jaw of patients who had large surgical defects following on ablation of tumour or trauma. While a similar technique is already in use to regrow bone in the lower jaw, this is likely the first time such surgery has been conducted anywhere in the world on the more difficult upper jaw.

The groundbreaking team comprises maxillo-facial surgeon Dr Rushdi Hendricks, mechanical engineer Dr George Vicatos from the University of Cape Town, and UCT Master's student James Boonzaier. This benchmarking surgery was performed on two patients in September and October 2011. Dr Hendricks implanted the first design into a 37-year-old patient, who had half her palate removed because of cancer. He was assisted by Vicatos, Boonzaier and dentist Dr Yusuf Parker. The surgery was a resounding success: the entire palate took about a month to fill in. In October the team used the same process to achieve the unheard-of for another patient: filling a gap in the palate as large as 80mm and replacing three-quarters of the upper jaw.

For years, surgeons around the world have been applying a technique known as distraction osteogenesis to regenerate bone in the lower jaw. Simply put, if a surgeon carefully severs the bone and pulled it apart, new bone and tissue will grow to fill the gap. Until now, this surgery was not possible on the more complicated upper jaw. This situation changed when Dr Vicatos and Boonzaier at UCT designed the plate-guided distractor.

Dr Hendricks said: "The value of this surgery lies in more than just the clever mechanics and the first-of-a-kind surgery. It also has the potential to change the entire maxillo- facial surgery world, and the lives of untold patients."

Dr Hendricks explained that the new technique allowed a more aesthetic result: "You can have microsurgery, where bone is taken from an arm or a leg, and close the hole beautifully, however I believe the aesthetics are not optimally desirable. My method is superior because I am growing bone as well as bone lining... Not only that: I'm also concentrating on your smile; on the aesthetics; the way the teeth are going to sit in your mouth."

Sci-tech magazine *Popular Mechanics* named Dr Vicatos and the team South Africa's Inventor of the Year in 2011, in recognition of the new technology.

***ENDS***

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