Planmeca ProModel technology part of first Nordic facial tissue transplant

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Finnish dental manufacturer Planmeca’s ProModel technology has supported the first facial tissue transplant procedure in the history of the Nordic countries. The service, which designs and creates patient-specific surgical guides and skull models from CBCT/CT images, helped surgeons to significantly reduce operating time for the demanding procedure, which was performed at Töölö Hospital in the Hospital District of Helsinki and Uusimaa (HUS).

In addition to a decrease in surgical time, the ProModel technology was able to produce significantly more precise results compared with conventional methods, the surgical team stated at a press conference. Dr Jyrki Törnwall explained: “Based on literature, we know that it can take 3 to 4 hours to trim bones. In this particular operation, it took Patrik [Lassus] and myself under 10 minutes to place the transplant. This led to a drastic reduction in the duration of the surgery, while also significantly improving the accuracy of bone placement.”

Using virtual surgery to simulate procedures is an increasingly important part of surgery today. “Surgeons and us engineers both see tremendous potential in this kind of collaboration”, said Jani Horelli, CAD/CAM Design Manager at Planmeca. “The field continues to advance at a fast rate and it is very interesting to witness this evolution first hand. I am proud to be part of a highly skilled Finnish community of specialists. It feels meaningful to take part in improving the lives...
of people, who have encountered serious illnesses and disabilities.”

Planmeca’s collaboration with HUS spans nearly a decade. “Planmeca’s role has been essential to our work for years—we have been able to utilise computer simulations to create saw guides, which allow us to saw at a specific orientation and to an exact depth, as well as remove facial structures, which we know match the donor, at a precise angle”, said Törnwall, acknowledging the benefits of the company’s 3-D services.

Both HUS and Planmeca began planning for the operation already years before the surgery was carried out and this consisted of modelling donor tissue and determining how it matched the recipient, as well as simulating the operation together with the surgeons in advance. Following this, the components were designed and manufactured at Planmeca’s headquarters and transported to the hospital, where they were taken directly to the operating room.

The extremely rare procedure, which was only the 35th of its kind in the world, entailed transplanting the patient’s upper and lower jaws, lips and nose, as well as segments of the skin, midfacial and tongue muscles, and the nerves of these muscles. The surgery itself took 21 hours and included a team of 11 surgeons, 20 nurses and other medical experts. The first face transplant in the world was carried out in France in 2005.

**contact**

Planmeca Oy
Asentajärankatu 6
00880 Helsinki, Finland

www.planmeca.com