

Press release from the Toulouse University Cancer Institute – Oncopole
Toulouse, 7th of November 2022

Technical and Surgical Innovation

A COMPLETE NASAL RECONSTRUCTION BY 3D PRINTED BIOMATERIAL

The ENT and Cervico-Facial surgery teams of the Toulouse University Hospital and the Claudius Regaud Institute have performed a surgical operation at the Toulouse-Oncopole University Cancer Institute consisting of the complete reconstruction of a patient's nose using a synthetic graft previously implanted in her forearm to pre-vascularize it. A tailor-made operation based on state-of-the-art technology.

A first-time intervention

The patient had been treated in 2013 for nasal cavity cancer (squamous cell carcinoma) with radiotherapy and chemotherapy. As a result of this treatment, she lost a large part of her nose as well as the front part of her palate. For more than four years, she lived without a nose, faced with failed nasal reconstruction skin flap grafting and difficulty in wearing a facial prosthesis. She was offered a custom-made biomaterial nasal reconstruction, based on a two-stage surgical procedure performed by Pr. Agnès Dupret-Bories and Dr. Benjamin Vairel.¹

Biomaterials are materials, synthetic or living, that can be used for medical purposes to replace a part or function of an organ or tissue.

This type of **reconstruction had never been performed on such a fragile and poorly vascularized area** and was made possible thanks to the collaboration of the medical teams with **Cerhum, a Belgian medical device manufacturer specializing in bone reconstruction**. This new technique also makes it possible to overcome certain limitations presented by other techniques.

The collaboration of these two entities took place through the PhD thesis carried out by a PhD student of Cerhum and the CIRIMAT laboratory (Inter-university center of research and engineering of materials/CNRS/University Toulouse III-Paul-Sabatier).

Successful transplantation

The biomaterial used to reconstruct the patient's nose was 3D printed after several discussions between Cerhum's engineers and the surgical team based on 3D views taken before the cancer treatment was started.

The biomaterial was first **placed under the skin (implanted) for vascularization on the patient's forearm**.



Implanting the biomaterial to revascularize the flap taken from the patient's temple.

¹ Pr. Agnès Dupret-Bories and Dr. Benjamin Vairel, ENT and cervicofacial surgery department - Respiratory tract unit of Toulouse University Hospital and the surgery department of the IUCT-Oncopole, directed by Pr. Sébastien Vergez

In September 2022, two months after implanting the bone graft under the patient's skin, the colonisation of the medical device was complete.

The device device was transplanted to the nasal area and successfully revascularised using microsurgery by anastomosing (creating a connection between blood vessels) the vessels of the skin of the arm to vessels in the patient's temple.

After ten days in hospital and three weeks of antibiotics, the patient is doing very well.

About the IUCT-Oncopole

The IUCT-Oncopole, a cancer care, research, and training centre in Toulouse, brings together the expertise of 1,800 professionals on a single site labelled "Comprehensive Cancer Center". It combines several state-of-the-art clinical facilities for cancer treatment with a world-class research infrastructure, on an integrated campus that brings together public and private stakeholders, including industrial partners.

The IUCT-Oncopole, which brings together the Claudius Régaud Institute (ICR) and several teams from the Toulouse University Hospital, treats more than 10,000 new patients each year, and more than one in eight patients is enrolled in clinical studies.

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