

TITLE Personalised prosthesis for jaw and facial bones.

DESCRIPTION OF THE INVENTION

Reconstruction of facial and jaw bones through replacement of the damaged bone by a prosthesis is often the only solution when a patient loses part of these bones as a result of cancer, radiotherapy or an accident.

The ideal prosthesis should be: perfectly adjustable to the patient's anatomy in order to match to the replaced area; it should also be capable of creating a continuous relationship with the bone in which it is inserted and it should maintain its aesthetics and functionality, which includes the anchorage of teeth implants. At the same time, the ideal prosthesis must be resistant against the stress caused by opposing forces that act on it, such as chewing, swallowing, speaking or yawning. Traditionally, conventional prostheses do not satisfactorily meet this needs, thus a demand for improvements exists.

These needs moved our hospital to work together with two specialised centres to develop a prosthesis that:

- Is completely customizable: the design and manufacturing of the prosthesis allows being perfectly adjustable to patient's anatomy, since it is designed from an image of the patient obtained from computerised tomography. Furthermore, it is directly manufactured using biocompatible materials by different techniques, including 3D printing.
- It has a specially designed geometry with support areas at the ends to enable the growth of the bone and the binding of soft tissues. This allows the perfect integration of the prosthesis within the adjacent bones.
- It is light but extremely strong thanks to biocompatible materials and the manufacturing methods used. Moreover, these methods are fast and save a significant amount of material.

BUSINESS SECTORS OF APPLICATION

Health sector: medical devices and more specifically prosthesis for maxillofacial surgery.

TECHNICAL ADVANTAGES AND BUSINESS PROFITS

This prosthesis and the corresponding manufacturing method will:

- Speed up patient recovery and save resources to the hospital. Unlike the conventional prosthesis, there is no need to adjust it to the patient's anatomy, so more than one hour of surgery is saved. This will have a positive impact on the patient, the surgeon and the hospital.
- Be more resistant than the current prosthesis. Since modelling during the surgery is not needed, we avoid stressing the prosthesis which spans its life.
- Be manufactured faster and save material: Our advanced manufacturing method allows reducing the volume of the prosthesis and in consequence, the manufacturing time and use of material.

DEVELOPMENT OF THE TECHNOLOGY

We are currently working on the biomechanical validation of the prosthesis.

INTELLECTUAL PROPERTY RIGHTS

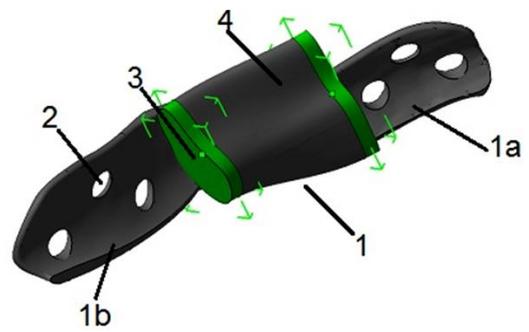
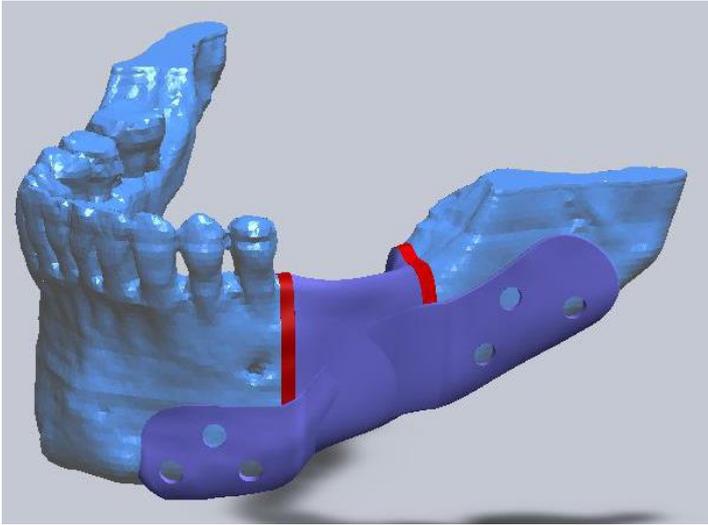
Both prosthesis and manufacturing method are protected in Spain (granted patent ES2525506) and Europe (application phase).

SOUGHT COLLABORATION

We seek for a company interested in either the commercial exploitation of this technology or sponsoring a first clinical study in which this prosthesis will be implanted in selected patients as compassionate use. This company must hold an ISO 13485 certification as well as authorisation for manufacturing customised medical devices. Licensing or other ways of collaborations are welcomed.

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RELATED IMAGES



CONTACT

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