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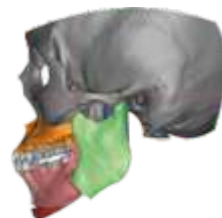


BIOTECHNICA®

Engineering, Medical Co. Ltd.

"engineering for life"

CRANIO MAXILLA FACIAL (CMF)



About Us

Our company works in the field of implant and joint prosthesis design, Personalized Anatomical Modeling, Surgical Guides and Medical Models that are fully suitable for the patient's body structure.

We design and produce implants, surgical guides and prostheses that are fully compatible with the anatomy of patients (custom made), to preserve human organs that cannot function for various reasons (cancer, accidents, organ failure due to disease), lost or damaged without the possibility of recovery. In performing these surgeries, we use accurate high-resolution 3D computed tomography (CT) and magnetic resonance (MR) images.

Our Vision

Our mission is to become one of the few companies in the world engaged in the production of personalized implants and prostheses, and together with the Turkish Doctors and Engineers with whom we work together, to conduct research in the field of biotechnology, which in this regard will reduce our country's dependence on foreign countries.

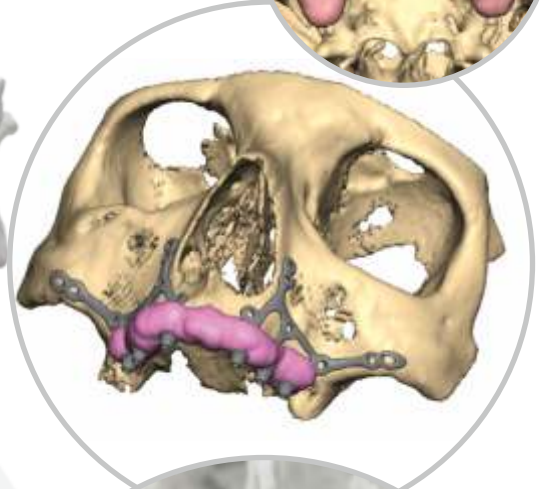
Our Mission

Our mission is to design and manufacture implants and prostheses for rapidly recovery of health, that can best follow the patient's natural movements and are fully compatible with anatomy of patients who have lost their natural functions

The biggest advantage is that the implant (including the palate prosthesis), which is specially designed and produced, can be applied inside the mouth with a single surgery. Implants and prostheses, compared to zygomatic bone implants that pass through the maxillary sinuses and have a higher risk of infection, created by us for patients who do not have the necessary bone mass, are made from a tissue-safe titanium alloy using additive manufacturing technology, with a very low the level of morbidity, for which was made analyzys the strength and fatigue of the material.



CUSTOM - MADE
CATSI[®]
Computer Aided Titanium
Subperiosteal Implant

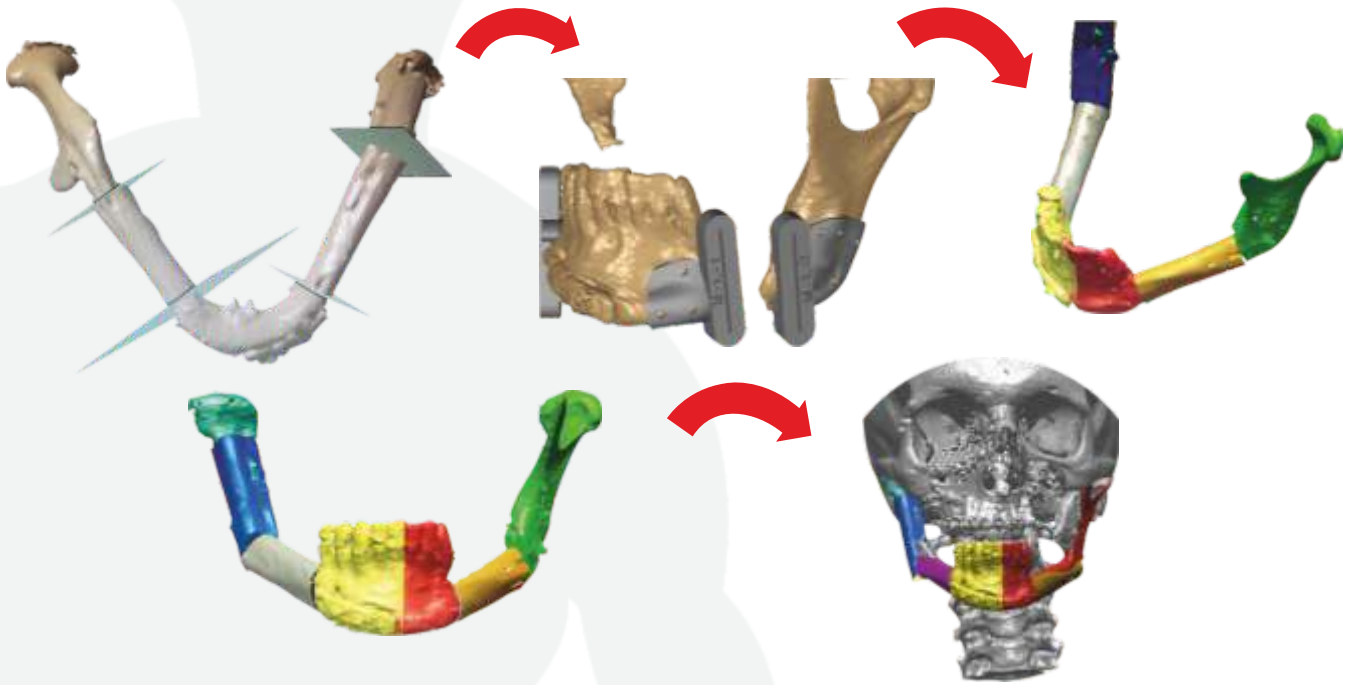


These implants and the prostheses made on them, even under local anesthesia, are easily installed in one operation, and patients have the opportunity to get their teeth on the same day. This is the first project in our country, fully developed in digital format. Due to computer technology, the possibility of damage to the nervous tissue is excluded. For achieving long-term use developed by selecting and fixing areas of high bone density, as well as performing dynamics and fatigue analyses. The short and hassle-free postoperative process is one of the biggest advantages of the system.

"New Generation Custom" **SUBPERIOSTEAL IMPLANT**

BEGO
Multi-Unit Abutments Integrated

Reconstruction of the Mandible and Maxilla With a Free Fibular Flap

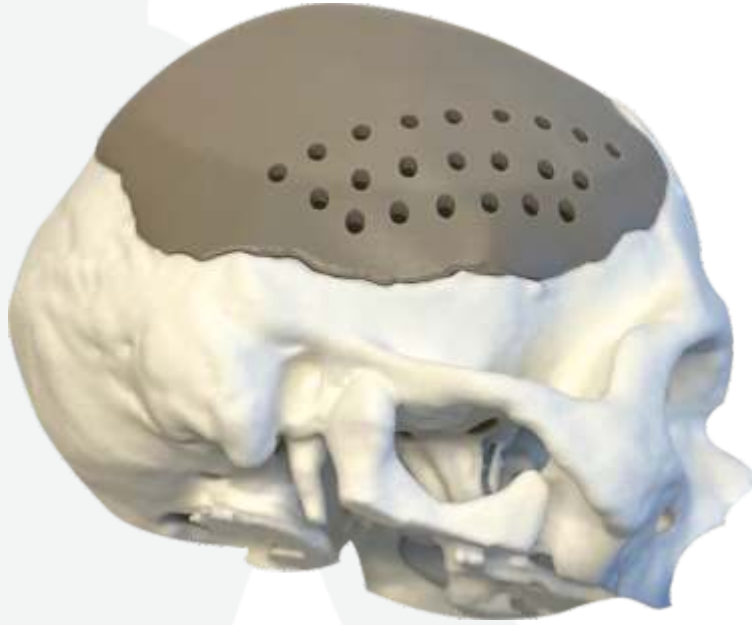


Method and advantages

- DICOM data obtained from 3D CT scans of thin sections of bone structures to be reconstructed and used in reconstruction, are being studied.
- Individual planning is carried out together with the patient's surgeon.
- The defect is identified in 3D in its actual size and anatomical position, and the reconstruction is performed with the same precision.
- Incision templates are created to fit perfect to the bone structures to be reconstructed and fit to be used in reconstruction, preventing misplacement.
- With the ability to make incisions with precise measurements, less bone tissue is lost.
- Since full contact will be achieved in the widest way possible on all surfaces between the bone segments, recovery (ossification and stability) will be better.
- The operation duration is reduced and the success rate increases.



Cranial Implants



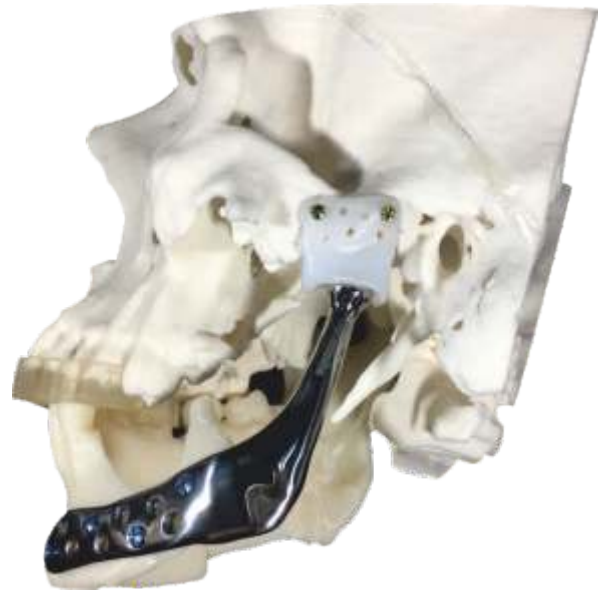
Peek Implant

PEEK (polyetheretherketone) is a material with high mechanical and physical properties, as well as thermal and dimensional stability. PEEK is a chemical resistant material that can remain in the body for a long time. Due to its elasticity close to the bone modulus, it is widely used in the world as an alternative to metal implants. The PEEK material has excellent resistance to thermal degradation and may therefore be preferred for closure of large bone defects.

Patient Specific Mandibular Implants and Prostheses

Mandibular prostheses

Loss of mandibular bone tissue (including jaw joints) as a result of road traffic accidents, gunshot wounds, oncological diseases, developmental disorders and other diseases can lead to a deterioration in the aesthetics of the patient, along with functional deficiencies. In these cases, special operations are carried out for patients to ensure integrity in the area of loss and to compensate for lost teeth and joints. The substructures to which palatal prostheses made for teeth lost with bone mass will be attached, can be adapted to our prostheses. After recovery, palatal prostheses can be screwed to these infrastructures with special screws.



Our engineers also design reconstructive plates specifically for patients with mandibular osteotomy. Thus, special plates that are fully compatible with the lower jaw bone and do not lose strength during flexion, combined with short operation durations and low morbidity rates, are aimed at ensuring that patients live without problems for many years.



Patient Specific Temporomandibular Joint Implants (TMJ)

After delivering us a tomography of the head, made in accordance with the protocol, a concrete 3D model of the patient is created together with the surgeon to decide on the design of the prosthesis for a particular patient. The joint prosthesis components are designed according to the guidelines decided on this model. Stress and fatigue analysis of the non-linear load that can occur on a joint during use are carried out and design recommendations are made. In particular, the design of the neck and the location of the implant screws in which the load is accumulated are specially designed by our highly experienced engineers with the approval of the surgeon.

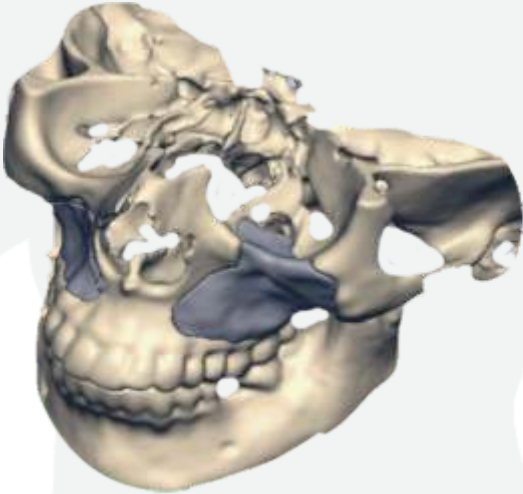


Patient Specific Total Temporomandibular Joint Implants (TMJ)

- Mandibular component- Titanium (Ti-6Al-4V) additive manufacturing
- Fossa component-ultra high molecular weight polyethylene (UHMWPE)
- Screws-Titanium (Ti-6Al-4V)
- More compatible with bone, less chance of displacement and breakage
- Longer lasting
- The installation operation does not last long (the patient is less time under anesthesia).
- Has low morbidity rates (fewer health problems that may occur after surgery).
- Implanted with less damage to the existing bone tissue.

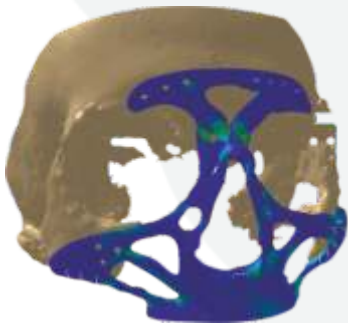
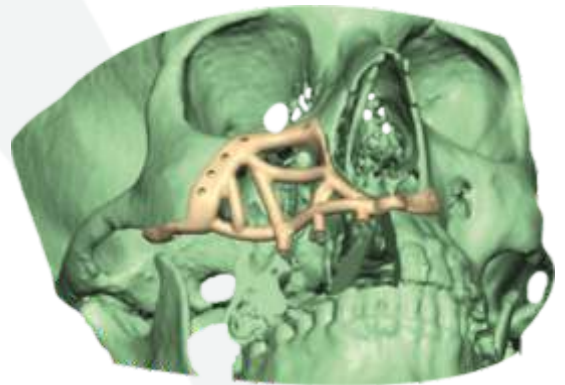
Maxillofacial Implants

Based on the 3D data obtained by the CT images of the patient, fully compatible with the anatomy of the patient Maxilla implants, are designed by our engineers and after the approval of our surgeons, are produced from biocompatible materials such as titanium alloy, Uhwpe, Peek, which are compatible with the bone.



Designed according to the best bone quality sites and the position of the screws is determined. When designing, attention is paid to the conformity of the anatomical structure and compatibility with soft tissue.

Fixed palatal prostheses can be integrated into our protrusion implants. For this, it is necessary to do a CT scan while the temporary palate prosthesis made of radiopaque material is in the patient's mouth and send it to us.



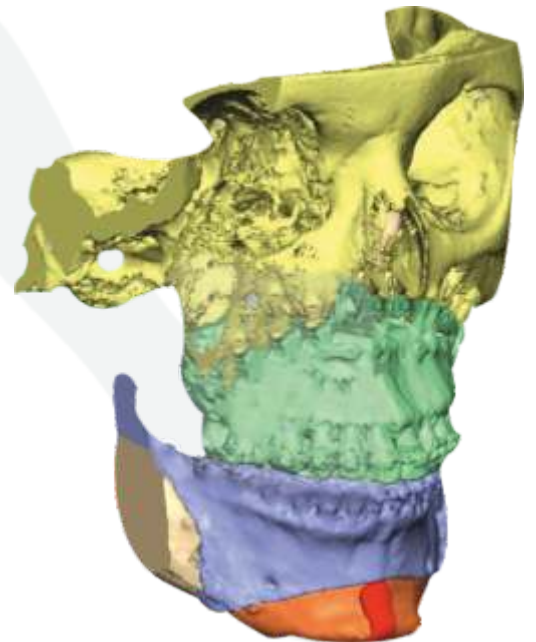
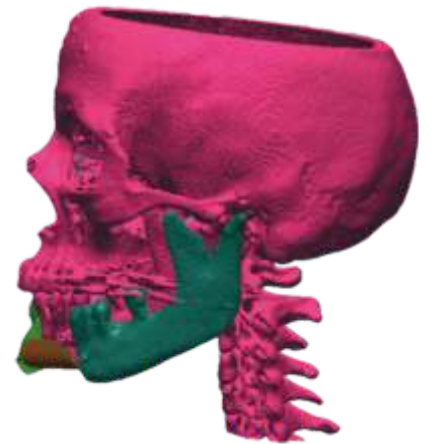
3D Virtual and Model Surgery

3D Virtual and Model Surgery

Along with the ability to perform virtual surgery using special computer software, surgeons can also perform Model surgery by using 3D models of patient data obtained via 3D printers. Thanks to cephalometric analyzes and measurements, all steps of the surgery to be performed are calculated with a precision of one tenth of a millimeter. The relationship of muscles, nerves and blood vessels, bone density, tissue thickness, weak and strong areas of the bone are calculated using special software, incisions and screwing sites are preliminarily studied in a virtual environment. We are also preparing medical images for virtual reality (VR) applications.

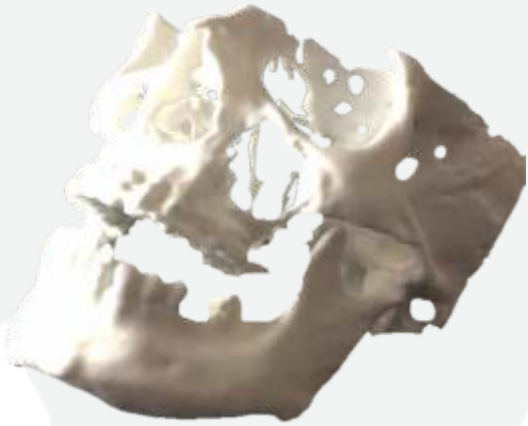
The advantages of these studies can be listed as follows;

- Ability to see the results of different surgical approaches,
- Determination of the best angles and planes for osteotomy,
- Identification and removal of tumor resections from the bone;
- Capturing the perfect mouth closure and bone symmetry;
- Short terms of operations and successful operations;
- Design of individual implants/prostheses.



3D Medical Models

By transforming the bones of our body into 3D models using the capabilities of modern technology, doctors have the opportunity to take 3D models of their patients' bones in their hands and perform operations on them by measuring, cutting, drilling and screwing.



At the same time, 3D medical models are unique materials for communication between the surgeon and the patient, for more accurate diagnosis by the doctor of the disease, as well as for a preliminary prediction of the location of the implant and screws. Patient-specific medical models obtained by Computed Tomography (CT) with 3D printing technology help surgeons to plan the surgical operation and make better decisions.



We in the Media

Medical Technical Journal



Defence Turkey Journal



Person-specific Planning Meeting on CMF



Alper Erken claims that operations are more successful with 3D printed models.



Biotechnica Co Ltd uses high technology In organic modeling.



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