

ACMIT

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DENTOSKULL[™] – MULTI-FUNCTIONAL HEAD MODEL FOR TRAINING IN ORAL AND MAXILLOFACIAL SURGERY

THE MODULAR, REALISTIC AND SUSTAINABLE HEAD MODEL ALLOWS THE REPEATABLE TRAINING OF SURGICAL PROCEDURES FOR DIFFERENT PATHOLOGIES

In oral and maxillofacial surgery, it is important to intensify education and training for both students and experienced surgeons. This is shown by the fact that up to 65% of patients with dental implants, for example, experience at least one complication during treatment.

A newly developed, cost-effective head model, based on real data and using 3D printing technology, enables training to be carried out under consistent conditions. Interchangeable upper and lower jaw modules allow the model to be reused when needed, while a 3D mount enables realistic positioning of the model during training. The jaw elements are equipped with different pathologies and different sinus membranes to simulate various training scenarios. Cortical and cancellous bone areas are realised as well as the mental nerve and special gum replicas.



DENTOSKULL mounted on table and ready for use

 Federal Ministry Innovation, Mobility and Infrastructure Republic of Austria Federal Ministry Economy, Energy and Tourism Republic of Austria





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SUCCESS STORY



Thanks to its design and the implemented pathologic treatment cases, the current model offers training opportunities for a variety of surgical procedures, such as implant placement, bone block augmentation, sinus lift, GBR techniques, and bone block removal.

Impacts and Effects

The main advantages of DENTOSKULL[™] are:

- The opportunity to study individual jaw pathologies in a realistic and interactive way to prepare for complex medical interventions.
- Enabling training under consistent anatomical conditions for students, trainee doctors and experienced practitioners.
- Education of patients about planned medical procedures so that they can make informed decisions about their health.
- Offering a platform for testing of new products and procedures as early as the product development phase.
- Providing long durability and reusability using specific materials and a modular design.
- Efficient manufacturability through optimized printing and molding processes.

Adapting the modules to additional pathologies can further increase the range of applications and reduce costs for the user and training at the same time. In addition, only bioplastics are to be used for all anatomical components as sustainability was and is a central focus during development.

As the result, main benefits of the model are reflected in reduction of operating theatre times, less stress for patients, energy savings and cost reduction.

Moreover, the reduction of complications through optimized surgical preparation can be promoted as well as a faster and more efficient growth of expertise through training under consistent, repeatable conditions.

Acknowledgements and Awards



DENTOSKULL[™] won the ecoplus **Innovation Award 2023/2024** in the category of "Medicine, Medical Technology, Innovations in Healthcare and Life Sciences"

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