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PER-ONE Advanced 3D Planning Tool for Patient-Specific Point-of-Care in CMF and Bone Surgery

Problem

In reconstructive surgery, accurate preoperative planning is key to achieving optimal functional and aesthetic outcomes, as well as reducing risks and surgical time.

Conventional surgical planning methods for such procedures often require physical tools (models, splints), which are time-consuming, depend on manual skills, and produce unpredictable results. There is a growing demand for precise, fast, and intuitive digital solutions.

Solution

PER-ONE is a 3D virtual planning software for the design of patient-specific cutting guides and custom-made reconstruction plates for surgeries requiring mandibular reconstruction using a fibula flap.

These guides and plates, designed with PER-ONE prior to surgery, enable cuts to be made with millimetric precision, reducing surgical times and achieving optimal reconstruction results.

PER-ONE allows surgical planning designs to be carried out easily and efficiently in approximately 20–30 minutes. It uses a guided and intuitive workflow, enabling the user to import three-dimensional models and work directly from the patient's own morphology. This intuitive and guided design approach allows even non-specialist professionals to perform surgical planning and minimizes the likelihood of error.

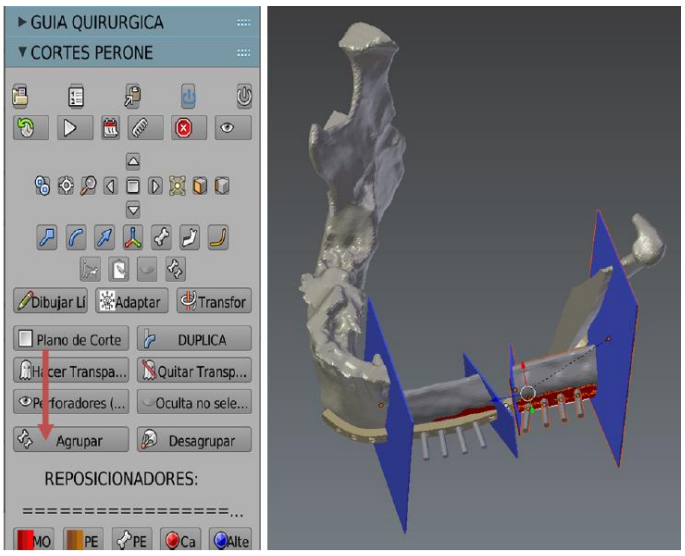

Image 1. *Screenshot of the PER-ONE software*

As shown in Image 1, the use of PER-ONE enables an integrated 3D visualization in which, within a single figure, the fibula segments prior to their final positioning, the precisely located perforators (with millimetric accuracy), and the cutting planes generated for the surgical procedure (for which PER-ONE also designs the necessary cutting guides) are all represented.

State of the invention

PER-ONE is fully developed and hosted on a remote server, allowing immediate use without the need for any installation, specific resources, or operating system compatibility.

Advantages

- Interfaz Clear, structured, and intuitive interface that guides the surgical planning design
- Fast learning curve
- No need for use by a specialized professional
- Time-saving, requiring only approximately 20–30 minutes per plan
- High precision
- Transfer to the operating room through the fabrication of customized surgical guides

Protection

Favorable notification from the Intellectual Property Registry of the Community of Madrid, with registration entry number 16/2025/3875.

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