

A process for obtaining three-dimensional models of nasal cavities with specified functional parameters

CSIC and Universidad Politécnica de Cartagena have developed a process that allows reconstructing the geometry of a nasal cavity and that achieves certain pre-specified functional parameters, starting from the geometry corresponding to the pathological nasal cavity.

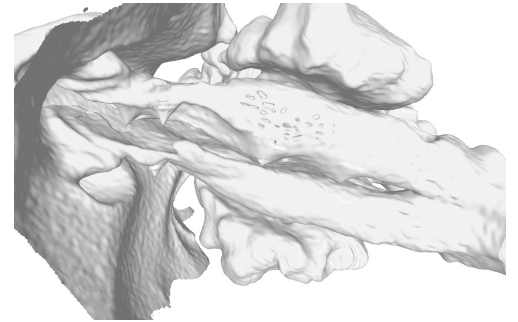
Industrial partners are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

Realistic and customizable three-dimensional models

This process allows obtaining a unique three-dimensional model, corresponding to the reconstruction of the nasal cavity of a patient with specified functional parameters, from the model of his nasal cavity, where this model is able to provide a plurality of representative parameters of its morphology and functionality with indicative measures for the clinical otorhinolaryngological diagnosis of the existence of any nasal pathology

In this way, the geometry of a nasal cavity can be reconstructed and the nasal cavity can have certain pre-specified functional parameters, based on the geometry of the corresponding pathological nasal cavity. This reconstructed cavity can be used as a model by the medical specialist to reconstruct the pathological nasal cavity by means of real surgery.



Morphology of overlapping nasal septa, before and after transformation

Main innovations and advantages

- This process provides not only the functional analysis of the patient's nasal cavity, but also provides the geometry of the three-dimensional model of the nasal cavity that satisfactorily complies with functional parameters previously established by the medical specialist, who can use it as a guide model to reproduce in the actual nasal surgery.
- The process is based on the combination of the three techniques of Computational Fluid Mechanics (CFM), Virtual Surgery (VC) and 3D Geometric Morphometry (3D-GM) in a single tool, so that together they provide a complete, objective and individualized solution for the patient.
- This process can be applied in the field of otorhinolaryngology, nasal surgery and nasal diagnostics, by processing digital data for modeling or simulation of the nasal cavity.

Patent Status

Priority patent application filed suitable for international extension

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