AVATARS AND THERMOGRAPHIC ANALYSIS IN FACIALLY DISFIGURED PATIENTS (019)

*Nascimento R.¹, Horta R.¹, Egipso P.², Rodrigues A.³, Silva I¹

¹Hospital São Joao, Plastic Surgery, Porto, Portugal
²Burn Unit, Plastic and Reconstructive Surgery, Porto, Portugal
³Porto Faculty of Medicine, Microbiology, Porto, Portugal

Background: Several methods have been previously described to evaluate patients with facial disfigurement, as they may provide a measure of severity, progression of deformity and recovery of normal function. An ideal method should combine morphological analysis, functional and dynamic evaluation. The aim of this study was to investigate how avatar and thermography technologies could be useful in Plastic and Reconstructive Surgery, namely in cases of facial disfigurement.

Methods: This study was divided in two different parts in order to analyze the potential applicability of these two technologies. First, we conceived look-alike 3D facial avatars and posteriorly, thermography was used to evaluate patients with facial disfigurement including a patient with severe cosmetic and functional facial burn sequelae.

Results: In addition to a detailed analysis of the facial dynamics, 3D avatar models analyzed with MeshLab allowed a morphological study and direct measurements such as the eyelid aperture. Thermographic analysis of these patients showed differences in the surface temperature distribution due to muscular damage, facial paralysis and overall decrease of the regional blood flow.

Conclusions: These two technologies could have a place in the management of facially disfigured patients with diagnostic and therapeutic implications. They may also be considered in future protocols for optimizing and implementation the process of facial transplantation by inclusion of the recipients in standardized follow-up protocols in order to compare results. Further studies have to be done, in order to validate the innovative methodology here proposed.