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Artificial Intelligence-Generated Previews of Hyaluronic Acid-Based Treatments

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Abstract : Communication between practitioner and patient is of the utmost importance in aesthetic medicine: as of today, images of previous treatments are the most common tool used by doctors to describe and anticipate future results for their patients. However, using photos of other people often reduces the engagement of the prospective patient and is further limited by the number and quality of pictures available to the practitioner. Pre-existing work solves this issue in two ways: 3D scanning of the area with manual editing of the 3D model by the doctor or automatic prediction of the treatment by warping the image with hand-written parameters. The first approach requires the manual intervention of the doctor, while the second approach always generates results that aren't always realistic. Thus, in one case, there is significant manual work required by the doctor, and in the other case, the prediction looks artificial. We propose an AI-based algorithm that autonomously generates a realistic prediction of treatment results. For the purpose of this study, we focus on hyaluronic acid treatments in the facial area. Our approach takes into account the individual characteristics of each face, and furthermore, the prediction system allows the patient to decide which area of the face she wants to modify. We show that the predictions generated by our system are realistic: first, the quality of the generated images is on par with real images; second, the prediction matches the actual results obtained after the treatment is completed. In conclusion, the proposed approach provides a valid tool for doctors to show patients what they will look like before deciding on the treatment.

Keywords : prediction, hyaluronic acid, treatment, artificial intelligence
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