Profile and smile attractiveness after conventional orthognathic three-phase surgery treatment and with the surgery-first approach

Objective: This study aimed to compare the attractiveness of the profile and smile in patients treated with Conventional Three-phase Orthognathic Surgery (CTOS) and Surgery-First Approach (SFA). **Material and methods:** The sample to evaluate the attractiveness of the profile comprised 46 patients that were divided into 2 groups: Group 1: 25 patients treated with SFA with mean age of 31.05 years (SD 7.99); Group 2: 21 patients treated with CTOS with mean age of 28.81 years (SD 9.24). The sample to evaluate the attractiveness of smile comprised 40 patients that were divided into 2 groups: Group 1: 25 patients treated with SFA with mean age of 31.05 years (SD 7.99); Group 2: 15 patients treated with CTOS with mean age of 25.88 years (SD 7.67). Medical records and digital dental models or dental casts of patients treated orthodontic-surgically by SFA and by CTOS were selected retrospectively from private clinics of Belém and Bauru, Brazil. Pretreatment and posttreatment silhouettes of both groups were performed by transferring the cephalometric tracings from Dolphin software to Adobe Photoshop 2020. Pretreatment and posttreatment smile photographs were cropped in a dimension of 21 x 12.4 cm and converted to black and white after removing the hair face and blemishes to reduce the number of confusing variables. The participants of each modality were randomized in Excel in T1 and T2 for both variables. Then a questionnaire separated for each variable (profile and smile) with Informed Consent Form, the records of the evaluators, the randomized silhouettes and smile in T1 and T2 using a scale in the form of a 10-point grading was sent to WhatsApp Messenger to laypeople, orthodontists, and maxillofacial surgeons. Intergroup comparability of initial age, treatment time, initial PAR index, and cephalometric measurements was performed with independent t tests and sex distribution and type of malocclusion was performed with chi-square test. The score of the initial and final profile and smile attractiveness between the three groups of evaluators was compared with one-way ANOVA and Tukey test. A backward multiple linear regression was used to evaluate if the %PAR and OGS are predictors in the final profile attractiveness. The association between the surgical modalities and the OGS, %PAR and final smile attractiveness were verified with Spearman correlation test. **Results:** In both groups, SFA and CTOS, there was an improvement of profile and smile attractiveness with treatment. Before treatment, the profile of the SFA presented no difference when compared with the CTOS group. Before treatment, the smile of the CTOS group was significantly less attractive than the SFA group. At the final stage, the SFA group presented a more attractive and greater improvement of the profile than the CTOS group. At the final stage, the SFA group presented a more attractive smile than the CTOS group. The %PAR is a predictor in the attractiveness of the final profile and the OGS has a strong and positive correlation with the surgical modalities. **Conclusions:** In this study the SFA show better results in attractiveness of smile and profile with better quality of finishing than COS group. SFA has become a good

alternative for patients, maxillofacial surgeons and orthodontists with shorter treatment time.