Denti-Pro BLOG

DOUBLE CROWN LENGTHENING GUIDE. DIGITALLY DESIGNED BONE AND SOFT TISSUE REMODELING.

MASOUD ABU ZANT JANUARY 8, 2017 3D DSD, DSD COMMENTS ARE OFF 7702 VIEWS

The facially driven smile design process should always start by defining the incised edge of the anterior upper teeth position, in harmony with the face and lip dynamics (fig 1, blue curve). After that, the most harmonious width relationship between teeth, arch and face should be defined, usually using the RED proportion (Recurring Esthetic Dental proportion) (fig 1, red lines). Only after the previous parameters are defined, one should define the width/length proportion of the central incisor and the ideal gingival position of the central incisors (fig 1, green rectangle).

The ideal gingival curve definition will be related to the cervical of the central and the lip dynamics to help determine the hight of the gingiva towards the posteriors (fig 1, yellow curve).

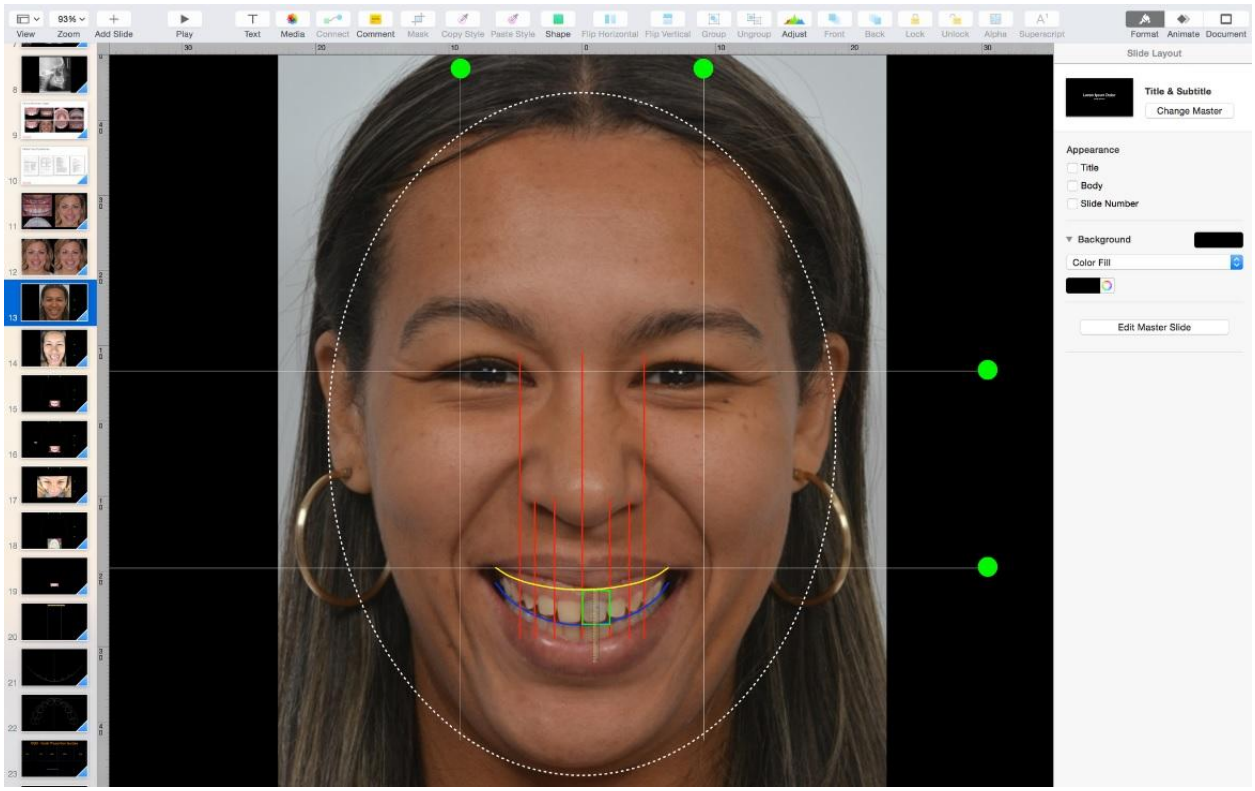

Fig 1. The 2D smile design project done on Keynote-Mac.White doted lines: digital face bow. Blue curve: smile curve.Red lines: width relationship of the six anterior teeth using the RED proportion. Green rectangle: Central incisor width/length proportion. Yellow curve: gingival curve.

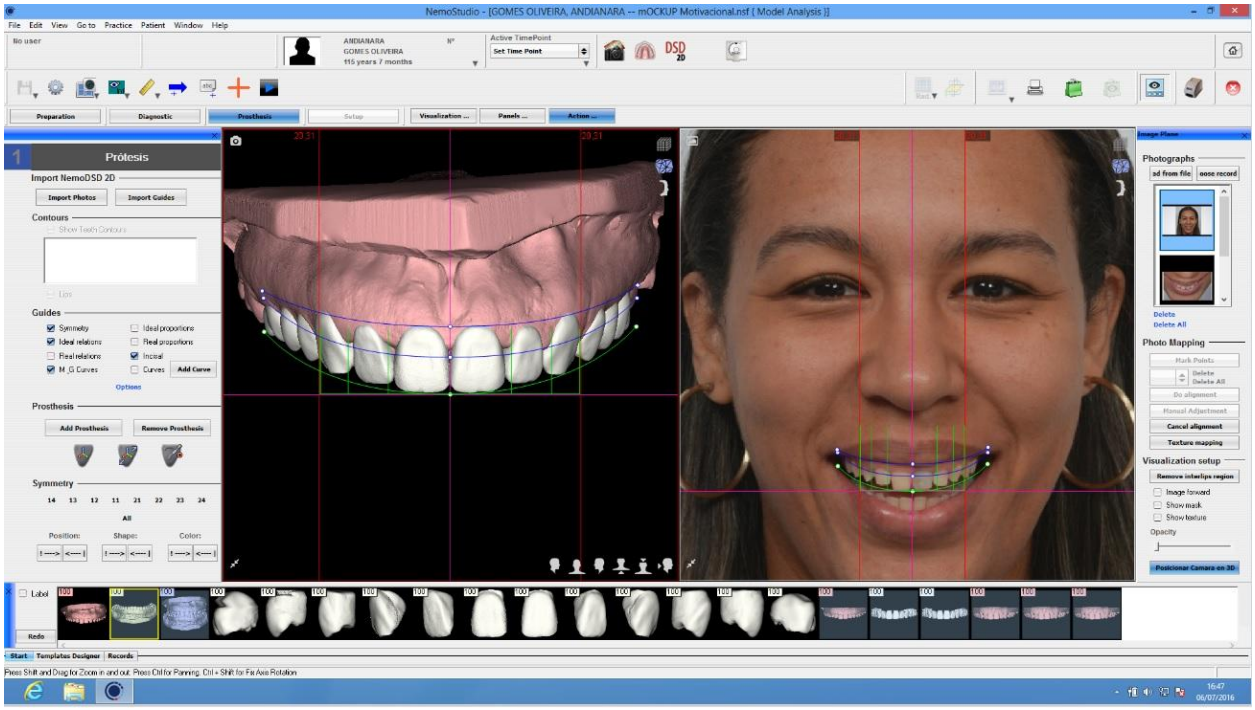

Fig 2. The 2D/3D project can also be done on a specific digital smile design software (NemoDSD 3D). Note that the 3D "digital wax-up" follows perfectly the facially driven 2D smile frame.

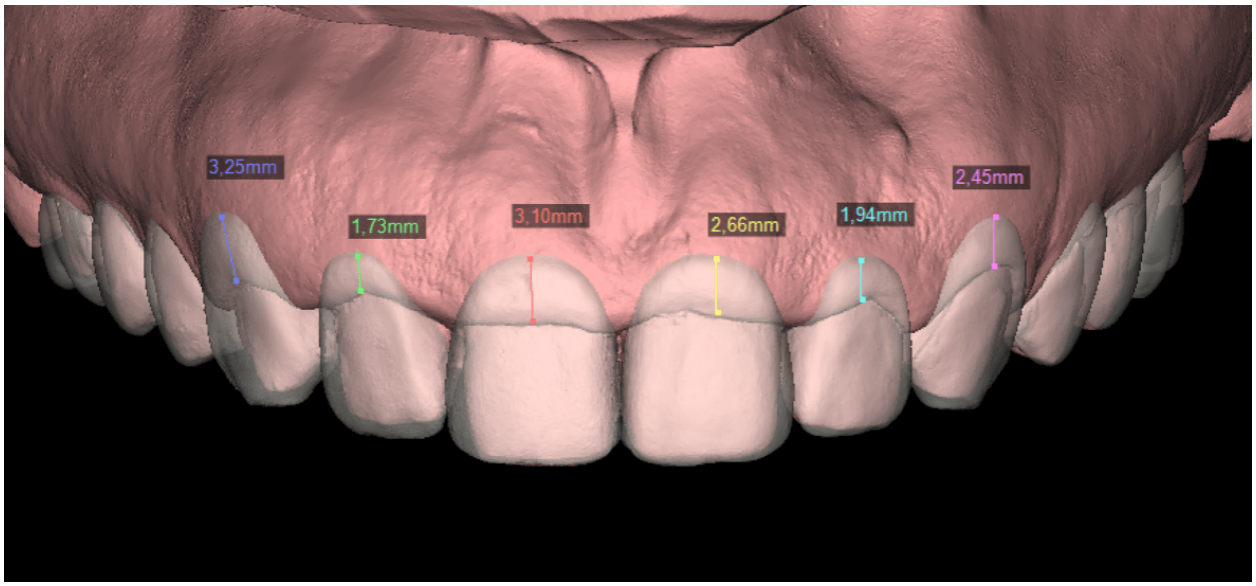

Fig 3. The 3D project with transparency over the digitalized pre op model showing the soft tissue reduction for ideal tooth proportion and facial harmony.

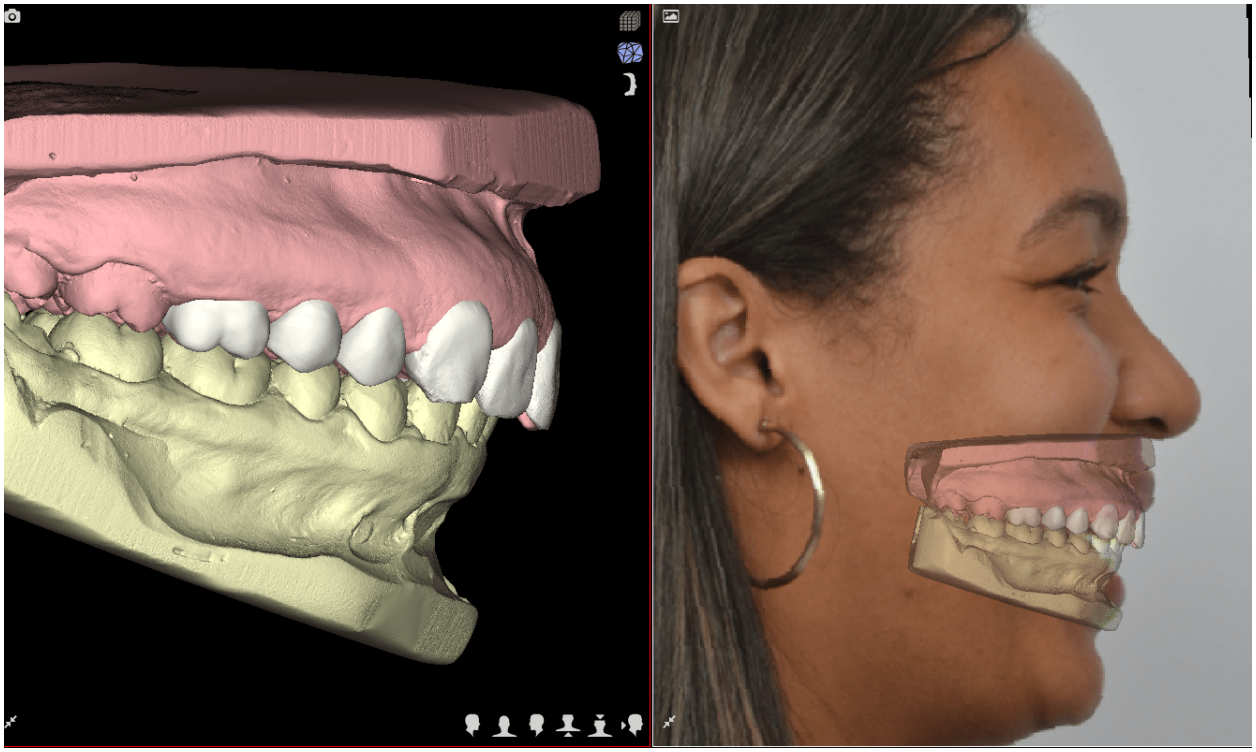

Fig 4. Profile analises of the relationship between the maxila, central incisor and face.

Fig 5. Printed model of the 3D project with the new tooth design and gingival margin. A vacuum tray is fabricated and trimmed creating the soft tissue reduction windows, the biological width space and the bone level, the Double Crown Lengthening Guide (by Coachman C. & Valavanis K.)

Fig 6. The double crown lengthening guide in position showing the amount of soft tissue reduction.

Fig 7.

Incision with the surgical blade supported by the guide.

Fig 8. Guide back in position after soft tissue reduction and opening the flap. The top part of the guide is 2-4mm positioned above the ideal gingival position giving the biological width according to the phenotype.

Fig 9. Quality control after suturing.

Modern predictable Interdisciplinary Dentistry can only be achieved by linking the initial smile design project to the clinical procedures. Digital technology is the best way to create this link by producing devices to help the clinical performance and allowing for a quality control analysis.

On crown lengthening cases this is achieved by transferring the ideal soft tissue position from the 3D digital world to the mouth using printing technology and a vacuum tray. The new double guide will help the soft tissue incision reducing the risk of mistakes and will also improve the bone level visualization when an open flap technique is the choice.

By :

Dr. Coachman has a private practice in São Paulo, Brazil.

Dr Claudio Júlio Lopes, private practice in São Paulo Brazil

Dr Francis Coachman, director of the DSD Planning Center, Madrid, Spain.

Dr Konstantinos Valavanis, Athens Greece.