ELOS MEDTECH

CLINICAL CASE REPORT

PATIENT SPECIFIC HEALING ABUTMENT

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Patient treated with fully digital workflow by creation of patient specific healing abutment made in 3Shape Implant Studio® using Elos Accurate® Hybrid Base™ Engaging

Dental appointments and chairtime have been reduced in a digital workflow for the design of individual healing abutments or temporary restorations but with a continued focus on soft tissue healing.

The patient visited the clinic four times in total: for an initial examination and planning, surgery, impression and delivery of the final screw- retained crowns.

This approach is a predictable and easy workflow where you have all the components needed integrated in the software.

In the present case, a 60-year-old patient, who had recently lost both central incisors due to extremal trauma, was referred to the clinic.

Elos Accurate® products used in this case:

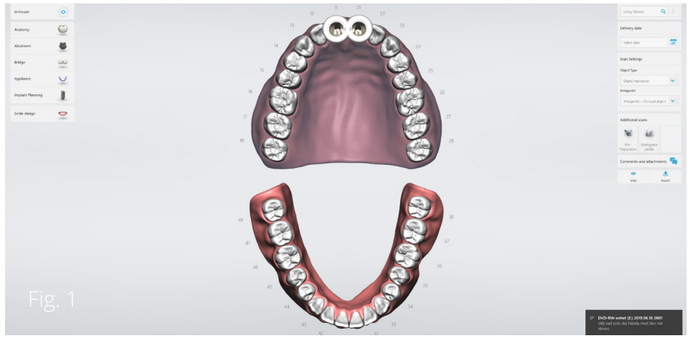

Fig. 1 - 15
Case set-up implant studio.

The patient underwent a clinical examination, a CBCT (ProMax 3D) examination, and an intraoral scan with a 3Shape TRIOS 3. CBCT and intraoral scans were imported into Implant Studio for case planning.

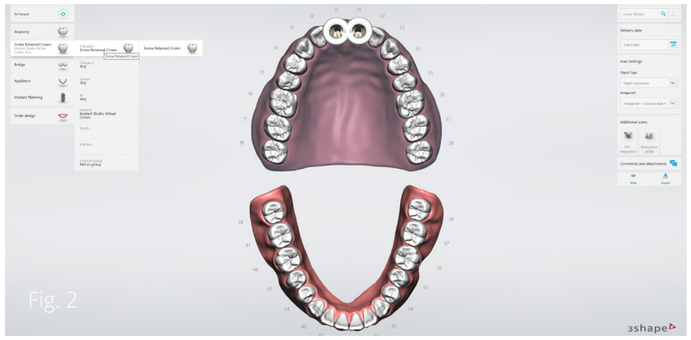

Fig. 2
Selection of guided surgery procedure with screw-retained crown workflow.

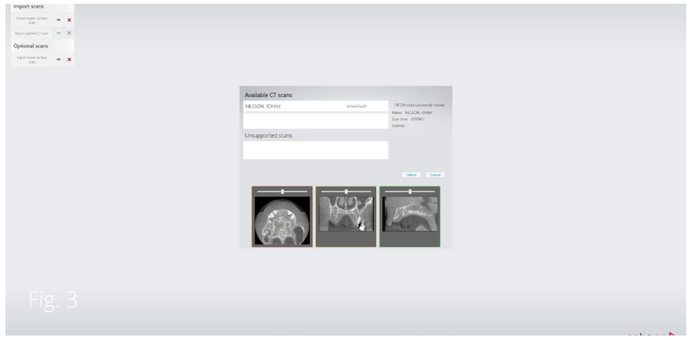

Fig. 3
Import of CBCT dataset.

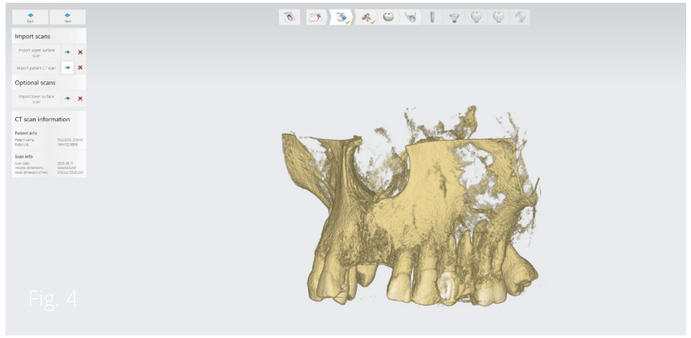

Fig. 4
3D renderad CBCT volume.

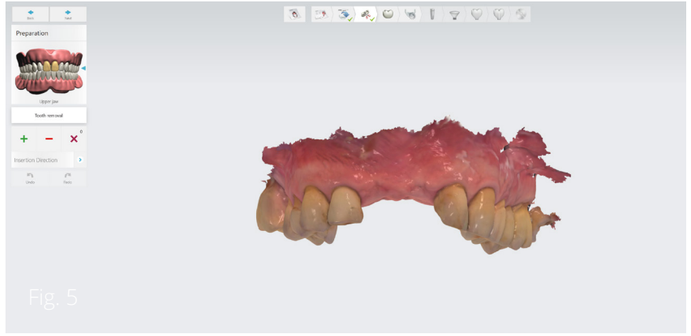

Fig. 5
Preparation of intraoral scan, frontal view.

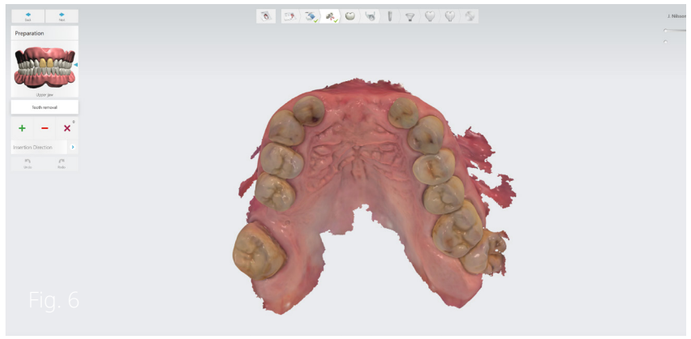

Fig. 6
Preparation of intraoral scan, occlusal view.

Fig 7
Virtual mock-up of central incisors.

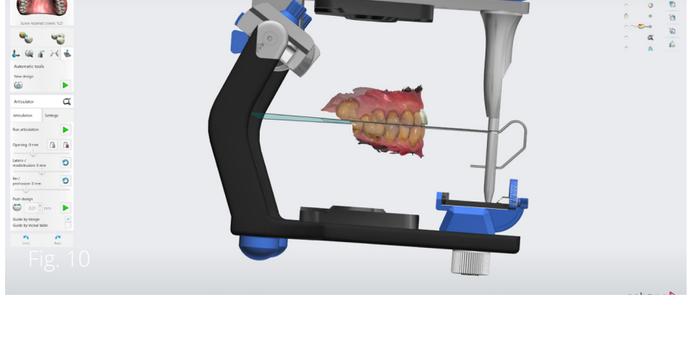

Fig 8
Virtual mock-up of central incisors.

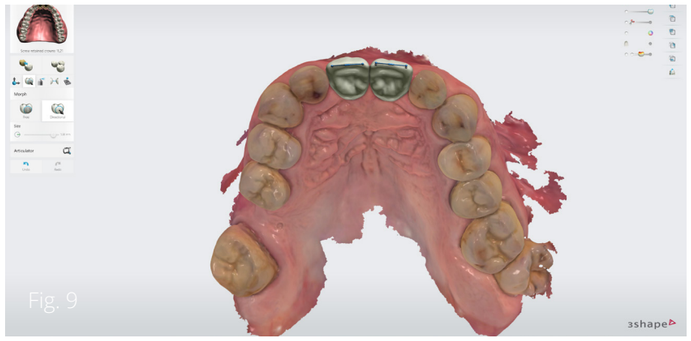

Fig 9
Virtual mock-up of central incisors.

Fig 10
Virtual articulator set-up.

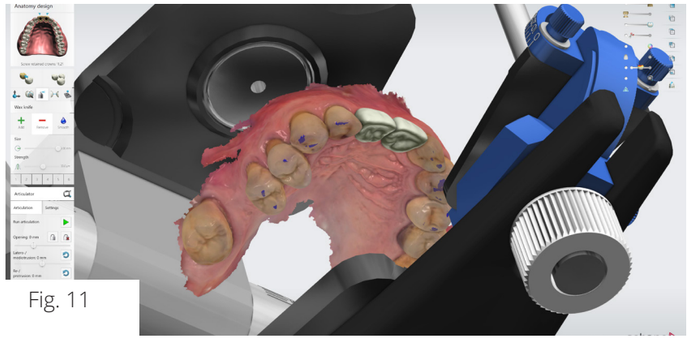

Fig 11
Virtual articulator set-up.

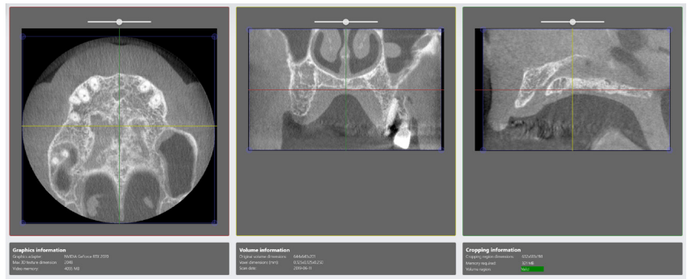

Fig 12
Preperation of CBCT dataset.

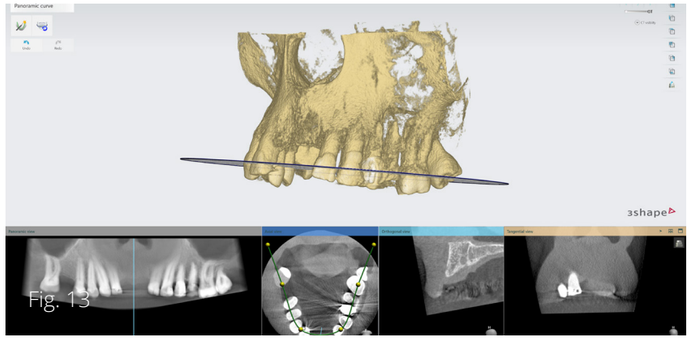

Fig 13
CBCT setup.

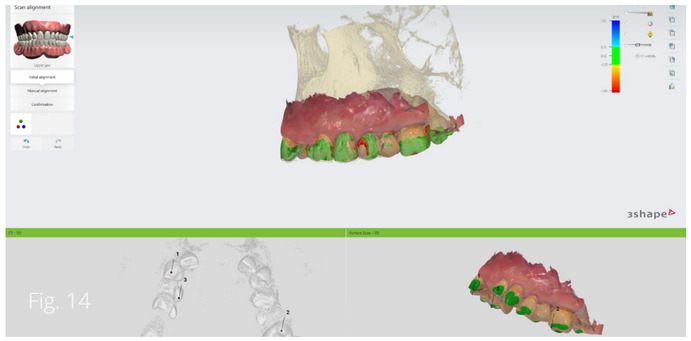

Fig 14
Alignment of CBCT and intraoral scan.

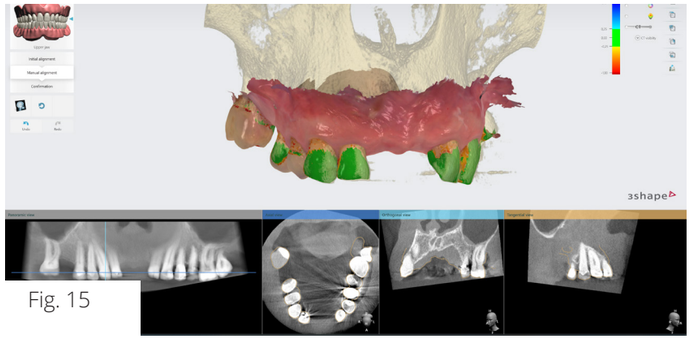

Fig 15
Fine adjustment of alignment between CBCT and intraoral scan.

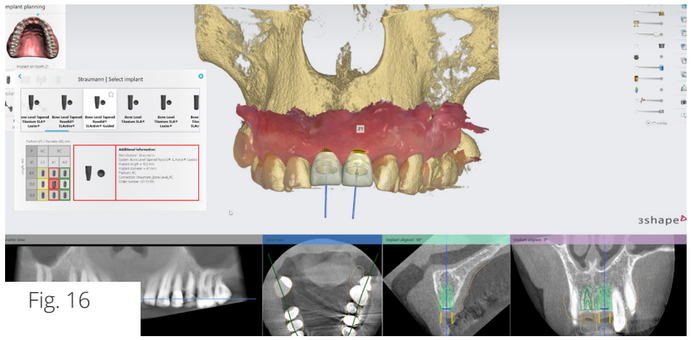

Fig. 16
Selection of dental implants and positioning.

In the present case, two Straumann BLT 4.1 RC implants were selected and positioned in the computer guided software.

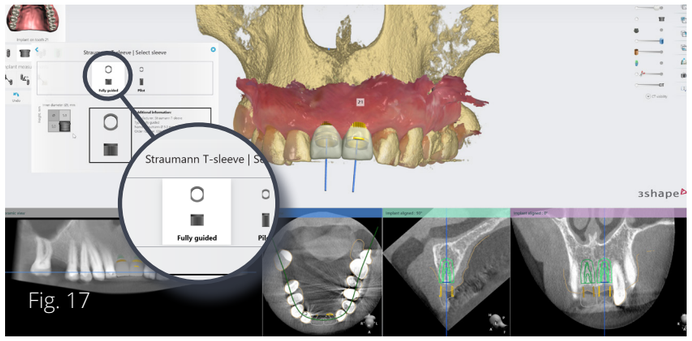

Fig 17
Straumann fully guided T-sleeves.

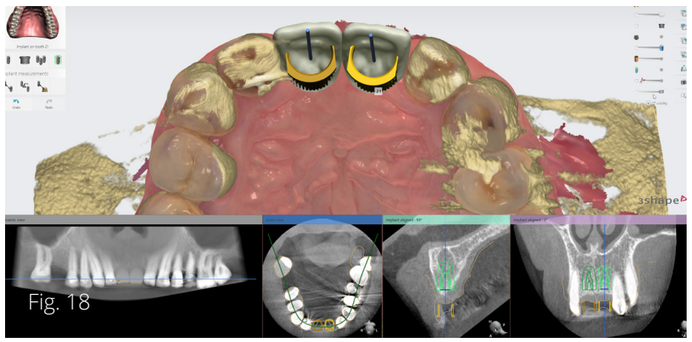

Fig 18
Fine adjustment of implant positions, controling hex orientation.

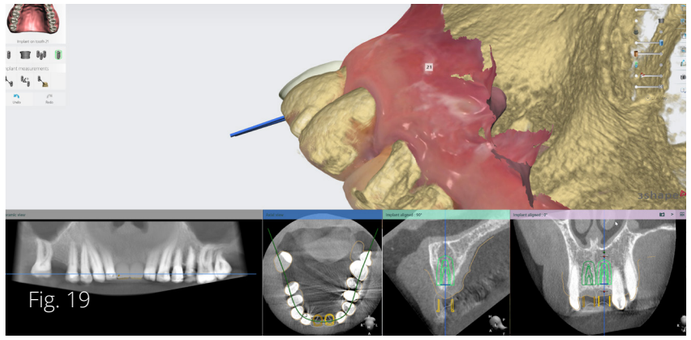

Fig 19
Inspection of implant positions.

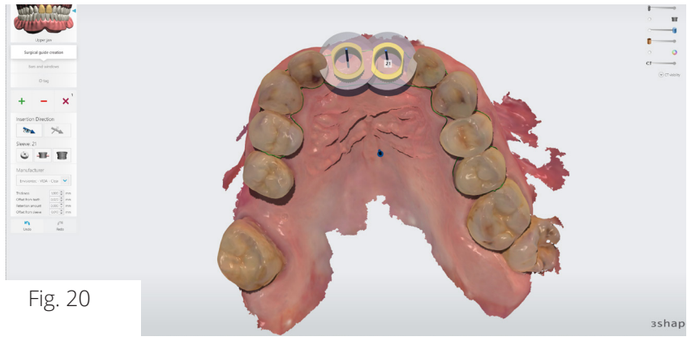

Fig 20
Surgical guide design, adding guide outline.

Fig 21
Surgical guide design.

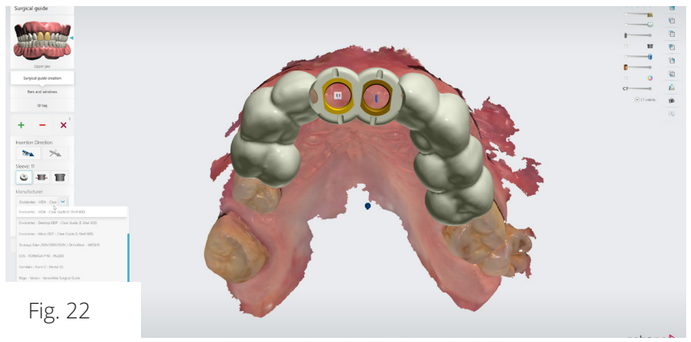

Fig 22
Surgical guide design, slection of 3D-printer settings and added implant hex-position markningns.

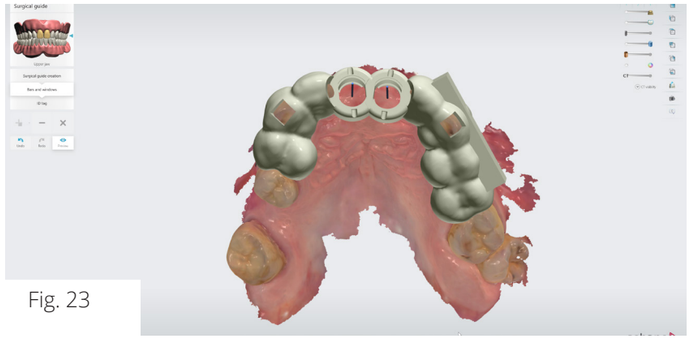

Fig. 23

Fig 23
Finalisation of surical guide design, with added name tag, position contral window.

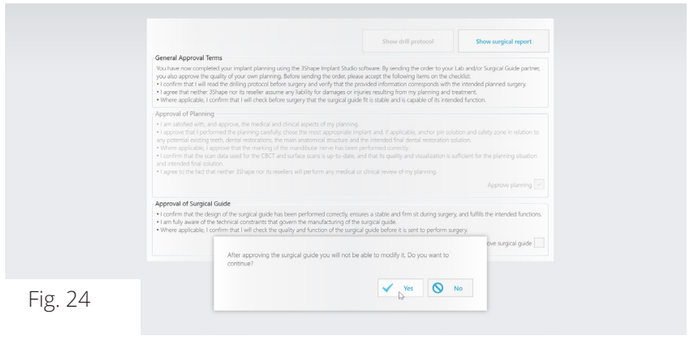

Fig. 24

Fig 24
Approval of guide design.

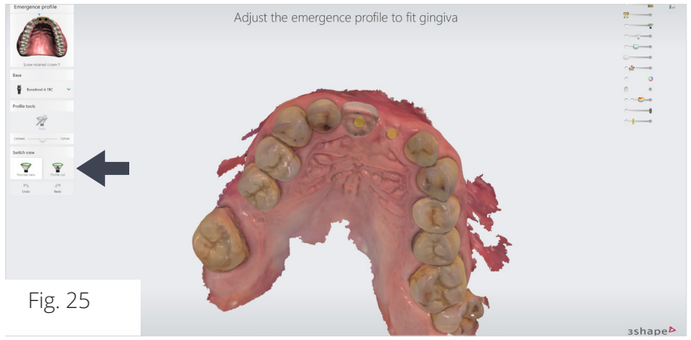

Fig. 25

Fig. 25
Definition of emergence profile in relation to mock-up.

Following the guide design, we had the option to either design two screw-retained temporary single crowns or two reduced crown designs to create custom healing abutments, all with the Elos Accurate Hybrid Base Engaging from the integrated library.

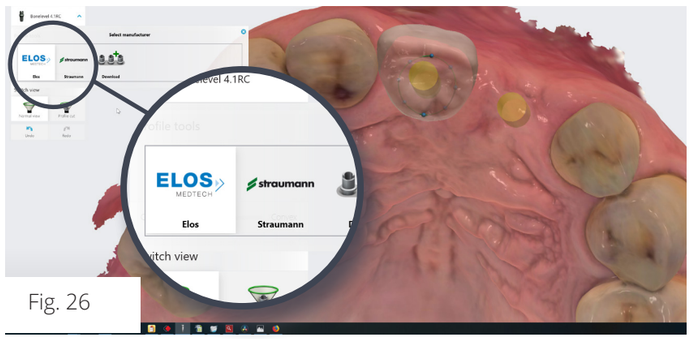

Fig. 26

Fig 26
Selection of ti-base brand.

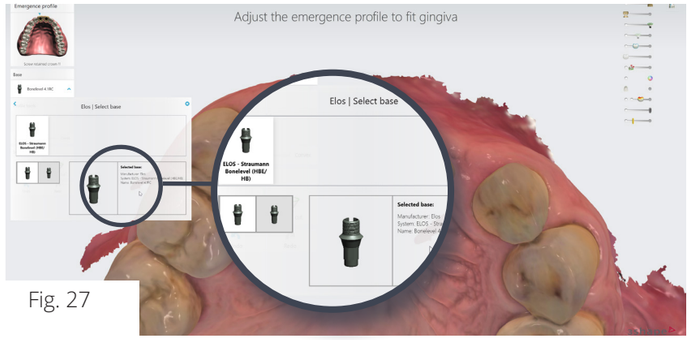

Fig. 27

Fig 27
Selection of appropriate Elos Accurate Hybrid Base Engaging.

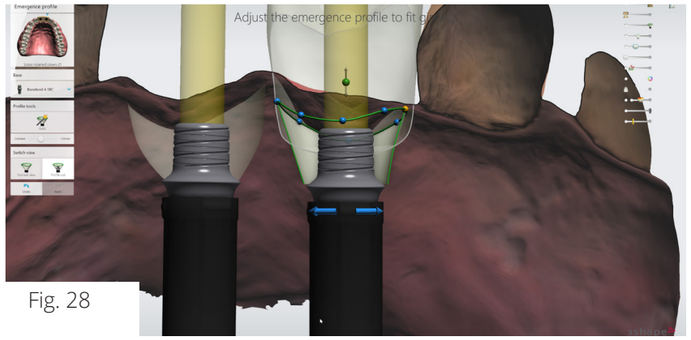

Fig. 28

Fig 28
Ajdusting emergance profile.

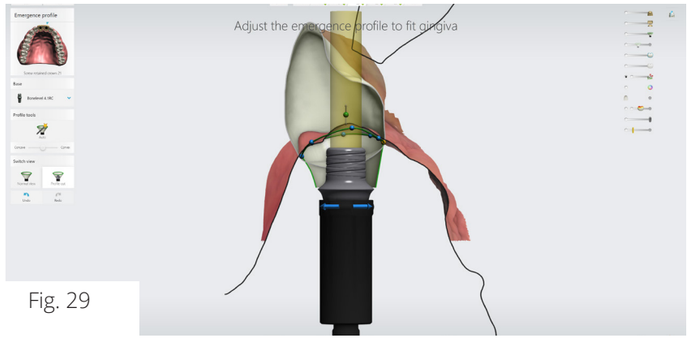

Fig. 29

Fig 29
Adjusting emergance profile.

Fig. 30

Fig 30
Adjustmment of the crown shape.

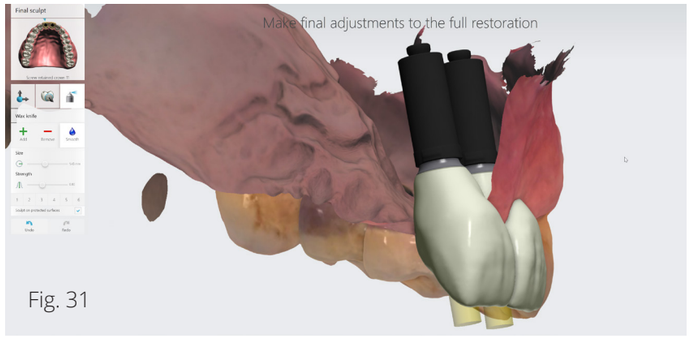

Fig. 31

Fig 31
Final adjustment of the crown shape.

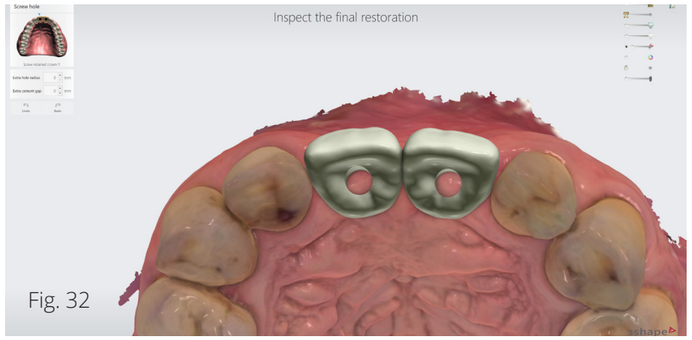

Fig. 32

Fig 32
Inspection of the restorations.

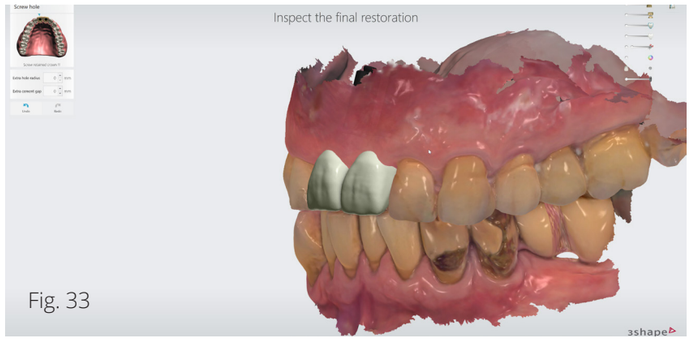

Fig. 33

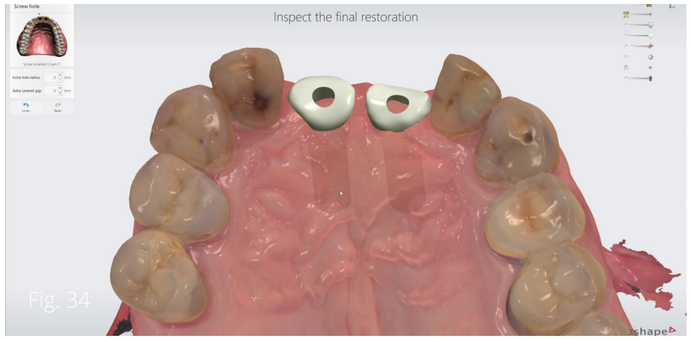

Fig. 34

Fig 34
Case-copy in which we reduced the crowns to create two individual healing abutments.

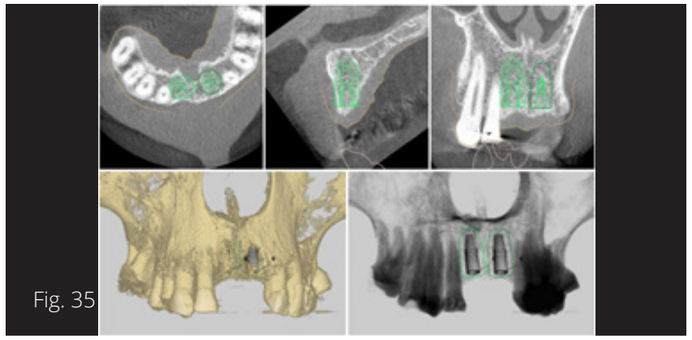
Fig. 35

Fig. 35 - 36
Surgical protocol report.

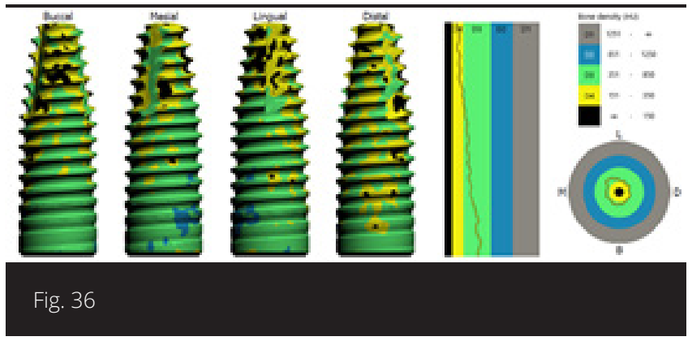

Fig. 36

Fig. 36
Bone density report.

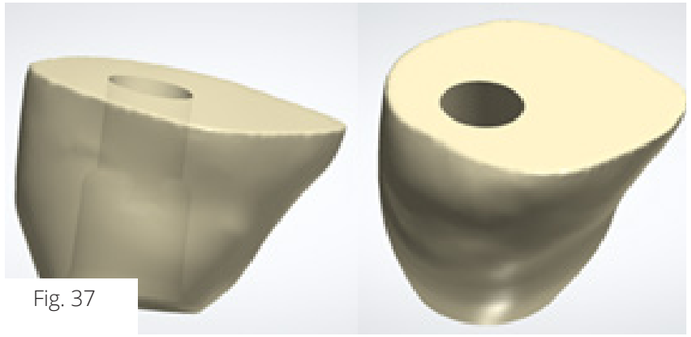
Fig. 37

Fig. 37 - 39
Individual healing abutment STLs.

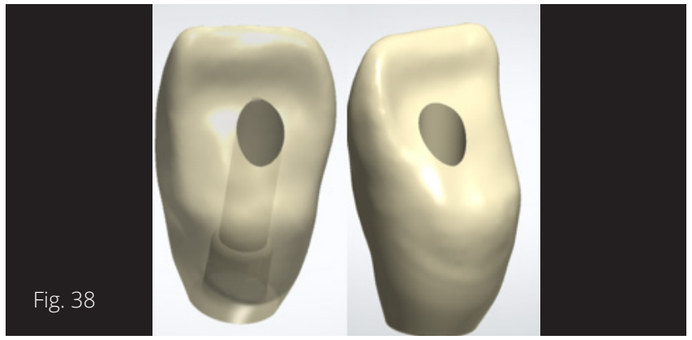
Fig. 38

Fig. 38
Temporary screw retainend corown STLs.

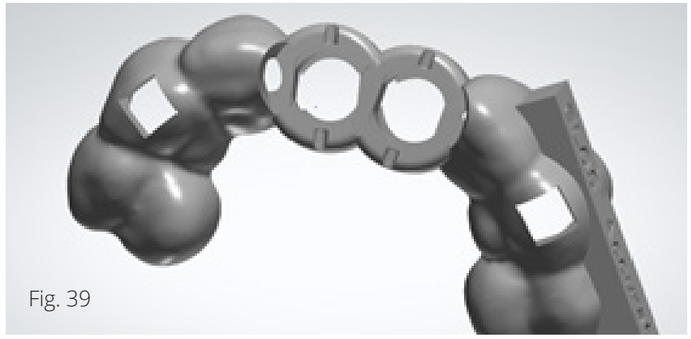

Fig. 39
Surgical guide STL.

Fig 40
3D-printing of healing abutments and screw-retainend crowns.
Temporary crows and custom healing abutments were 3D-printed with an EnvisionTEC printer using their polymer material for temporary solutions.

Fig 41
3d-printed surgical guide with integraded guide sleeves.
Surgical guide printed with the same 3D-printer using the recommended material for surgical guides.

Fig 42 - 43
Temporary screw-retained crowns with Elos Accurate® Hybrid Base™ Engaging were integrated into the temporary crowns and healing abutments.
The surfaces around the printed material were polished and ti-bases were cemented outside the patient's mouth before surgery using Panavia V. Before surgery, restorations and surgery guides were sterilized.

Fig. 43
Custom healing abutmetns with Elos Accurate Hybrid Base Engaging.

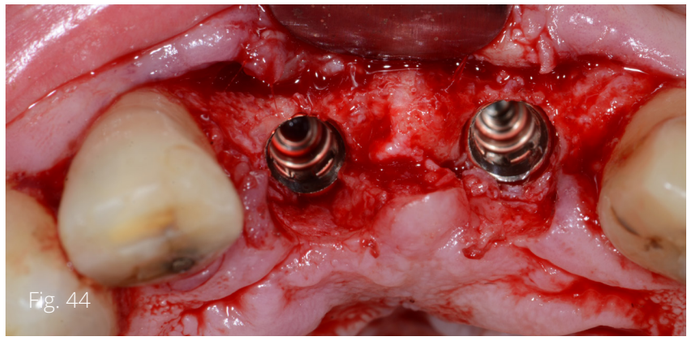

Fig. 44
Stramann BLT implants after completion of guided installation. Due to inadequate primary stability and low ISQ values immediate loading was not an option. During the guided surgery procedure the soft tissue punch was only used to mark out the implant sites. This tissue was then saved and used to augment the buccal mucosa by means of the pouch roll technique. The anatomic shape of the abutments facilitated the positioning of the soft tissue grafts.

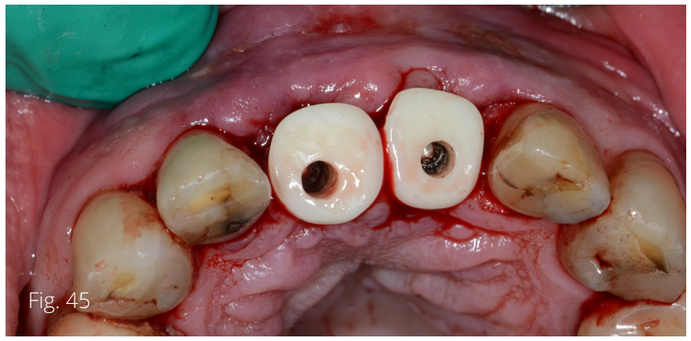

Fig. 45
Custom healing abutments control mounted.

The custom healing abutments were first control mounted on the implants before suturing and final adjustments.

The temporary screw-retained crowns were saved in case they would be needed later.

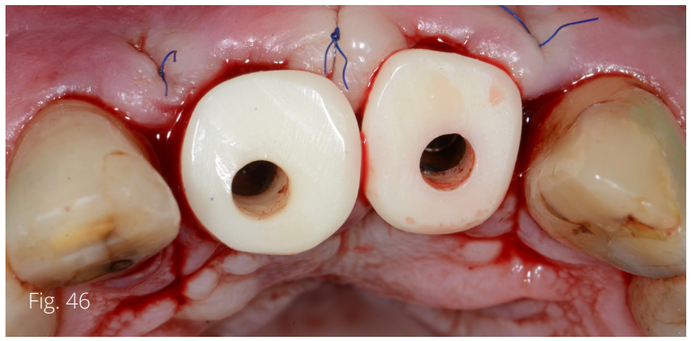

Fig. 46
Suturing around healings abutments.

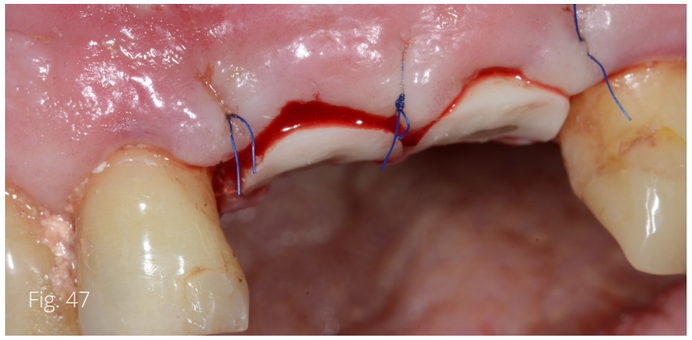

Fig. 47
Adjusting healing abutments in vertical dimensions to not interfere with the temporary restoration.

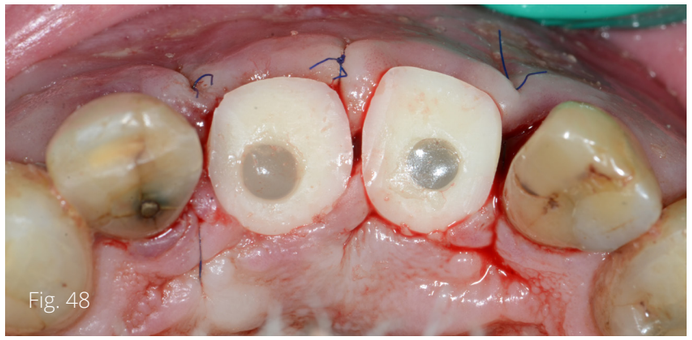

Fig. 48
Final inspection.

Fig. 49
After 3 months of post-operative healing, the patient was called back for the final impression. It was noted that the patient have used snuff during the healing period, contrary to recommendations. This could have impacted the soft tissue healing.

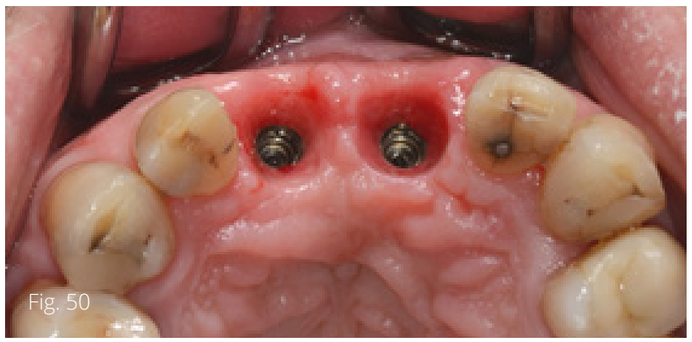

Fig. 50
It was noted that there was adequate formation of emergence profiles at both sites with the help of the custom healing abutments. There was therefore no need for further mucosa formation with temporary restorations. The temporary screw-retained crowns could now be used as a temporary solution before delivery of the final restoration, but in this case the patient decided against it

One week later, the patient was restored with two monolithic KatanaTM Zirconia HTML crowns, with Elos Accurate Hybrid Base Engaging.

Thank you for your contribution:

Björn Gjelvold, Clinic for Prosthodontics, Centre of Dental Specialist Care, Malmö, Sweden

Björn Gjelvold graduated from the University of Malmö 2003. Since 2014, he has been a senior consultant and holds a specialist degree in Oral Prosthodontics at the Center for Specialist Dental Care Lund. He is also a PhD student at Malmö University, Department of Prosthodontics. He is involved in several research projects and international collaborations. He has a special interest involving development and research in the field of digital dentistry and dental implant treatment.

FOLKTANDVÅRDEN SKÅNE

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David Reinedahl graduated from the University of Gothenburg in 2008. Since 2017, he has been a senior consultant and holds a specialist degree in Oral and Maxillofacial Surgery. He is also a PhD student at the University of Gothenburg, Department of Prosthodontics. David is involved in national and international research projects focusing on dental implant treatment.

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