

DTL Mediaan and Mediaan clinic
Netherlands

Immediate dentures based on digital impressions and digital workflow



Solutions featured:

3Shape TRIOS intraoral scanner
3Shape Dental System

Case Information

The patient suffered from parodontitis over a period of a few years. Paro-treatments did not produce satisfactory results. (Fig. 1i, ii)

After consulting with our team, the patient decided she wanted a full denture. We explained to her the possible outcomes of her choice.

In our discussions, we talked about her expectations. Her chief concern was that people would notice her wearing a denture. She wanted the denture to resemble her present teeth set-up as much as possible. (Fig. 2)

She also expressed a fear of conventional impressions. She preferred we took digital impressions.



Fig. 1 (i)



Fig. 1 (ii)



Fig. 2



Fig. 3 (i)

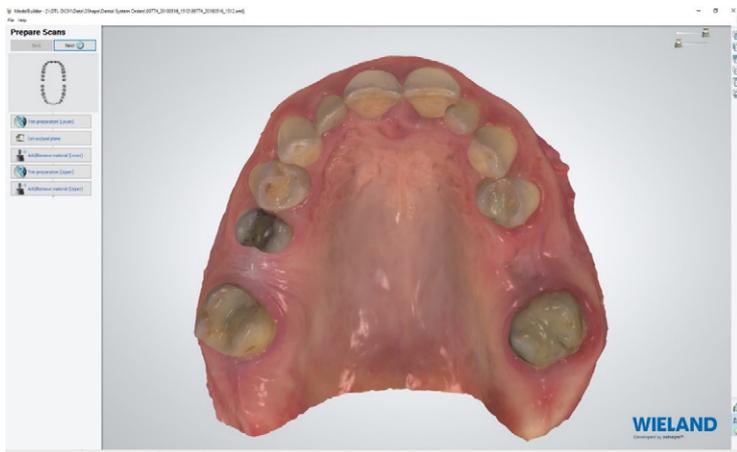


Fig. 3 (ii)



Fig. 3 (iii)

Treatment plan

Because of the patient's anxiety around the treatment, we planned the full extraction of the lower and upper teeth in one session with an immediate placement of the dentures.

For the digital impressions, we used 3Shape TRIOS 3 intraoral scanner. The lower and upper jaw as well as bite registration were scanned. (Fig. 3 i - iii)



Fig. 4

To match the characteristic set-up of the patient's own teeth, we took portrait images of her face in a smile position. (Fig. 4)

We also used the photo as an extra reference in 3Shape Smile Design.



Fig. 5 (i)

We chose the Ivoclar SR Vivodent digital full arch workflow due to the patient's small intermaxillary space between her upper and lower jaw. (Fig. 5 i - vi)

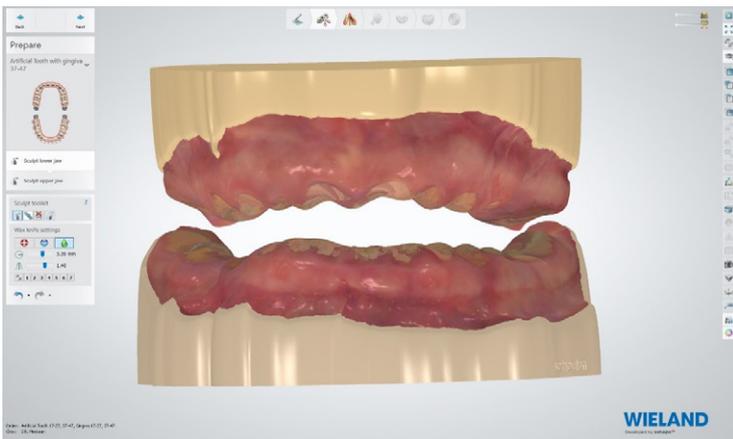


Fig. 5 (ii)

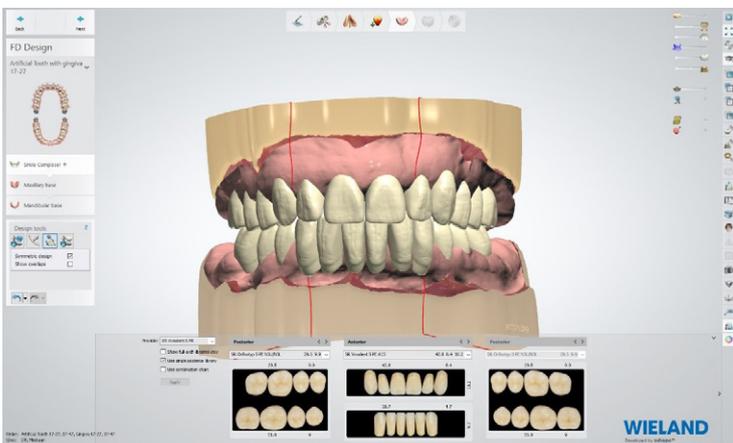


Fig. 5 (iii)

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3Shape RealView used to match patient's facial characteristics with photos and the wax rim. This helped to verify the design in relation to the patient's smile and achieve optimal esthetics. Fig. 5 (v)

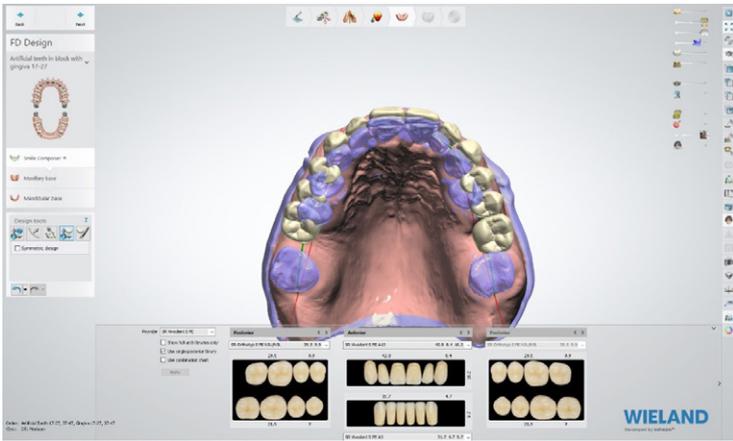


Fig. 5 (iv)

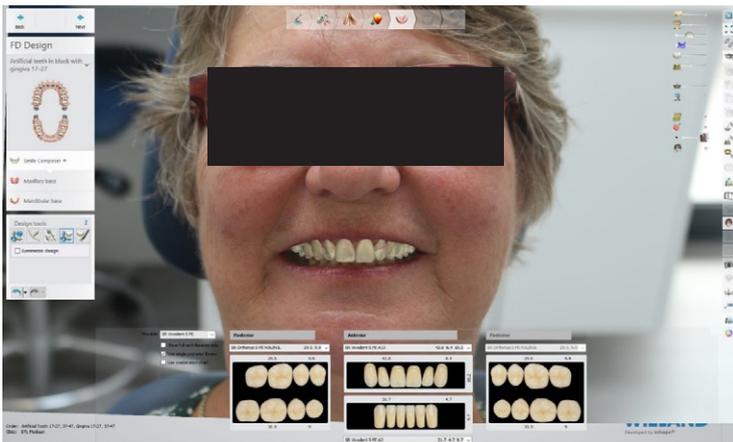


Fig. 5 (v)

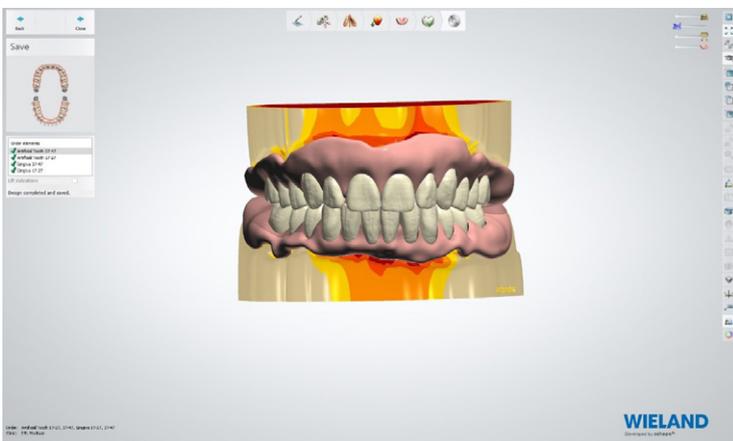


Fig. 5 (vi)

The workflow, consisting of a full arch bonded in an Ivoclar-milled base, we believed would provide the immediate denture with a greater strength when compared with a conventional denture or milled denture using stock teeth. (Fig. 6 i - iv)



Fig. 6 (i)



Fig. 6 (ii)



Fig. 6 (iii)



Fig. 6 (iv)

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Fig. 7

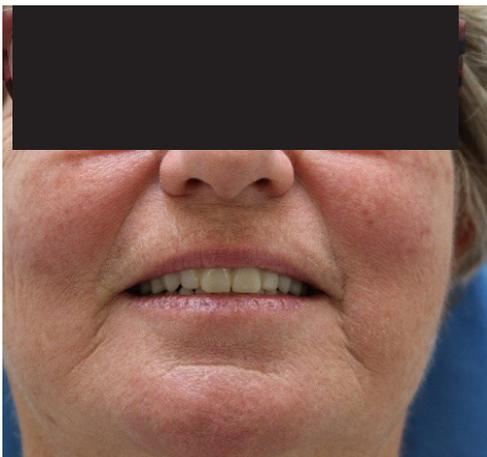


Fig. 8

After one week, we did a second check-up. At this stage, the patient was becoming used to the denture.

The fit and retention on lower and upper were perfect and the patient was very happy and satisfied with the esthetics. Her biggest compliment was that no one had noticed that she was wearing a denture. (Fig. 8)

The patient was able to nearly eat her normal diet after one week.

The immediate denture would be replaced by a final denture after six months.

One of the important benefits of working digitally is that we can use the tested design in a pre-preparation scan to create the exact same set up for her immediate denture.

Scanning soft tissue with 3Shape TRIOS intraoral scanner

There has been considerable discussion in the industry regarding scanning soft tissue using an intraoral scanner.

As you will notice in our images, we did not have any problems scanning the patient's soft tissue using the 3Shape TRIOS. The teeth in the patient's mouth provided a perfect reference for our scans.

In addition, the rugae for the upper and the lingual ridge of the mandible gave us a perfect reference.

The main benefits of using a scanner in a case like this are the patient comfort and live bite registration.

Static occlusion with plaster models is always a bit different than the intraoral dynamic occlusion. Moreover, with digital, there is no need to use bite registration material between the upper and lowerjaw which can cause a fault in the bite-registration as well.

Conclusions

The lab, DTL Mediaan, used in this case, the Ivoclar digital denture workflow driven by 3Shape software (Dental System), scanner and the Zenotech select ION milling machine.

In previous cases we had milled bases using stock teeth, but with recent updates to materials and software, we are now able to use the SR Vivodent teeth blanks and mill the full arch.

There are several benefits to milling full arch dentures: strength, time efficiency, esthetics, and better occlusion.

In terms of strength, as we assumed before, the strength of a full-arch bonded in a milled base provides a higher strength for the denture because the strength of the both materials bonded together forms a full block of PMMA.

In terms of time efficiency, we see this when we compared the time of bonding separate teeth into the milled base and the work of finishing the denture and make the stock teeth free of bonding material.

For esthetics, we believe this workflow is much better because we are now able to morph the teeth in every way we want. We are now able to duplicate the patient's exact teeth into the denture teeth.

In terms of better occlusion, using the software and the digital articulator, we can do a full re-occlusion and reproduce all the lateral and proal movement. We can then adapt these movements into the design of the teeth. With stocked teeth, there is always a little fault in the margin because it is possible to bond the teeth in the wrong position.

With the new oversized milling workflow, the occlusion is finely milled after the bonding of the full arch and base. As a result, the occlusion pattern is always the same as the design.

Intraoral scans combined with patient photos in 3Shape Smile Design were used to design the full denture. The images were overlaid in the 3D design to copy as closely as possible the existing set-up and teeth form.

The bonded base and arch together were made with a SR Nexco composite. We believe this provides the best esthetics. We also did some extra visual lengthening of the front teeth because of the patient's small inter-maxillary space.

About DTL Mediaan and Mediaan clinic

DTL Mediaan and mediaan clinic are a full-service dental clinic and lab with specialties in, paro treatment, endodontics, implantology, surgery and prosthetic/prosthodontics.

The lab was opened one and a half years ago. It is one of first laboratories to offer fully digital workflows for dentures. After one and a half years and six hundred digital dentures later, the company can attest that digital dentures are the best choice they have ever made.

DTL Mediaan founder, Germeen Versteeg, a dentist, began his career eighteen years ago as a dental technician. He has a five-year education at the Dutch Health Tech Academy, followed by a Masterclass for the full denture and a dentist degree from the HU University of Applied Sciences Utrecht.

Before starting DTL Mediaan, Germeen worked in the Academic Medical Center Amsterdam in the department of oral surgery in addition to being operational manager for a global dental lab.

DTL Mediaan believes that full digital workflows produce better results and improve patient satisfaction.

About 3Shape

3Shape is changing dentistry together with dental professionals across the world by developing innovations that provide superior dental care for patients. Our portfolio of 3D scanners and CAD/CAM software solutions for the dental industry includes the multiple award-winning 3Shape TRIOS® intraoral scanner, the 3Shape X1® CBCT scanner, as well as market-leading scanning and design software solutions for both dental practices and labs.

Two graduate students founded 3Shape in Denmark's capital in the year 2000. Today, 3Shape employees serve customers in over 100 countries from 3Shape offices around the world. 3Shape's products and innovations continue to challenge traditional methods, enabling dental professionals to treat more patients more effectively.

Let's change dentistry together

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