Simple, planned aesthetic orthodontics for the General Practitioner

By Dr. Tif Qureshi

Dr. Tif Qureshi shows how digital technology has moved progressive smile design on and the enormous benefits this will have for both patients and consent. Digital Smile Design is making a come back in a very smart and intelligent form through the use of live video, cameras, and keynote presentations.

I commend the users of this technique as it is clearly a far better form of smile design planning than just using plain static before and after pictures with someone else’s smile stitched into place.

However, in cases where there are alignment issues, I would still argue that any patient who does not at least go down the pathway of alignment and bleaching, cannot really see their teeth change in a dynamic way.

I have found that patient’s feelings about their smiles change, once they think they want one thing but after they see their smile change a little they start to appreciate it in a different way. How can someone really be consented unless they are given the opportunity to bleach their teeth, perhaps with slight alignment and bonding.

This case is the perfect example and will show how progressive smile design also using digital technology can produce beautiful predictable results that often require far less invasive treatment.

We use digital technology in a different way of course and this is all to do with planning and consent. Previously with Inman Aligners, we had to use metal models. These are effectively fairly crude stone models which take a cut and once repositioned in wax the aligner is then built on that model. As soon as the aligner is fitted into an uncorrected mouth the forces are there to push the teeth to the final position. The real downside of all the wax creates quite large inaccuracies. Also it is very difficult to see how much adjustments have been made to the teeth to get them to fit within the curve. This is even more so of a problem for flared teeth which have been out of the arch for many more years. These teeth tend to be highly triangular and often need more targeted adjustments to get them to fit within the arch form. You can visualize the wits of these teeth, it is almost impossible to accurately know how much production is required to each.

Of course with digital 3-D printing this has all changed. The difference if you like is one night and day. We can also use printed models to show the patients the proposed outcome. This is excellent for the consenting process. Untreated patients will now see any compromises areas and the final outcome. If they are not happy they could reject the treatment before it starts.

A case

A 22 year old gentleman did not like the appearance of his teeth especially because the two centrals was so prominent. He had considered having porcelain veneers done just to improve his smile in one treatment. He did not like the appearance of his enamel and also the discrepancy in the shape of his front teeth. We showed him the occlusal view of his teeth and he could see that the upper anterior is one mildly misaligned. Indirect veneers would have been fairly aggressive towards the preparation of the upper central incisors. By showing examples of other cases where simple alignment had dramatically improved the aesthetic value the patient agreed to try to align his teeth first before having veneers done.

Consent part one

A full orthodontic examination was carried out. All orthodontic options were discussed and the patient understood the benefits of fully comprehensive orthodontics, and was also given a range of short-term techniques that he could have chosen. He declined comprehensive orthodontics on the basis that he only wanted to deal with his anterior teeth.

He chose to have an Inman Aligner because of the shorter wear time and the minimal cost impact on his overall treatment desires. Our first goal was to evaluate the aesthetics and function to decide on landmark or reference teeth. As part of the digital planning process these teeth are not moved and ensure the setup accommodates these teeth to ensure the proposed curve is not flared out or over constructed.

In this case the patient also had a retained upper left deciduous tooth (no canine had developed). Fortunately this tooth was in the right position so it became the reference tooth and hence no orthodontic force would need to be applied to it. Both upper centrals needed to be retracted and both laterals slightly advanced. It was important to visualize a chin up view to ensure this is viable for the patient from an occlusal and guidance point of view. All the movements were possible.

(1) Occlusal showing landmark and desired movements.
(2) Showing Spacewise trace

In the chair the occlusal photo was taken and uploaded into the spacewise digital calculator.

The curve is set according to the landmark teeth and required movements. This showed a crowding result of 3mm which was within the easy limits for Inman treatment.

Impressions were taken and were sent to the lab with the spacewise trace.

Consent part two

The 3D model was returned and we could view the proposed setup made according to the spacewise instructions.

An appointment was made with the patient to sit down and examine the models. At this point the patient clearly sees any compromises in the posterior region of his mouth. These were again highlighted but the patient insisted he did not want these treated. The over jet was also discussed with the patient he could see a reduction but not complete closure, he was happy with this.

You can see the width differences in the anterior teeth that would require adjustment and the laterals advanced by about 1.75mm exactly. These setups can be viewed as digital files in 3D if needed beforehand by the dentist and adjustments can be made if needed once we are happy, the 3D model was printed.

Digital technology has moved planning and consent.
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tooth shaping with PPR (predictive proximal reduction). This made it far easier for him to under-
stand the processes required to create the space. Finally he
could also see the differential wear in his tooth outline that
would be evident after align-
ment. He clearly understood
that edge bonding and tooth
countouring might be required
after alignment and bleaching
were complete. That is assum-
ing he did not want to continue
with porcelain veneers.

It was noted that the patient had
reviewed and understood the 3-D model and what it was pro-
posing. The Inman Aligner was
then built and fitted.

Treatment
Inter-proximal and Predictive proximal reduction were car-
ried out in a progressive and measured manner over 3 visits.
This was done to ensure good anatomy and to reduce the
risk of gouging, over stripping and poor contacts. With Inman
Aligner treatment stripping is
never carried out in one go.

Composite anchors were also
placed in a timed and sequenced
manner to ensure the forces
placed in a timed and sequenced
were complete. That is assum-
ing he did not want to continue
with porcelain veneers.

Composite bonding was carried
out on the 7,9 and 10. A com-
posite veneer was placed on the
11. All these were carried out
with only roughening and no
prep or bevel. Venus Diamond
composite from Heraeus Kulzer
was used. I find that the Opaque
shades allow superb blocking
out of light meaning that if lay-
ered as dentine, it means a long
bevel is not required to block out
the join. Enamel shade can then
be placed thicker towards the in-
cisal edge.

A wire retainer was fitted and the
guidance adjusted to ensure there
were still balanced excur-
sive contacts on the left side so
the load was not focused on the
decisious tooth.

Roughening, total etch Opti-
bond solo and Venus flow were
used to bond the wire in place.

A clear essix retainer was also
given to the patient to wear at
night initially then to use occa-
sionally and to have as a back up
improvement in color as well.

Figure 6: Before Close front view
Figure 7: After alignment and
bleaching at 10 weeks
Figure 8: Immediately after bonding

Discussion
Figure 9: Before front smile view
Figure 10: After Alignment and
bleaching at 10 weeks
Figure 11: After Edge bonding and retainer
Figure 12: Side profile before
Figure 13: Side Profile after
Figure 14: Side Smile before
Figure 15: Side Smile after align-
ment and bleaching
Figure 16: Side Smile at 6 months
Figure 17:Before occlusal
Figure 18: After occlusal at 10 weeks
Figure 19: After 6 months with retainer

On viewing the sequenced shots
it is clear to see the changes.

The patient was delighted
that he had emerged from the
treatment with his own teeth
looking more attractive rather
than having ceramic porcelain
veneers. As good as ceramic
restorations are, they will al-
ways require further treatment/
maintenance and replacement.

On a 22 year old if alignment,
bleaching and bonding can sat-
isfy the patient that it has to be
better than placing ceramic ve-
neers. The problem with digital
smile design is that the patient is
not really given the opportunity
to see the teeth change slowly
and in situ.

It is fine if whitening, bond-
ing and alignment are part of
those protocols but arguably
patients should not be shown
images of multiple veneers un-
til they can visualize their own
teeth looking better.

You can see how very sub-
tle changes can dramatically
improve the appearance. Even
though the colour is not truly
homogenous and the teeth have
a mottled appearance the most
important thing here is that the
patient was completely delight-
ed with the treatment.

Ultimately a patient being
happy with their own smile has
to far outweigh the parameters
that are set up traditional smile
design.

Final images at the 6 month re-
view are also shown.

Contact Information
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Figure 19
Figure 10
Figure 11
Figure 12
Figure 13
Figure 14
Figure 15
Figure 16
Figure 17
Figure 18

Figure 20: Before Full face
Figure 21: After full face (at 6 month review)

“Great value and it has been a
game changer for my practice.
The forum effectively turns a one-
day course into a 365-day course!”

Dr Tif Qureshi teaches Inman
Aligner Training
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Figure 9
Figure 18
Figure 20
Figure 21