Thinking outside the box

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When it comes to extreme dental makeovers, amazing transformations can be achieved without resorting to some of the extensive surgical solutions that might otherwise be required.

As dentists, we naturally lean toward our historical training, which might involve treatment plans that don’t embrace some of the newer concepts available to us as restorative dentists.

Many years ago, the concept of leaving an anterior restoration high in the bite to create space would have been regarded with scepticism. However, now this “Dahl Principle” is readily accepted and used to create anterior occlusal space in certain clinical situations by allowing a combination of anterior intrusion and posterior “over eruption.”

Likewise, this thinking can extend to more complicated situations. Yet, as long as there is sound treatment planning via adherence to sound aesthetic and occlusal principles together with fully informed consent, amazing transformations can be achieved without resorting to some of the extensive surgical solutions that may otherwise have been required.

Communicate with your patient

The starting point for all of this is: ask the patient what he or she wants to achieve and fully discuss all available treatments; this may include extended orthodontic therapy with or without surgery.

From here, a sound understanding of the principles of smile design is essential (see Table 1, below) and an understanding of occlusal schemes.

Table 1: Criteria of smile design

- Incisal edge position at rest
- Midline and cant
- Width: height ratio and Golden Proportion
- Buccal corridor
- Smile line
- Axial inclination
- Embrasures and contact points
- Gingival zeniths and heights
- Arch form

We will now demonstrate many of the principles we have discussed in previous articles, but applied to some more complex cases.

Case study No. 1, Figures 1–11

This 34-year-old woman presented having seen us on the television show “Extreme Makeover U.K.” She had not visited a dentist for 10 years and disliked the fact that her front teeth did not show. She was also aware that her gums bled when cleaning.

A full examination revealed early periodontal breakdown with BPE scores of three in all sextants. She had a plaque score of 42 percent and bleeding scores of 58 percent.

Her initial treatment focused on achieving health and involved periodontal care, direct posterior composite restorations to treat early decay in previously unrestored molar teeth and indirect restorations (one crown and one tooth coloured inlays) to replace heavily restored and leaking posterior restorations.

Most importantly, her dental health was vastly improved as a direct result of the dental education she received from her re-attendance before any cosmetic concerns were dealt with.

As for her cosmetic concerns, all options for her severe anterior open bite were discussed, including orthodontics with or without orthognathic surgery.

The patient refused any orthodontics as well as any surgery and wished to pursue the restorative option available to her.

A diagnostic wax up allowed a visual diagnostic try-in to show the patient what could be achieved with four anterior restorations to lengthen the teeth.

The possible tongue thrust element to her AOB was discussed and she was fully informed that this could mean that the AOB would open somewhat post treatment.

The patient approved the aesthetics and decided upon this line of treatment. She was advised that there would be a greater amount of unsupported porcelain than ideal and, therefore, care would be required when incising into anything hard.

For this reason also, it was decided to place 90 degree veneers for increased structural integrity. As the procedure was agentic, it was possible to ensure all preparations were entirely within enamel.

Whilst the final result does not follow all the principles of smile design, these should be considered as a guide in such extreme cases.

The final restorations on the central incisors may be 18 mm long, but fit in with her smile beautifully.

The life-changing effects of this cosmetic transformation by only treating four units and whitening are self-evident.

Case study No. 2, Figures 12–18

This 42-year-old woman presented as part of the “Extreme Makeover U.K.” television show.

She hated the appearance of the teeth, including their length and the
large spacing between them.

She had a naturally outgoing personality, but over time, she felt embarrassed to smile and now would hold her hand over her mouth even when talking to people.

Previously she had undergone periodontal treatment and surgery at a teaching hospital; this had been stable for more than 10 years.

When one first looks at her teeth, one would assume that they would be all mobile. However, they were all stable with no mobility evident at all despite having half and two-thirds horizontal bone loss.

This made discussion of her treatment options more straightforward as a mixture of crowns and veneers could achieve what she wished for without the need for multiple extractions and dentures or implants.

But she was informed that two teeth would need to be electively root filled to achieve these desired aims as they were either a long way out of the arch or too long.

Given the constraints imposed by the show’s timings (work to be completed within six weeks) orthodontic treatment would have proved difficult, but she was still informed of this option.

She was advised that orthodontics would minimise the risk of root treating any teeth, but she declined this treatment.

Five upper veneers, three veneer onlays and two Procera crowns were placed along with four lower veneers to correct the lower spacing.

She was advised of the importance of ongoing hygiene maintenance to ensure adequate plaque control around the anterior restorations that now had a much fuller contour gingivally as they were in effect porcelain cantilevers.

Case study No. 3, Figures 19–25

This long-standing patient of more than 15 years had always been unhappy with her smile and existing crowns.

The URI crown had been under review for some time and when the tooth developed caries under the margin, it was time to replace it.

All options were discussed with the patient, including just replacing the one crown, orthodontic treatment (with or without surgery) to...
correct the Class III malocclusion or instant orthodontics by opening her vertical dimension and so jumping the anterior crossbite.

Before deciding on a definitive plan, a wax-up was made so a visual diagnostic try-in could be carried out to give the patient an idea of how she would look if the crossbite were corrected by restorative means.

She was happy as to what could be achieved and decided she wanted the restorative pathway as so many of her teeth were already crowned or heavily restored.

This also gave us the opportunity to bridge the space mesial of the UR6 and so build out the buccal corridor in this area.

By crowning the very heavily restored lower right-hand side molars, the tilting of these molars could also be improved at the same time.

It is important to plan all these changes at the same time because opening the vertical means less occlusal reduction is required. The only unprepared tooth that required preparation was the UR3.

This received a minimal veneer preparation; palatal coverage was not required on this tooth due to the Class III nature of the occlusion.

However, the pre-operative planning with a diagnostic wax up is essential for this.

Whilst the final result appears somewhat flared in the retracted view, the smile and full face demonstrate that the result works well.

Again she was advised of the importance of ongoing hygiene maintenance to ensure adequate plaque control around those restorations that now had a much fuller contour gingivally as they were also, in effect, porcelain cantilevers.

**Conclusion**

To quote two eminent colleagues:

“Learning smile design is the process of training your eye to spot details you can fix” (Dr. Chip Steele).

“The hand can only perform what the eye has been trained to observe and the mind has striven to understand” (Dr. Newton Fahl).

The out-of-the-box thinking required for some of these extreme dental makeovers can only truly occur with a thorough understand-

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ing of the principles involved in
smile design and their application
and modification to fit each individ-
ual scenario together with correct
occlusal planning.
Thus, aesthetics with longev-
ity (functional aesthetics) can be
achieved.
When correctly applied, the
results can be life changing and
can be achieved in ways that may
previously have been deemed not
possible.

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Fig. 21: Pre-op retracted in occlusion.
Fig. 22: Post-op full face.
Fig. 23: Post-op smile.
Fig. 24: Post-op retracted in occlusion, now Class 1.
Fig. 25: Post-op portrait.