Progressive smile design
Tif Qureshi explains how little things can make a big difference.

Articles about smile design can commonly polarise readers. Some will think they know it all already while others will think it is not relevant to their practice. I’m hoping to prove both groups wrong by provoking some re-thinking with three suggestions that I truly believe.

1. Every single dentist should be carrying out all the dentistry they do in an aesthetic way.
2. Smile design planning as it has been known is taught back to front and only serves a niche market disconnected from most dentists.
3. We now have the tools for any dentist to create beautiful smiles without even picking up a drill.

The concept of progressive smile design has been documented, but was actually introduced by myself in 2008. It is quite clear from attending many shows, conferences and lectures, that its potential significance has not quite sunk in yet amongst the profession.

I would argue that cosmetic dentistry has traditionally focused on the large high end cases and actually this has been a very shortsighted approach. It effectively became a very well publicised niche market which could be carried out by very few dentists at a price very few patients could afford.

With progressive smile design, a much wider range of patients can potentially be treated by a much larger number of dentists at much lower risk.

Traditional smile design focuses on an endpoint, often processed in a digital manner via computer software. This is translated to a wax up and the patient is shown what might be achieved. This can even be tried in the mouth with a stent made from the wax up.

Often ideal smile design parameters are built into this set up so a patient will commonly view eight to 10 units changed in their mouth via simulation or the trial smile. These parameters will include golden proportion, connector harmony, wider buccal corridors, perfect incisal outlines, correct gingival zeniths.
Showing a patient this at the start point they are going to naturally assume that this is what they want. Often then irreversible treatment is carried out to achieve this using porcelain, composite, and even no prep veneers. Currently many patients are having the concept of no prep, minimal prep or composite veneers promoted to them as a way of achieving a perfect smile.

The big question is, do these people really need these techniques at all? Digital smile design, as clever as it is, does not allow patients to see small, in situ changes. It means a patient will often opt for a far more dramatic treatment plan than maybe required to actually make them happy. In my experience, patients
who initially thought they wanted ideal smile design, changed their minds after seeing their teeth align/whiten and after receiving edge additions.

The cynical will commonly say improving smiles in anyway at all is unnecessary but that would be highly ignorant of many patients wishes and also of the fact that restoring a smile can often have significant functional benefits.

What we also commonly ignore in dentistry are factors beyond just the clinical. Dentists are trained to make clinical judgements. Psychological and long term judgements were not always discussed or and have not been researched well in dentistry historically. Long term case follow up with good photography is extremely rare. Yes consent is commonly and rightly talked about but it seems to go about as far as a legal consent form and some note taking.

What the case outlined below will show is how one patient achieved a dramatic improvement in her smile aesthetics and function with hardly any tooth removal at all. This kind of dentistry is achievable by any dentist, and just as importantly, affordable to patients.

**Case study**

This patient at one point had considered ceramic veneers to improve her smile, but was concerned about the amount of preparation needed and was happy to align her teeth and whiten beforehand.

On examination, her upper teeth were slightly retroclined and the edges were chipped. The lower teeth were crowded and on excursions the irregular lower edges were causing chipping on the upper teeth because of some para-function.

All orthodontic options were offered to the patient including a referral to a specialist. The patient refused the referral. She had previously been treated with orthodontics and her teeth had relapsed due to a lack of retention (she was told she did not need to wear her retainers after three months).

Only simple anterior alignment was needed so the patient opted to have her teeth aligned with removable appliances (Clear Aligners on the upper arch and an Inman Aligner on the lowers).

In-surgery digital arch planning was used set up to flare the upper centrals forward by only 0.5mm to allow a little more space to align the lowers. The lower arch form was also planned digitally while the patient was in the chair to ensure all actual movements and positioning are realistic and achievable and acceptable to the patients occlusion.

The digital software (Spacewize) allows a dentist to trace a curve that the laboratory needs to follow. This allows the practitioner to be in control of the occlusion and eliminate the risk of flaring out and causing potential occlusal issues.

The upper teeth were aligned out with four clear aligners in eight weeks with 0.3mm of IPR required. The Clear aligners needed to be worn 23 hours a day. The lower teeth had exactly 1.8mm of crowding - IPR carried out progressively over three appointments with strips - the Inman Aligner 18 hours a day. The lowers aligned with a single Inman Aligner, also in eight weeks.

At week six simultaneous bleaching was started with six percent Daywhite by Philips with super sealed trays and technique to ensure the teeth are dry before the trays are placed. This consisted of two weeks of day time whitening (2x30 minute sessions a day) while the Inman Aligner was out.

At week eight alignment was virtually complete, and post alignment and whitening the patient very quickly decided against ceramics because she could see her teeth in a completely different way. Without this opportunity, she would have had ceramics placed.

After two weeks direct bonding was placed on the upper incisal edges to restore the original shape and a little on the palatal of the upper cuspids for better rise. The composite used was Venus Diamond (Hereaus Kulzer). Two shades were used, Opaque Light and B1 Enamel. The composite is laid in a reverse triangle technique which blocks out the light transmission on the join so no preparation is needed. Each restoration was polished with Flexibuff discs and Enamelize paste by Cosmodent. Venus diamond was used because it is especially easy to block out visible the join without bevelling and has great strength in thin section making it especially good for edge bonding.

The patient then continued with Essix retainers and after nine weeks gradually moved to night time wear.

**Discussion**

The patient was delighted with her results as the end result had effectively made her own teeth look better without removing any real tooth structure. What could have been a complex ceramic case that might only have been affordable by a tiny percentage of patients and carried out by a minority of dentists instead turned into a simple alignment bleaching and edge bonding case that is far more affordable for many more patients and achievable by many more dentists. This is because the tools are now there with various forms of tooth alignment in appropriate cases, effective whitening and ideal easy to use, bonding materials.

References available on request.