Comprehensive Case
Mrs A

Severe acid erosion, treated by increasing the OVD with freehand composete buildups utilising the Dahl effect

History

Mrs A presented as a new patient on 15/10/10. She was concerned about the fact that her teeth were wearing away and their unsightly appearance. She was experiencing no sensitivity, and only noticed the occasional chipping of her front teeth.

Diet analysis revealed that Mrs A ate a considerable amount of fruit, no other contributing factors; either extrinsic or intrinsic were found.

Medical history – Clear – no history of acid reflux, GORD, bulimia, rumination, hiatus hernia e.c.t

Clinical findings

Extra oral

- no TMJ clicking/crepitus/pain
- no limitation/deviation on opening
- no swelling/asymmetry/tenderness
- no headaches

Intra oral

- Clinical examination revealed that Mrs A had severe wear of her upper incisors and canines both buccal and palatal surfaces. These teeth were relatively un-restored save for buccal composite veneers.

-The posterior dentition did not show the same evidence of tooth wear exhibited in the anterior dentition.
- UR6, LL6 and LR6 were very heavily filled.
- Oral hygiene was excellent. No bleeding on probing or pocketing > 3 mm was detected except around the crown on UL6 that had an overhang.
- UL6 has had buccal recession revealing a discolored margin, the crown on this tooth is a poor shade match.
- Soft tissues were all healthy
- Cervical wear lesions were present in the lower right quadrant.

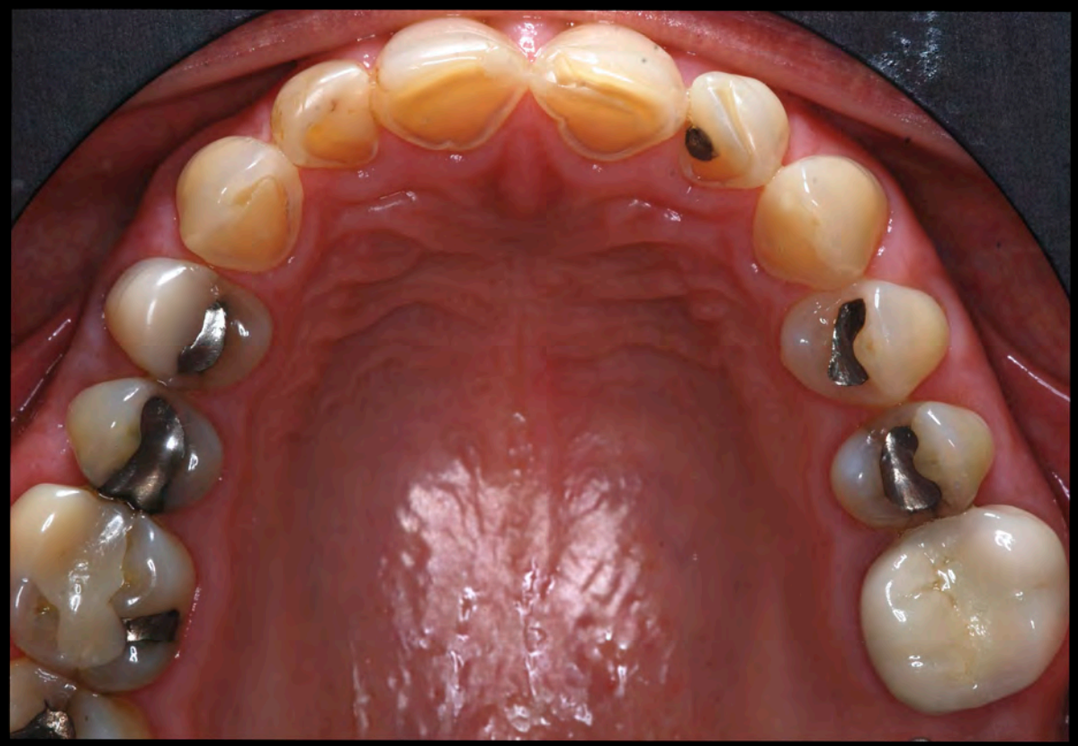
Occlusal Analysis

- ICP=RCP
- Canine guidance on lateral excursions to the left
- Guidance to the right is first on 15 and 45 and then goes to canine guidance
- Anterior guidance is on 13,11,21
- No WI or NWSI
- Class 1 Div 1
- Space created by the palatal erosion had closed through over-eruption of the lower incisors
- Posterior occlusion stable

Extra Oral Shots 21/1/11



Intra Oral Shots 21/1/11




Radiographs - taken 5/10/10

Treatment Planning

Radiographic findings

- Mild horizontal bone loss
- No peri-radicular pathology
- Heavily filled posterior dentition
- Possible caries UR6
- Very short roots on upper anterior teeth
- Amalgam fragment between UR4/5

Diagnosis

A diagnosis of erosive tooth wear due to excessive ingestion of fruit was diagnosed.

Treatment plan

Treatment was aimed at addressing MrsAM0238's presenting complaint of wanting to protect her teeth and restore aesthetics. To help prevent further damage to the teeth advice was given regarding diet and she was advised to see her GP to rule out any intrinsic cause for the acid.

To address her cosmetic concerns while helping to protect her teeth various options were discussed including;

- Crown lengthening along with Empress II crowns
- Veneers
- Metal palatal shims
- Orthodontics along with empress II crowns
- Composite build ups followed by veneers

The treatment plan that was agreed upon was to utilise composite palatal build-ups to create a Dahl effect as described by B Mizrahi et al. This was decided upon because;

- The upper incisor roots were very short for crown lengthening
- Veneers would not protect the palatal surfaces
- Metal palatal shims would be unsightly
- Patient was not keen on conventional orthodontics and the ceramic palatal surface could give rise to wear on the lower teeth

In comparison initial composite build-ups both palataly and buccaly would;

- Give immediate protection to all exposed tooth surfaces
- Be highly conservative
- Give an immediate aesthetic improvement
- Create space for any future restorative work
- Not have any wear implications for the opposing dentition
- Help to intrude the lower incisors which had over erupted

Treatment

Articulated Study models in RCP to study the occlusion and create a diagnostic wax up

Teeth whitening by a home whitening 10% carbamide peroxide regime using scalloped whitening trays without a reservoir

Direct palatal and buccal build ups were constructed as described by De Voto et al;

Colour was determined using vita shade guide, shade D2 enamel and A3 dentine were chosen

Anesthesia was administered

Existing restorations and caries were removed

Isolation was achieved with bite block and cotton wool – rubber dam would have interfered with the seating of the palatal index

Bonding procedures were carried out using a 3 step adhesive (optibond FL)

Adjacent teeth were isolated using teflon tape

Palatal surface built up using D2 enamel with the putty index,

Contacts built up in D2 enamel using contoured clear plastic matrix and wedges

Mamelons and body built up in A3 dentine

Area between mamelons filled with amber translucent composite

D2 enamel placed over buccal surface

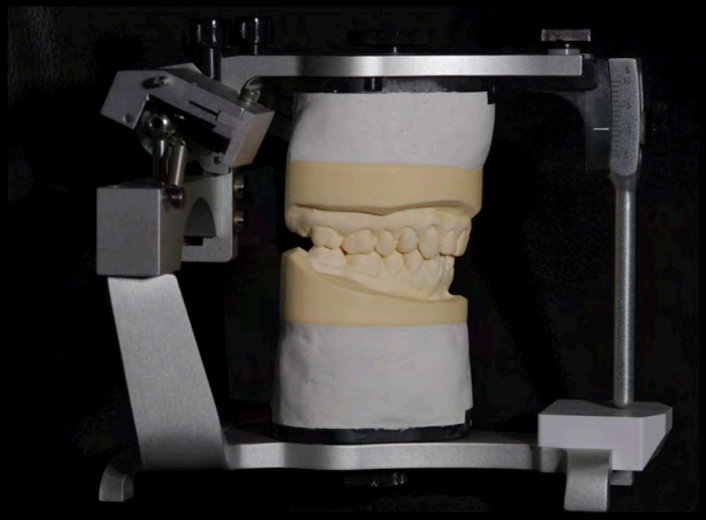
Glycerine gel placed over teeth and final light cure

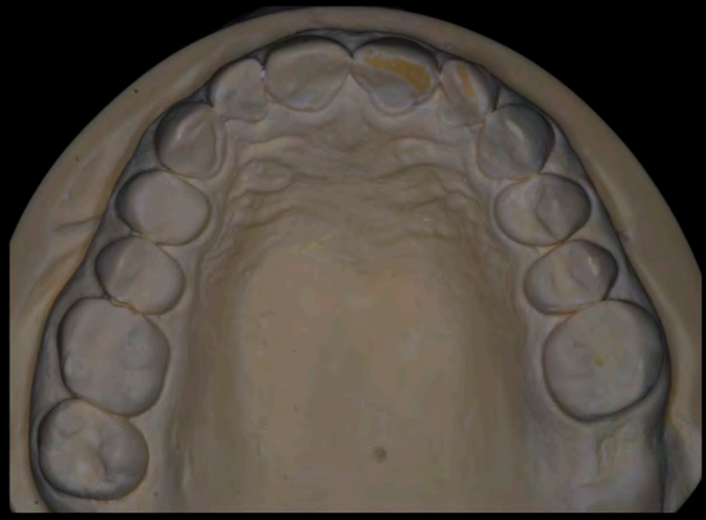
Occlusion refined

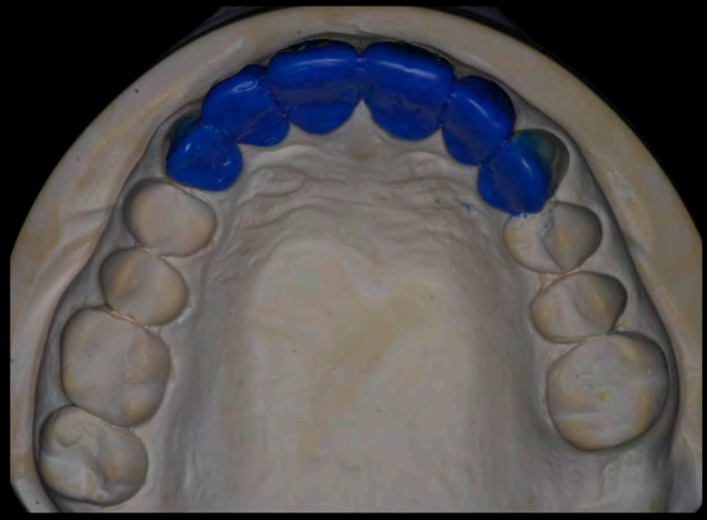
Interproximal and cervical areas polished using soft-flex discs

Surface anatomy refined using coarse diamond

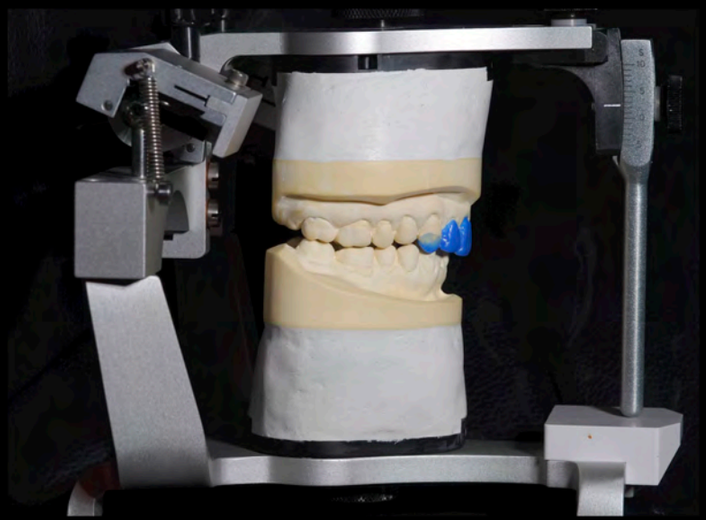
Polished buccal surface using goat hair wheel and 3 micron diamond polishing paste then 1 micron diamond polishing paste, through to felt wheel with fine diamond paste







2 sets of articulated study models were constructed, on the second set a wax up of the composite build ups was constructed by the dentist to increase the OVD by 2 mm and improve the aesthethics.



Care was taken to ensure that there were flat occlusal stops in ICP to ensure axial loading of the anterior teeth and thus ensure that these teeth did not splay during the course of treatment. Care was also taken to ensure that there was a smooth transition into anterior guidance and canine guidance in lateral excursions



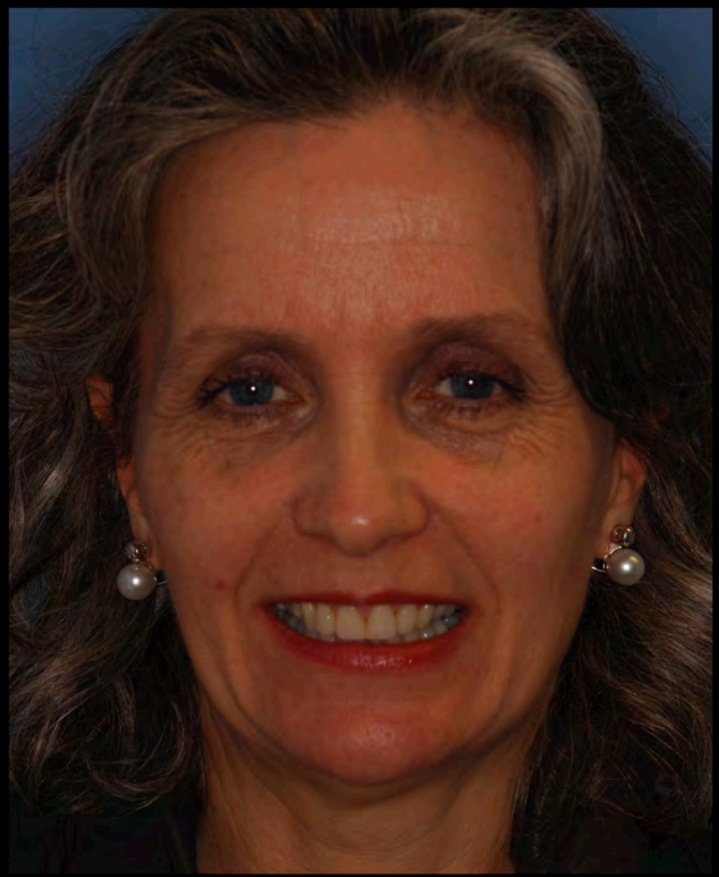



Aesthethic Reconstruction

Aesthethic reconstruction of the front six teeth was a key element to this case, by first of all constructing a wax up it was possible to envisage the end result as well as helping to decide if any gingival recontouring was necessary.

One of the most important reasons for waxing up the anterior was to determine the incisal edge position as this was going to be reproduced intra orally using a lab putty guide.

Unfortunatley while the wax up was shown to Mrs A and she consented to proceed with treatment, it would have been a good idea to transfer the wax up intra orally via a lab putty guide and temporary crown material. This became evident as when the final restorations were constructed Mrs A felt that they were rather large and requested that they were shortened slightly.



Extra Oral Shots 6/5/11



Intra Oral Shots 6/5/11


Palatal Buildups

Finished palatal surfaces with and without occlusal markings.

Blue markings indicate contacts in ICP (ICP=RCP in this case)

Red markings indicate anterior occlusal giudance

Faint green markings indicate lateral guidance

To date (1 year) there have been no incidences of # composite and no repairs have been necessary

Tooth movement is progressing in the desired manner, all be it at a slower pace than anticipated and there has been no splaying of the anterior teeth

Buccal Mirror Shots 30/5/12

As yet the posterior teeth have not fully erupted into occlusion, though as can be seen above good progress is being made.

Future treatment

Future treatment

Gold onlays on UR6, LR6, and LL6
Emax crown on UL6

Feldspathic porcelain veneers on the upper incisors

The reason for placing veneers on the upper incisors is two fold;
Firstly the ceramic of the veneers is much stiffer than the composite and will help to reinforce the structure as described by Magne et al.
Secondly the ceramic veneers will maintain their aesthetic appearance better over a long period

Instructions to patient and Post-treatment recall schedule

3 monthly recalls to monitor changes in the occlusion
Advice given regarding oral hygiene
6 monthly touch up of the composite polish using the felt wheel and fine diamond polishing paste

Prognosis

Clearly the treatment has not yet been completed, however the treatment is progressing well and the long-term prognosis is good. Should any failures occur they are likely to be within the composite and thus easily repaired.

Reflections

The quality of the photography leaves something to be desired, the varying "warmths" of the before and after shots makes it impossible to compare shades. For the close ups of the anterior teeth I found it very difficult to eliminate hot spots of reflection to allow a proper study of the anatomy (I later found out that this was due to a poor flash).
The result of the whitening procedure was disappointing, this may have been due to the fact that her teeth were a grey/brown shade as opposed to the yellow shades which tend to respond better.
When comparing the wax up on the model and the final result it is evident that the OVD was opened in excess of the intended 2mm. To be honest I am unsure where this error has arisen given the use of the putty guide. This increase in vertical dimension has likely contributed to the posterior dentition taking its time to erupt (1 year at present)