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SCD CASE STUDY

Worn Dentition and Broken Down Teeth

Background

A female aged over 70 presented with an unremarkable medical history seeking a comprehensive examination as the last dental examination was over four years ago. The patient is a non-smoker. Her main concerns were her worn dentition and broken down teeth.

The intraoral examination revealed:

- heavily restored dentition
- wearing on the palatal aspect of her maxillary anterior teeth.
- fair oral hygiene
- partially edentulous maxilla and mandible

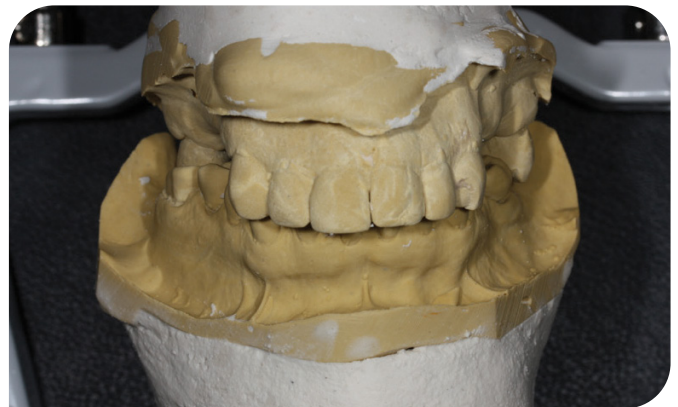
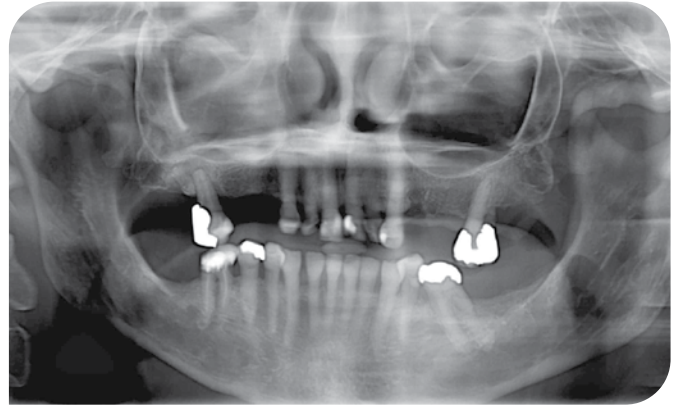
Different treatment options were presented and the following approach was adopted:

1. The patient requested a restoration of the dentition and occlusion and was amenable to a staged approach to case management.
2. A diagnostic wax-up was fabricated by Southern Cross Dental. Photographic information was sent to the laboratory to augment clinical findings.
3. A Penn Stent was used on the mandibular teeth to provisionally increase the vertical dimension.
4. Two phases of treatment were planned:
 - The short-term plan was to address the patient's aesthetic concerns and do composite bonding on the lower teeth 34-44 to improve aesthetics and open the vertical dimension of occlusion (VDO). All-ceramic anterior maxillary restorations (IPS e.max[®]) were used to restore aesthetics and function was re-established by reducing the overbite and overjet. A temporary denture was made to replace the missing upper teeth while the patient was able to save up for the implants.
 - The longer-term treatment plan involved implants on the upper right and left to replace missing teeth and thereby restore occlusion/ function/ aesthetics in order to maintain the new re-organised vertical dimension of occlusion.
5. A maintenance program was established.

This case is a good example of an interdisciplinary approach between fixed prosthodontic options for the more heavily filled upper anteriors and very conservative management of the unfilled lower anteriors using a direct bonding technique.

Communication between the dental laboratory and dentist is essential in order to achieve the best outcome.

The pre-operative assessment included OPG and mounted study models.



Clinical Findings Pre-operatively

The pre-operative photographs show a combination of discoloured and worn teeth. The patient had old fillings and bonding that no longer blended with the surrounding tooth structure. The old crown on 11 no longer matched the adjacent bonding. As the natural teeth had been worn down, the incisal lengths of the natural teeth were more worn than the crown. The presence of lower diastemas was observed. Excessive overbite and loss of vertical dimension were noted. There were missing teeth from upper 14-16 and 24-26.



The patient was happy with her temporaries so the dentist supplied a study model for the laboratory to copy the approximate shapes and proportions for the proposed all-ceramic crowns. The lower anteriors were waxed up to restore an extra 1.0 mm in length, cover the exposed dentine on the incisors and close the diastemas.



The lower wax-up had to be harmonious with the upper crowns.

Images of the wax-up for a Penn Stent case were forwarded to the clinician for approval of shapes.



These can also be shown to the patient for further approval or if discussion is warranted. The Penn Stent provides direct composite veneers more simply by providing a custommade template after the shapes are designed in wax to give the ultimate proximal contours. Wedges and interproximal strips can be inserted into the Penn Stent to control the flow of material and reduce the amount of clean up required afterwards.

Clinical Stages



Photographs taken during composite build-up with Penn Stent.



The preparation of upper anterior teeth was included in this important photograph of the stump shades which was then forwarded to the laboratory.

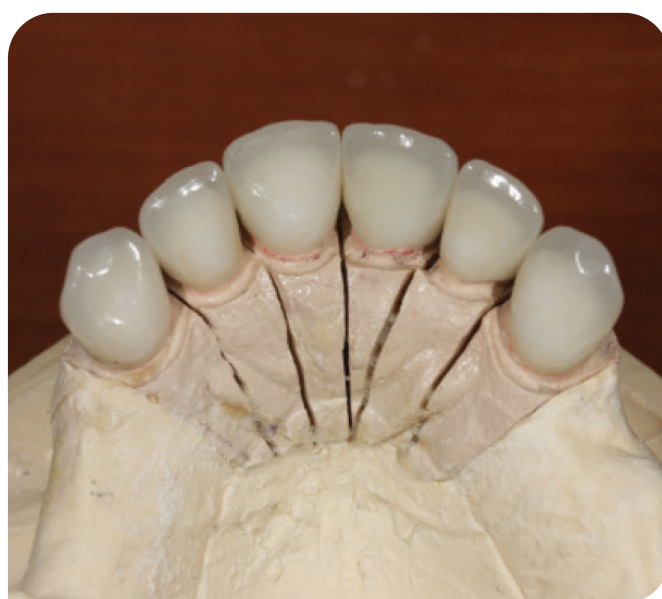
A lower translucency ingot was used to make the upper all-ceramic IPS e.max® crowns to block out a relatively dark stump shade. There were no posts or severely discoloured and dark root-treated teeth that required masking.

A temporary acrylic denture was made to match blend in with the new shapes on the maxillary dentition.

The anterior all-ceramic IPS e.max® restorations are layered by SCD to provide some translucency around the incisal areas. The more opaque core material successfully blocked out the dark stumps. It is vitally important to advise the laboratory about stump shades for all-ceramic restorations so that the correct ingot can be chosen.

If the stump is dark and the most translucent ingot is selected as a default, it is highly likely there will be a grey coldness coming through the crowns.

If an ingot is too opaque, the benefits of using the lithium disilicate to recreate the natural enamel look would be lost.





All IPS e.max® and IPS Empress Esthetic® issued from SCD comes etched with hydrofluoric acid (HF) for quick and easy silanation prior to cementation.

If the crowns are heavily contaminated at the try-in stage, HF etching would need to be repeated chairside – so it is handy to keep a stock of the HF for that purpose.

Discussion

The lower teeth which were built up by the Penn Stent are easy to polish and enabled adjustment of the occlusion. The slight discrepancy between the aesthetic compromise of the use of porcelain and composite in this particular case was offset by the advantage of conservative management of the lower anteriors. Both dentist and patient were satisfied with the result.

The dentist stated 'There was a huge improvement in the patient's appearance and perception of her smile. In the future, we will be able to replace the upper denture with some nice implant-supported crowns to take it to the next level. The patient is a lady over 70, with high expectations of a nice result after finally

deciding to get something done to improve her smile...and her expectations were exceeded.'



The final restorations are shown in place indicating good masking of the underlying tooth structure and pleasing contours for the patient.

For SCD, this is a good example of multi-disciplinary dentistry, team work and good communication between the practitioner and dental technicians.

SCD would like to thank Dr Kenneth Cheung for supplying the photographs for this case. Dr Kenneth Cheung is married to fellow dentist Dr Cheryl Cheung. Together, they run a busy dental surgery in Wagga Wagga. Dr Cheung has completed multiple CPD activities with a special interest in the fields of aesthetic dentistry and oral implantology.