Minimally invasive management of erosive tooth surface loss utilising a combined direct and indirect approach

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HISTORY – Mr C

Presenting Complaint
- "Sensitivity to cold drinks from back teeth"
- "Chipped and worn front teeth"
- "Wants teeth to look better"

Medical History
- Fit and well, non-smoker and alcohol consumption of less than 2 units/week

Dental History
- Irregular attender at the practice, last examination was more than five years previously
- Oral hygiene routine involved brushing twice daily with an electric toothbrush and flossing once daily

Diet History
- Consumption of over 1 litre of diet coke per week and a moderate sugar intake

Social History
- 37-year-old gentleman who worked as a civil engineer

EXAMINATION

Extra oral examination
- TMJ assessment revealed no abnormalities – no evidence of bruxism
- Slightly reduced lower facial height and low smile line
- Class I skeletal base

Intra oral examination:
- Soft tissue assessment revealed no abnormalities
- Oral Hygiene was fair with generalised mild calculus deposits (plaque score 22%)
- BPE

2	1	1
1	2	1

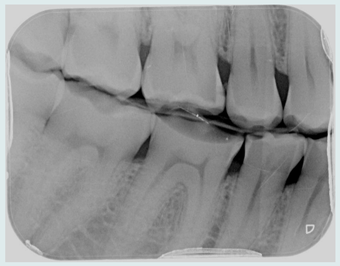
- Caries: LL6 DO, LR5 DO, LR6 MO, UR6 MO – all normal response to sensibility testing and TTP-ve
- Generalised evidence of erosive tooth surface loss with multiple cupping lesions, dentine show and generalised sensitivity to cold
- BEWE

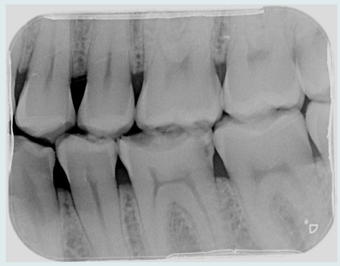
2	3	2
3	1	3

- Occlusion: reduced OVD, group function

SPECIAL INVESTIGATIONS

- Bitewings to assess bone levels and for interproximal caries
- Diet Sheet revealed five cans of diet coke were consumed per week as well as 3-4 sugar exposures per week
- Upper and lower impressions, facebow and RAP records to obtain articulated study casts

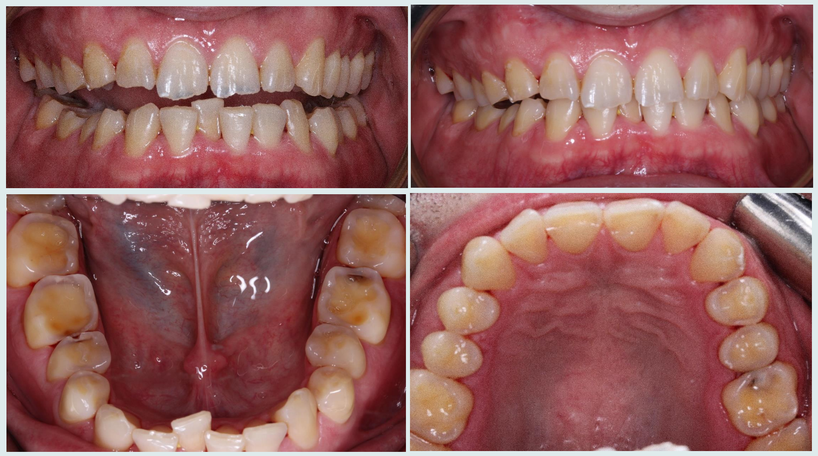




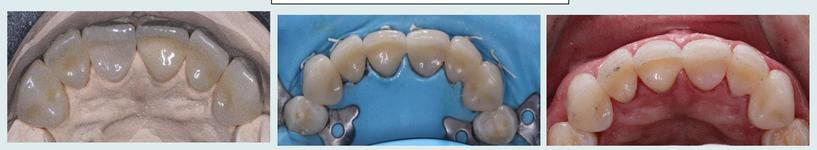
DIAGNOSES

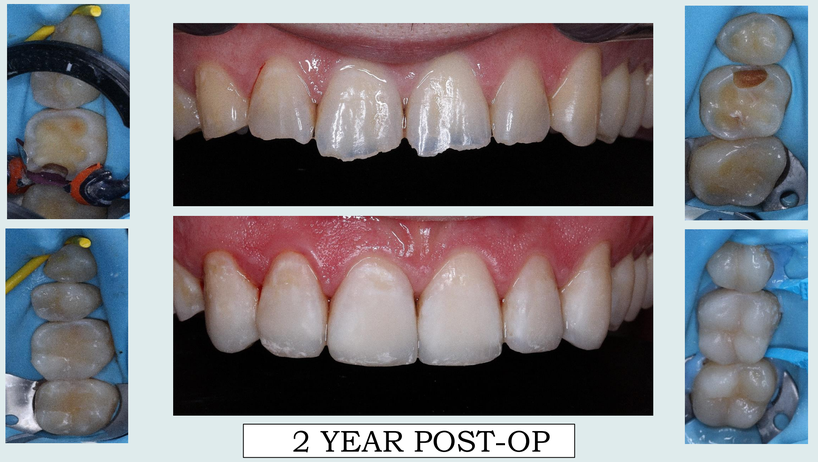
- Generalised plaque-induced gingivitis
- Caries and reversible pulpitis LL6 DO, LR5 DO, LR6 MO, UR6 MO
- Generalised moderate tooth surface loss – primary erosive

PRE-OP

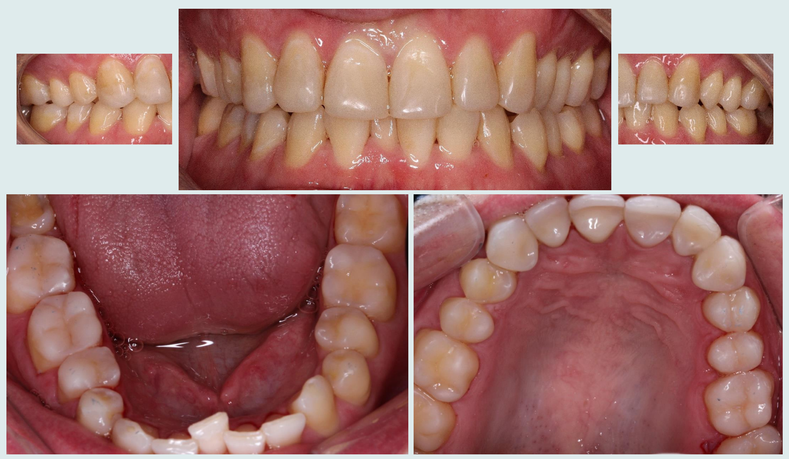


MID-OP





2 YEAR POST-OP



DISCUSSION

- A long discussion was had with the patient on preventing the cause of both the caries and tooth surface loss. A massive change was seen in the patient's diet and oral hygiene level over the first few visits which were focused around plaque-control and management of gingivitis
- Due to the loss in vertical dimension, desire to improve aesthetics and the space requirement to restore the posterior teeth a re-organisational approach was decided upon
- The preliminary planning involved a wax-up of the upper anteriors at ideal proportions on the articulated study casts. This was tried in the mouth and aesthetics, function and speech were verified
- Different material options were discussed with the patient with their relative advantages and disadvantages
- As the tooth surface loss was primarily erosive in nature and the causative factor had been stopped, composite was deemed to be a satisfactory option in terms of strength. The patient was well aware of the reduced lifespan compared to ceramics/gold and the higher risk of marginal staining/chipping but also preferred it due to the possibility of repairs. Furthermore, financial constraints made this a more viable option for the patient especially due to the number of teeth which required treatment
- Indirect composite backings (TWiNY) were chosen over direct composite restorations for the palatal surfaces of the upper anteriors. This was to allow for better management of occlusion, greater strength in this area and better control of aesthetics as the backings allowed for a matrix for the direct labial composite to be built against. This was possible via a non-invasive approach
- Due to the need for direct composite build ups on the posterior teeth it was decided to manage the carious lesions concurrently. This had the advantage of the composite being done in one go meaning we were not bonding to old composite and also reduced overall chair-time for the patient. However, it did have the disadvantage that caries risk was not fully managed before progressing onto the rehabilitation. These were completed freehand maintaining the ideal occlusion determined by the upper palatal backings

TREATMENT PLAN

Prevention
- Oral hygiene instruction – Duraphat 5000ppm twice daily, fluoride mouth rinse daily
- Dietary Advice – major reduction in both sugars and acidic drinks, straw to be used if any acidic drinks consumed
- GMP referral to investigate any acid reflux (no findings were made)
- Full mouth supra- and subgingival debridement

Once plaque score <10%, dietary advice and oral hygiene instructions were being followed the below plan of treatment was formulated after a thorough consent discussion

1. Upper and lower impressions, facebow record and RAP record (wax-up of 3-3 at increased OVD to allow for space to restore posteriors)
2. Mock-up tried in mouth and accepted, final impressions for upper palatal veneers taken
3. Cementation of upper palatal indirect composite veneers (TWiNY) and direct labio-incisal freehand composite placement
4. Direct composite build-ups of all posterior quadrants and management of approximal caries (LL6, LR56, UR6) over two appointments to ideal occlusion
5. Provision of post-operative splint once occlusion settled and ideal parameters established

Recall - 3 month recall interval as per NICE guidelines for Red Care Pathway

REFLECTION

- The two year post-op review showed good adaptation of composite with very little wear occurring and no chipping as of yet
- Indirect composite veneers allowed for much more predictable occlusal control compared to my past experiences with direct composite for restoring anterior palatal tooth structure. Minimal modification was required after cementation
- Mr C has been an excellent attender who has shown good compliance with all advice given. However, I feel it would have been better to err on the side of caution and manage the carious lesions first and ensured good attendance before embarking on the more complex aspects of the treatment plan

References: 1) Davies S. Conformative, re-organized or unorganized? Dent Update. 2004 Jul-Aug;31(6):334-6, 338-40, 342-5. doi: 10.12968/denu.2004.31.6.334. PMID: 15376717. 2) Loomans BAC, Kreulen CM, Huijs-Visser HECE, Sterenborg BAMM, Bronkhorst EM, Huysmans MCDNJM, Opdam NJM. Clinical performance of full rehabilitations with direct composite in severe tooth wear patients: 3.5 Years results. J Dent. 2018 Mar;70:97-103. doi: 10.1016/j.jdent.2018.01.001. Epub 2018 Jan 12. PMID: 29339203. 3) Opdam NJ, van de Sande FH, Bronkhorst E, Cenci MS, Bottenberg P, Pallesen U, Gaengler P, Lindberg A, Huysmans MC, van Dijken JW. Longevity of posterior composite restorations: a systematic review and meta-analysis. J Dent Res. 2014 Oct;93(10):943-9. doi: 10.1177/0022034514544217. Epub 2014 Jul 21. PMID: 25048250; PMCID: PMC4293707.