

Management of Combined Erosive and Traumatic Tooth Surface Loss using Injection Moulding and Indirect techniques

Dr Bethany Revert, Dr Mital Patel
Restorative Dentistry, Royal London Dental Hospital

History

Presenting complaint

Broken and chipped teeth, wants her smile back

Medical history

Epilepsy, depression, anxiety, history of IV drug abuse, previous bulimia
Sodium valproate, Lithium, emergency Midazolam, Lofepamine, Quetiapine

Social and dental history:

29 year old female, ex smoker, occasional alcohol
Previous dental treatment included restorations only until epileptic seizure in 2018, which lead to extensive facial and dental trauma

Diet history:

High sugar intake, low acid intake

Examination

Extra oral examination

Facial scarring from accident – forehead, left philtrum and left nasal alar
Skeletal class 1
TMJ assessment revealed no abnormalities
Smile line: low

Intra oral examination

Soft tissues: NAD
BPE: 1 1 0
0 1 0
Root canal treated UL1, UL2, UL3
Discolouration of UL3
Localised tooth surface loss: intrinsic erosive and previous trauma
BEWE: 1 3 1
0 0 0

Oral hygiene: Good

Occlusion: Slightly reduced OVD, no space for restoration, Class 1 incisors

Special Investigations

Bitewings and IOPAs were taken at first trauma assessment at RLH: Diagnosed caries in UR7, UL7, LR6, LL6 which was treated prior to my treatment plan
Subsequent IOPA of UL1,2,3, taken to assess RCT quality and root morphology of UL2 (RCTs completed by previous DCT in training)
Upper and lower impressions, facebow and RCP record was taken to gain articulated study casts for mock up



Diagnosis

Generalised multifactorial tooth surface loss (intrinsic erosion and trauma)
Previous RCT UL1, UL2 and UL3 (Acceptable, good quality, slight extrusion UL1, accepted)
Generalised plaque induced gingivitis
Discoloured UL3

Clinical Photographs

PRE-OP



Figure 1. Intra-oral pre-operatively



Figure 2. Intra-oral upper anterior



Figure 3. Intra-oral palatal erosion

MID-OP



Figure 4. Intra-oral mock up



Figure 5. Clear injection moulding stent on wax up



Figure 7. Injection moulding stent intra-oral



Figure 8. Composite of choice



Figure 6. Completion of composites and post crown prep



Figure 9. Injection moulding UR1, UL1 immediately post op

POST-OP



Figure 10. Completion of composites and post crown



Figure 11. Intra oral post fit of crown



Figure 12. Intra-oral occlusal view

Discussion of options

Conformative V Reorganised approach:

Reorganised approach most appropriate due to need for increasing OVD to allow restoration of palatal and incisal wear, re-establish correct OVD and restore aesthetics

Choice of restorative material for restoring UR123 and UL13:

Primary aetiology of TSL is erosion therefore minimal parafunctional forces
Options included: Composite (Direct or indirect), Metal, Metal ceramic and all ceramic restorations
Direct composite was material of choice due to its minimally invasive nature and suitability for restoring erosive TSL

Injection moulding or free hand build ups were discussed. Injection moulding selected due to ...
Discussed longevity of composite restorations, the need for excellent OH, replacement needs in the future, risk of staining and chipping

Choice of restorative material for UL2:

Minimal coronal tooth structure resulted in need for post and core. Planned for RCT and fibre post and resin core to allow root canal to be immediately sealed and tooth temporised
Definitive crown made from PFM but could have been made from all ceramic as well

Discolouration of UL3:

Option of non vital internal/external bleaching offered but due to COVID19 delays, patient was keen for masking with composite instead

Treatment plan

Prevention:

- Oral hygiene instruction, diet advice, high fluoride toothpaste (full mouth supragingival scaling completed by previous trainee, following Delivering Better Oral Health Toolkit)
- Patient presented to me with good OH after preventative advice already given by previous trainee

1. Upper and lower impressions, facebow, RCP record: wax up of 3-3 at increased OVD to allow for restoration of palatal wear and increased incisal height
2. Mock-up completed intra-oral: accepted by patient
3. Completion of direct composite restorations of UR3, UR2, UR1, UL1, UL3 using injection moulding technique
4. Preparation of post crown for UL2: direct post
5. Restoration of palatal cupping UL4, UR4
6. Review/Next visit – NICE Guidance

Reflection

Learning and understanding the injection moulding technique – initial difficulty getting smooth junction at gingival margin, use of double retraction cord technique was helpful in achieving successful outcome

Improved polishing protocol required, which was practiced over the course of the treatment plan
Discolouration of UL3 – ideally this should have undergone non-vital bleaching but the patients wishes were to not have this due to time constraints. In addition, more work could have been undertaken to block out grey discolouration using more opaque composite
Temporary crown caused inflammation of gingival tissue leading to gingival margin to be pushed apically, to review after healing and fit of crown

Overall, an improved aesthetic outcome and a happy patient. Both oral hygiene and patient motivation have had a massive improvement