# Treating a tooth wear case

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Tooth wear is caused by attrition, abrasion or erosion, but most often a combination of these. After identifying the causes of the tooth wear and addressing that, treatment of the wear itself can be decided upon. A direct or indirect treatment approach can be used.

## Introduction

Many tooth wear cases can be treated simply using direct composite build ups. This is an excellent treatment option for a number of reasons:

- It is highly conservative as there is no need for any preparation
- All occlusal adjustments can be made directly
- It is more affordable than indirect restorations.

The direct composite build up technique is best when working on anterior teeth or when there is no need to cover the occlusal surfaces of the posterior teeth (*Figures 1-4*).

Many people worry that the composite will debond or fracture, however if placed in a dry field and thorough occlusal adjustments are made then this will not happen.

Occlusal adjustments must be done in lateral excursive and protrusive movements as well as centric occlusion.

If canine guidance can be created this is ideal, but it is very important that during the guidance a thin single line on the palatal surface of the upper canines is created when using articulating paper.

This line should be created on all teeth involved in guidance. This is a very important step in the success of any build up and especially if canine tips are restored to provide canine guidance.

Indirect restorations may be more appropriate to correct more severe tooth wear or in cases where the posterior teeth need building up or if the presenting occlusion needs to be reorganised.

**Figures 1-2:** Composite tips upper centrals and canines


**Figures 3-4:** Composite tips to 8 anterior upper teeth and 8 anterior lower teeth

## Full mouth reconstruction

In this gentleman, the wear was caused by a combination of erosion and attrition. He drank four cans of Coke per day and was a severe bruxist at night and during the day. His presenting occlusion was complicated by a cross-bite on the right hand side and on left lateral excursion he guided on his anterior teeth and canine. On right lateral excursion he guided on his first premolars. He had a bridge from 14 to 17 and crowns on 11, 21, 35 and 36.

### Treatment options

For all treatment options the causes of the tooth wear need to be removed or limited first. Dietary advice needs to be given and a nightguard provided. Four main treatment options were discussed:

- To accept the reduced vertical dimension and to only achieve minor repairs to protect the dentition
- To build up the anterior teeth with composite thereby creating a Dahl effect. This technique would hopefully cause some eruption of the molars and intrusion of the anterior teeth. This technique may only allow a small increase in vertical dimension if any
- To provide orthodontic treatment to create space for restoring the anterior teeth
- To restore both arches in order to correct both the vertical dimension and the tooth wear.

## Treatment plan

- Dietary, oral hygiene and other preventative advice


**Figure 5:** a-b – *Before (left) and after (right) images of the case*

- Replace failing amalgam and composite restorations and bring the mouth to a healthy state
- Composite mock-up of anticipated result
- Records for articulated wax-up
- Create overlay (from the wax-up template) on patients own teeth for patient's approval and to make a further assessment intraorally
- Crown lengthening surgery
- Upper and lower preps and provide temporary restorations
- Allow two months for gingival healing and to allow time for patient to adjust to increased vertical dimension and to make

**Figure 6:** a-f – *Before (left) and after (right) images of the case*

**Figure 7:** a-b – *Before (left) and after (right) images of the case*

sure temporaries do not fracture or debond. Impressions of adjusted temporaries
- Remove temps and finish preps before taking final records (same as for wax-up but also including stump and final shade). Make new temporaries using the new impressions
- Fit permanent restorations, adjust occlusion and take impressions for a nightguard
- Check and review occlusion and make final adjustments if necessary.

This patient had a presenting incisor length of 8 mm and we decided on an ideal of 11 mm by doing a composite mock-up of a few teeth. A leaf gauge was used to put the patient into centric relation as a reorganised occlusal approach was required: 11 leafs, therefore 1.1mm of anterior opening was required to put the patient into centric relation without any tooth interference.

Impressions of the mock-up were sent to the lab so that they also knew the tooth proportions that we were aiming towards. Upper and lower impressions of the teeth were sent with a facebow, occlusal bite registration at the desired vertical dimension in centric relation and a stick bite to confirm the occlusal plane. At this point the patient chose the specific details of how he wanted the teeth to look, i.e. shade, shape, overall alignment and levelling of the teeth as well as the number of teeth to restore.
Some crown lengthening was also necessary on the upper centrals and upper left lateral incisors. It is quite common for the bone to overcompensate for worn teeth. The gingival edge to bone was measured at 3 mm and therefore it was decided that crown lengthening by bone removal would be more appropriate than a gingivectomy alone. Consequently, 2 mm bone removal above the centrals and 1 mm bone removal above the lateral were carried out in order to allow 3 mm to the crown margins based on the stent made from the wax-up.

Preparations of both arches were carried out soon after the crown lengthening. To remove the minimum amount of tooth required during preparations, an overlay made from temporary material was placed onto the patient's teeth using a stent made from the wax-up. Depth cuts were made through the temporary material, thereby allowing for maximum tooth preservation during preparations and in this case, showed how conservative full mouth reconstruction could be.

The patient was left for two months to allow for healing of the gingival tissues and to allow for patient adaptation to the new vertical dimension and occlusion. As this patient was a severe bruxist the two month period in temporaries was also crucial to allow for adjustments to the occlusion if any temporaries were to debond or fracture. No nightguard was provided during this time.

Once it was confirmed that the mouth was stable (soft and hard tissues), the temporaries were removed and the preparations were refined. Each arch was prepped and fitted separately in order to reduce the adjustments to the final restorations. Once the final restorations on the upper arch were fitted, the lower temps were adjusted to the occlusion instead of

adjusting the final restorations. Also, by this method it was hoped that once the lower restorations were fitted, fewer occlusal adjustments would be necessary than if both arches were fitted simultaneously.

The upper arch was prepared in thirds, and bites of the prepped teeth against the opposing temps were taken in that order to maintain the desired vertical dimension. Once the upper arch was fitted and adjustments to the lower temps made to equilibrate, the lowers were prepared in the same way to maintain the desired vertical dimension. A facebow was also taken on both prep appointments and sent to the lab along with the bites and impressions.

Thorough occlusal evaluation was carried out once all restorations were fitted and a nightguard made for his bruxism. He reports that his bruxism has now reduced following treatment and he has gained great confidence from his improved appearance. The patient did not think he would wear a nightguard. For reasons of comfort a soft nightguard was made and as he has reported less grinding. Since his temporaries lasted without debonding and fracturing it was decided that the soft nightguard would be sufficient in this instance. It has now been three years following treatment without any complications despite the patient admitting to not always wearing his nightguard.

## Acknowledgements

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## Further reading

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