

ADG Treatment Guide - Consent to receiving Composite Build Ups

What are composite build ups?

Composite build ups are tooth coloured full contour reconstructions of your teeth made out of a dense polymer resin. When embarking on this procedure, the dentist is usually building up several front teeth on the same visit with view to improve or protect the bite and set this at a new level.



Although these resins have excellent strength, they will eventually wear out like your teeth do over several years. The main benefit to you of composite build ups is that they receive the impact of bite loading rather than let your worn enamel suffer more loading. As a result, the resin suffers ongoing wear rather than your tooth enamel which is spared and protected.

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The beauty of using this technique is that it does not require any tooth preparation or tooth reduction, unlike traditional crown procedures. Neither does the technique usually require use of local anaesthesia as we are simply 'adding' or 'bonding' resin to existing tooth structure. On some occasions, it is beneficial to remove old fillings before undertaking composite build-ups. In this event we will offer local anaesthesia if you need this.

The composite resin used has good mechanical and optical properties so all composite build ups look as natural as they could be. They will not however be a perfect match to your teeth.

You must view this procedure as a protective measure which is not permanent, like most aspects of dentistry. In the same way that you need to change the tyres of your car circa every 10k miles, you will usually need to replace your composite build ups every 10 years to keep protecting your bite.

Sometimes the dentist will suggest that you consider a bite-splint after the composite resins have been completed, and this is to protect the work completed.

Why have composite build ups been recommended?

Your dentist has recommended building up the teeth to:

- Correct tooth-wear to prevent loss of vitality of the teeth
- Correct progressive chipping of the teeth to prevent a deteriorating condition
- Change the biting surfaces to ensure that the way the teeth glide across each other is favourable so that teeth do not break. When you grind from side to side, the ideal front

teeth to accept the biting load are the canines and we strive to achieve this 'canine guidance' or 'canine protection' with composite build ups.

- Improve the bite by an orthodontic effect prior to more complicated and definitive crown and bridge or implant procedures. The overbuilt restorations result in a change of bite which is more favourable for provision of a crown, bridge or implant.

Teeth wear occurs for a number of reasons:

- **Erosion** – this is tooth wear of the tooth surface due to the frequent ingestion of acidic beverages, or due to acid attack from indigestion and regurgitation
- **Attrition** – this is tooth wear of the teeth due to excessive tooth to tooth contact and a condition known as bruxism (explained below)
- **Abrasion** – this is excessive wear usually on the side of the teeth due to damaging oral hygiene habits
- **Abfraction** – this is tooth surface loss at the necks of the teeth due to flexure of the teeth

Composite build ups are used mainly to correct the effects of erosion and attrition, although abrasion and abfraction cavities can be filled with the same material. Composite resin is acid resistant (unlike enamel) and so is an excellent cover for tooth surface loss due to acid erosion.

Normally we do perform chewing movements and swallowing of saliva during our sleep. This results in tooth contact of approximately 20-40 minutes duration per night. Some individuals brux at night. This means that they clench or grind their teeth, usually while dreaming. Severe bruxing can cause tooth contact to exist for several hours, typically circa 4 hours per night and this is destructive to teeth and causes progressive loss of enamel over the years.

Whereas enamel is the protective shell of the tooth and is 97% mineralised, when some of this shell comes off by tooth wear and exposes the underlying dentine (which is only 70% mineralised) there can be tremendous ongoing loss of all tooth structure due to loss of the supportive dentine matrix. The overlying enamel shell simply fragments. Rather than let this situation continue it is beneficial to cover the worn edges and restore these to full contours.

Frequently a patient has been referred for dental implant treatment due to isolated loss of teeth. When there is significant loss of contour of the biting surface of the front teeth, this results in loss of 'anterior guidance', and this can result in 'chattering' of posterior teeth which start to skate over each other. This is not good if you are to have an implant at the back of the mouth as the posterior teeth will skate across the implant and this can result in screw loosening and loss of integration of the implant. Instead, the front teeth need to be restored as described here. In our effort to restore the front teeth, a guiding platform of composite resin is placed on the back surfaces of UR3 and UL3 (the upper canine teeth). These teeth usually have long stout roots and are ideally placed to receive the lateral loads and at the same time protect the posterior bridge work or implants from receiving profound lateral (sideways) loads.

If the canines are not present or are fragile, we will want to create the lateral guidance (described above) on the upper first premolars if possible. Some-times many of the anterior teeth are fragile and the dentist will need to consider a bespoke solution to control the lateral loads of your jaw.

Important information about the technique and how your bite will feel after the build ups

When you are about to receive composite build ups, it is important that you have not been undertaking professional whitening for at-least 1 week prior to the 'bonding' appointment. This is because the peroxide in the professional whitening gels reduces the bond strength of composite resin to enamel.

Resin technology has proven the test of time since its invention by Buonocore in the 1950s. The composite resin does however require to be placed in a dry field to ensure a good bond. The presence of saliva will contaminate the bond to tooth and render the bond strength poor. When placing composites, your dentist may therefore isolate the relevant teeth by a rubber mask called a "rubber dam" (see below). This covers your whole mouth. From time to time, the dentist will choose to isolate the treatment area with cotton wool rolls.



Clinicians use different techniques when undertaking build ups. Sometimes the clinician will undertake some laboratory planning and design build ups in wax with view to create a lab made partial resin 'matrix' that will be bonded on the teeth. These procedures add cost to the composite build up procedure. Sometimes the clinician feels confident in providing a 'free-hand' build up. This is the most economical way to restore tooth contours using this technique.

When completing the build-up, the dentist deliberately ignores the bite, and focuses on restoring individual teeth to optimal contours, even if this results in teeth that become and feel 'high'. On many teeth the composite is deliberately over-built. As we are performing this procedure mostly on several front teeth you will find that your back teeth will not meet after the build ups and you will not be able to bring these together. You will be concerned that this feels incorrect, but please be reassured that this is a planned procedure where the back teeth will eventually come together fully in the majority of individuals.

For several days after the procedure, it is awkward to eat but this quickly passes. The overbuilt teeth and poor bite usually start to settle over several weeks by "differential intrusion and extrusion", and slight changes in position of your jaw joint. The front teeth that are overbuilt change in position slightly and there is some remodelling within the jaw joint to facilitate bite settling. Similarly, the back teeth continue to erupt resulting in favourable bone remodelling around the roots until the bite is settled.

This readjustment procedure results in restoration of the bite while enjoying reconstruction of the teeth without cutting them. This is one of the most conservative procedures in dentistry that results in very significant and positive bite change. See the before and after pictures below.



What if the bite does not settle?

Rarely, the bite does not fully settle. Interestingly, this rarely causes any problems and the bite will usually have improved. In this situation some additional procedures are needed to settle the posterior teeth together. There are a few choices:

1. Wait longer for bite settling to continue to occur
2. Trim some of the built-up teeth until the bite fully meets
3. Close the bite with a minimal orthodontic procedure
4. Consider one or more high density polymer crowns to improve the bite

Option 3 involves separating the posterior teeth followed by placing a few orthodontic brackets on the back teeth and placing elastic bands between them to pull the teeth together. Option 4 is still a conservative procedure as it involves crowning teeth that have been re-built. These additional procedures are chargeable.

Progressive failure over several years

Your composite build ups will suffer progressive tooth wear and chips however they will still protect the underlying tooth structure. Over time, and due to water sorption, the composite build-ups will suffer microleakage and will start to stain. It is possible for the build ups to be re-polished and refurbished without whole-sale replacement. From time to time there is the potential for a bulk fracture of the composite which will require the whole tooth to be built-up again. This can happen while your bite is settling to the new bite position.

Cluster failures

We have performed build up procedures hundreds of times, and the technique is fully documented in dental scientific literature with good success rates and is called the 'dahl treatment concept'. We have noted however that in a small cohort of patients, their bite is 'aggressive' and our composite build ups continually fail. Whereas there are many signs of bruxism that inform us of the frequency of grinding, it is difficult to predict intensity of grinding and this may result in such cluster failures. There is no way of predicting this. In this scenario we recommend building up to full contour again, allowing some bite settling and then preparing the teeth to receive 'high density polymer' crowns. Whereas this is a traditional tooth cutting procedure, it is only done straight after the natural teeth have been built up and at-least partly

settled. We are therefore shaping a significant amount of composite resin from the build-up and very much less tooth structure will be trimmed to achieve high density polymer crowns. This protects your teeth and ensures that crown preparation procedures which are traditionally very destructive. After your teeth have been built up and allowed to settle using the 'dahl-treatment concept', any further crown preparation procedures will become very conservative on natural teeth.

Complications

When performing a composite build-up, there is always a chance that the build-up can partially or wholly break in the first year. When this happens, they usually break off teeth without damage to the tooth underneath as long as your own tooth is not filled. Heavily filled teeth to the core are fragile anyway, and a build-up may increase the chances of your whole tooth breaking. The implications of this risk need to be discussed with the dentist so that a back-up plan can be agreed in the event that your teeth are fragile. All build-ups that come off within the first year are covered for re-work without additional charge to you.

When performing a build-up procedure on heavily restored teeth there is always a chance that the tooth itself will break as discussed above. We will warn you if your teeth are heavily filled, and tooth fracture will be a risk. In this situation we will have to consider a remedial restorative plan/back up plan on a case-by-case basis which is chargeable.

Most of the time composite resin is placed on strong natural enamel, which is worn and not heavily filled, and the above procedure typically enjoys a phenomenal success rate, and results in additional protection to your enamel which lasts for years to come.

Longer term protection with a bite splint/guard

After your composite build-ups have completed and your bite has fully settled, your surgeon will ask you to consider a carefully constructed bite guard to be worn at night and to carefully control the tenacity of your bite forces with view to ensuring that your composite build ups last as long as possible and do not suffer bulk fracture.