

These times depend on how much we are adding, of course. However, after about three months, you usually find the tooth has intruded itself back down from where it came and the bite now meets fairly evenly. You can have a slight adjustment to your bite later on to make the bite perfect.

WHAT HAPPENS IF I CAN'T STAND THAT UNCOMFORTABLE FEELING?

You can go back to the dentist and adjust the height and you will be no worse off than you were before. Typically 9 out of 10 people don't have a problem but it is nice to know that if you can't stand it, you can have it fixed.

WHAT ARE THE RISK FACTORS?

There is a slight risk with some people that they may develop a click in their jaw joint as a result of this abnormal bite. If this happens the obstruction can be removed and the click should go away. Some people who have a history of suffering from jaw joint tenderness and problems may be at a higher risk for problems with this type of treatment and may prefer to accept the risks associated with having their tooth drilled down and nerve aggravated.

WHAT ABOUT WORN DOWN FRONT TEETH?

We can also extend front teeth, but usually if you do any one tooth, you need to do 4, 6 or 8 teeth so that the smile looks consistent. In the case of a single front tooth that has dipped down due to wear, we can obviously build this one tooth up again so that it is level with the others. If we add length to the incisors, sometimes we may need to open the bite; i.e. minutely increase the distance between your chin and your nose, so that the front teeth meet at the same time as the back teeth. In this case we will need to add to the tops of all of your back teeth as well as your incisors to give you a new biting position and restore your teeth to their former condition.

CAN I HAVE MY BITE OPENED WITHOUT TOUCHING MY FRONT TEETH?

Yes. This is a common procedure because often the molars wear faster than the front teeth and the front teeth end up overlapping excessively. By putting "retreads" on the tops of the molars; i.e. without grinding away tooth substance, we are able to restore the worn down and super-erupted tooth. Simultaneously we open up the bite, reduce the pressure on the front teeth and reduce the amount of overlapping of the front teeth. You can probably appreciate patients who have this done often feel like they have a new lease on life due to the dramatic improvement it can make to their bite and the comfort of the whole chewing apparatus.

IF I HAVE JUST ONE TOOTH THAT NEEDS THIS INTRUSION THERAPY, WILL YOU BUILD IT UP PERMANENTLY OR TEMPORARILY?

This will vary with each patients situation – but briefly, if it is a worn filling, we usually build it up permanently, but if it is a tooth that needs a crown and has no room for a crown, we would usually build it up temporarily and do the permanent crown later when sufficient height has been established. This saves the permanent crown being used as the instrument to push the tooth backwards in case it causes the crown to break. It is better to chip or crack a cheap plastic filling than an expensive porcelain crown.

This document has been produced for the international dental profession.
The English (US) dictionary has been used as the basis for the text.



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Reconstructing Severely Worn Teeth

As we age, our teeth and our fillings wear down. There is in nature a mechanism to overcome the effects of tooth wear which dentists call "super-eruption". This refers to the process whereby the tooth is extruded or pushed out from the bone and gum until it finds something to touch. This process increases the efficiency of the chewing apparatus by stopping the creation of gaps, which would have otherwise occurred due to the wearing down of teeth. The process of super-eruption happens very slowly and would not be noticed by you. It happens as the tooth wears and teeth wear at different rates depending on the following factors:

- 1. How much enamel you have left on your tooth** - If you have worn through the enamel on a significant portion of your tooth, the inner core of the tooth called the dentine becomes exposed. Enamel is like glass and wears very well, but dentine is like wood and doesn't wear very well. As a result you may see patches of tooth where there is a rim of enamel and a crater of exposed yellow dentine. The surface used to be level, but with years of chewing the differential wear rates cause this cratering. If the tooth is in contact with the opposing tooth, the opposing tooth will grow down into that crater and the cratered tooth will grow up towards the opposing tooth due to super-eruption.
- 2. The quality of your enamel** - Some people suffer from poor quality enamel that causes it to wear away very quickly. This can be a genetic problem or you may have had an unfortunate illness at the time the enamel was growing (for example between the ages of 1-6 years). These people tend to suffer from cratering on the tips of their cusps (cusps are the small mountain peaks on the top of molars) at a very early age; i.e. in their 20s. These craters can be acutely sensitive due to the lack of enamel coverage and you may find pain when you bite a tomato seed into this crater.
- 3. The type of filling you have on your tooth** - Fillings vary widely in their resistance to wear. Typically gold and amalgam wear at the same rate as enamel, porcelain wears better than enamel but composite resin (the white plastic fillings commonly used today) used to wear quite poorly. Technology is improving all the time and they now wear fairly well but still not as well as most other restoratives.
- 4. How many molars or premolars you have left to share the load** - If you have had a back tooth extracted, the opposing tooth becomes useless, so the rest of your mouth has to make up for the loss of these two teeth. If you have had two teeth extracted you are really down four teeth and you only

have 16 opposing chewing teeth. The chewing teeth are the molars and premolars; i.e. everything behind your canines, which are the pointy ones at the corner of your mouth. Some people lose all their back teeth and are forced by economic circumstances to chew on their incisors and canines - but this is not the way nature planned it. As a result the wear rate of their front teeth can be alarming, especially once they wear through the hard outer skin of enamel.

Another problem that arises when you lose a back tooth is that the surrounding teeth tend to fall into the gap - they tilt sideways often ending up at 45 degrees or more over a period of 5 to 10 years. As a result the flat surface on top of the tooth, which used to meet so nicely with the opposing tooth, now meets with a 45 degree gap - thus reducing the crushing and grinding power of the molar by about 80%. Whilst you may not die of malnutrition, you will definitely notice a substantial loss of chewing power and you will find less satisfaction with your eating due to the fact that you are not grinding your food as finely and releasing the flavors. You will also be swallowing food that has not been sufficiently ground up and mixed with the enzymes in the saliva and you will therefore add an extra load to the digestive enzymes. If the digestive enzymes cannot keep up efficiently, you may have other symptoms occurring in the intestinal tract (such as excess gas).

- 5. Your diet - If you eat a lot of acidic foods you may soften the enamel and cause it to wear out prematurely.** If you are bulimic you will usually wear away all of the enamel on the inside and often on the tops of your teeth due to the strong stomach acids. Vegetarians tend to have more wear than non-vegetarians possibly due to the increased abrasiveness of the fibrous material in fruit and vegetables.
- 6. The extent to which you grind your teeth during the day or more particularly, at night** - See our separate brochure on Bruxism.
- 7. Whether you wear a night guard.**

HOW DO WE FIX WORN DOWN TEETH?

In the case of molars, the dentist will usually place a restoration such as gold, porcelain, amalgam or composite resin across the entire biting surface. This thin wafer of material usually does not stick on to the tooth all that well and so it needs to be held down with vertical extensions which wrap down the side of the tooth. To get a good hold on the tooth sometimes these vertical extensions should go all the way around - this is called a crown. Sometimes only part of the tooth has to be wrapped up - this could be a three quarter crown or an onlay. Sometimes only the bit in the middle needs fixing and this could be done either as a filling made in the mouth, or made outside the mouth and cemented in later - this is called an inlay and is usually a superior result.

HOW THICK SHOULD THIS PROTECTIVE LAYER BE OVER THE TOP OF MY TOOTH?

This varies with the type of material used - if the material used is inherently weak and fragile it has to be thicker to compensate for its weakness. For example, porcelain is fairly brittle but if it is 2mm thick and bonded to the underlying dentine it works very well. Thin porcelain is more likely to fracture - it is like a thin layer of concrete without reinforcing. Also, like concrete, it may be strong enough to walk on but not for trucks to drive on. If you have a very strong bite due to powerful facial musculature, or if you grind your teeth in your sleep, you are much more likely to damage or crack or wear your filling or crown. Gold on the other hand is a strong malleable metal which will not crack under strong loads - it needs only 1mm of thickness and will last decades.

WHERE DOES THE SPACE COME FROM THAT IS NEEDED TO PUT THIS PROTECTIVE LAYER OVER MY TOOTH?

This is where all the information above starts coming together. The answer usually is - from your tooth. The problem with this is that you already have a worn down tooth and we now are proposing to add a layer of restorative material somewhere between 1 and 2mm thick which will involve drilling down an already worn tooth a further 1 to 2mm. The nerve may already be within 1 to 3mm from the surface of the worn down tooth and if you are unlucky the nerve could be exposed, or irritated sufficiently if not exposed, to the point that it may die in years to come. This is a risk factor you need to be aware of when it comes to taking the easy way out. Drilling the tooth down also weakens the tooth making it much more likely to develop cracks in the future - see separate brochure on "Cracked Tooth Syndrome".

IS THERE AN ALTERNATIVE TO HAVING MY TOOTH DRILLED DOWN TO MAKE ROOM FOR THE PROTECTIVE LAYER?

Yes, but you have to understand that it is not very comfortable and may involve certain minor risks. The problem is that your tooth has grown up out of the gum to replace the worn tooth structure. We would have preferred that it didn't do that and that there was a nice gap of 1 to 2mm ready for us to put a new top on. However, we can create this gap by reversing the process of super-eruption. The way we do this is to build up the tooth with either temporary or permanent material to the correct height. This tooth then becomes the only tooth you touch when you bite and is effectively moved orthodontically by the muscles that close your jaw - every time you swallow, clench or chew. The fact that it is the only tooth that touches is very annoying for the first three days. For the next two weeks it is moderately annoying and for the next three months after that it is mildly annoying.

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