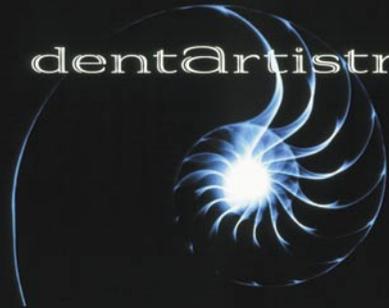


Dr Sandra Short



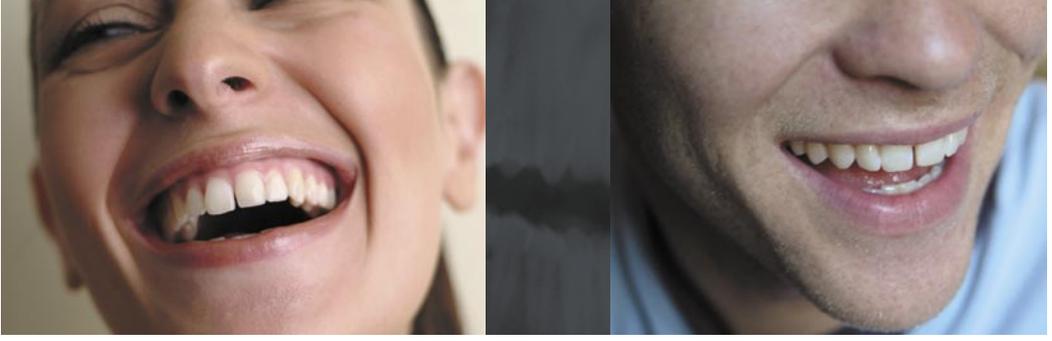
# The Consumers Guide To Cosmetic Dentistry

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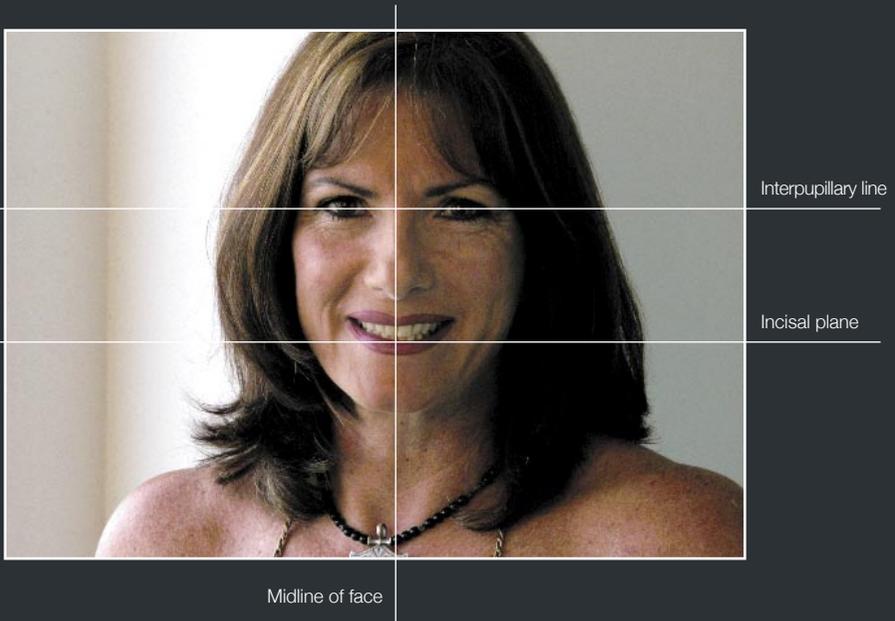
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**SMILE DESIGN PRINCIPLES** In designing dental restorations, there are several design principles which are used to create an aesthetic smile. One of the guidelines used is the midline of the face. The midline of the teeth should line up with the midline of the face to create a smile that is symmetrical. A line joining the edges of the front teeth (called the incisal plane) should be parallel to a line that extends between the pupils of the eyes (called the interpupillary line). Following these design principles helps to create restorations that are in harmony with the facial features which result in a beautiful, natural smile.





In creating an ideal aesthetic smile, certain principles in smile design must be closely followed. The first principle to understand is the level of the gum tissue between the two front teeth. If we draw a line at the height of the tissue between the two front teeth, the tissue should be at the same height. An uneven tissue height creates an unaesthetic appearance.

The next principle to understand is the height of the tissue between the front tooth, the cuspid tooth as compared to the tooth in between. If we draw two lines along the tissue heights of the teeth, as seen in this example, we would find that the tissue height would be one millimeter lower on the lateral incisor (the tooth in between), in a ideal aesthetic smile.

The amount of curvature of the edges of the teeth changes the age appearance of teeth.



Teeth that have deep curvature are youthful in appearance, and as the curvatures become less prominent (almost straight), the teeth become older in appearance. Understanding this principle can affect the appearance of your smile.

**TOOTH SIZE AND PROPORTION** When we look at the proportion of the front teeth, we are looking at the ratio of the width of the tooth to its height. Teeth that appear aesthetically pleasing, have an ideal width to height ratio of 75 to 80%. In this example these teeth have a width to height ratio of 75% and are in ideal proportion. When these front teeth are restored, our goal is to achieve the ideal proportion.

The maximum height of the central incisor and the cuspid tooth is usually a millimeter above the maximum height of the lateral incisor.



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## DR SHORT'S PROFESSIONAL PHILOSOPHY

I remain a general dentist, not specialising in any one field, in order not to limit the scope of care that I can offer my patients. I do not believe I can be a “Jack of all trades.” I do not practice endodontics (root canal work), orthodontics (straightening teeth), or periodontics (gum disease treatment, where the gums have a significant infection). I feel that these are areas best handled by specialists. I practice general dentistry with an artistic approach to restore function, health and beauty to mouths.

### RESUME Dr S M Short BDS Syd Uni

In 1975 Dr Short graduated with a Bachelor of Dental Science from Sydney University and the following year completed six months postgraduate studies in New York under Dr Leonard Linkow, the inventor of implants.

In 1989 Dr Short established her current practice in Double Bay. She has always been interested in cutting edge technology and in 1990 was part of the initial team from Australia to be trained in the USA and Canada in the use of lasers in dentistry.

1992 saw Dr Short lecturing at Westmead Hospital on the use of lasers in dentistry and acting as the clinical instructor of laser dentistry for two years.

Dr Short has had an involvement in humanitarian work. In 1993 she travelled to Vietnam and set up a dental clinic in Ho Chi Minh City for street children.

The following year, 1994, she gained Dental Board accreditation for the use of anaesthetics in the dental surgery and became a councillor of the Australian Dental Association (NSW branch) for the next four years.

Dr Short completed study in dental implant surgery and bone grafting techniques conducted by Dr Carl Misch in the USA in 2000. Dr Misch is one of the foremost researchers on dental implants in the world.

In 2002 the Exceptional Practice Group of Australasia was formed and Dr Short was a founding member. The group comprises the top 50 practices in Australia and New Zealand.

In 2003 Dr Short gave a lecture at the annual conference of the Cosmetic Surgery and Cosmetic Physicians Society of Australasia on the Gold Coast. ✨



**COSMETIC SELF EVALUATION**

Would you like to have whiter teeth?

YES NO

Are you happy with your smile?

YES NO

Please rate your smile from 1 to 10

(1 = I hate my smile, 10 = very good)

1 2 3 4 5 6 7 8 9 10

When you smile in the mirror are you conscious of any defects to your teeth or gums?

YES NO

Do you show too much gum when you smile or laugh?

YES NO

Do you feel that your teeth are too wide or too narrow?

YES NO

Are there spaces between any of your teeth that concern you?

YES NO

Do you have teeth that are crooked, uneven or out of line?

YES NO

Do you have any grey, black or silver (mercury) fillings in your teeth that you are unhappy with?

YES NO

If you answer yes to any of these questions see your dentist.

**DISCLAIMER** The opinions expressed in these pages are my opinion based upon 30 years of experience. Other dental professionals may hold differing opinions on some issues. I base my opinion on continual education and scientific research. I belong to the Exceptional Practice Group of dentists who strive for excellence.

**A STUNNING SMILE** If you want to improve the look of your smile, your dentist is the perfect person to ask. Your dentist can discuss with you how you want to improve your smile and then examine your teeth and recommend the best way to achieve the result that you want.

Using the latest technology and materials, your dentist can repair stained, chipped, crooked or missing teeth.

Some of the recent advances in cosmetic dentistry include:

Special treatments to bleach the teeth

Coatings made of resin, plastic or porcelain which cover the teeth to improve colour, shape and length, and to close gaps.

White marks on teeth are usually in the surface of the tooth only and can be polished out.

If you are concerned about your smile, talk to your dentist. A simple solution is likely. ☒

**COSMETIC SMILE DESIGN** The size and proportion of teeth should be determined by the laws of nature.

i.e. The Golden Proportion if it is to be pleasing to the eye. These laws govern all aspects of nature from the curve of the shell, to leaves on a plant or flower, proportions of the human body. It is replicated in architecture and even the harmonics in music adhere to this mathematical formula.

When the Golden Proportion is applied to the size of teeth height versus width, the upper incisors to the lower incisors or the central incisors compared to the lateral incisors compared to the canines etc. a geometric progression rather than random sizes gives the most aesthetic result.



Another important feature to get right is the midline of the teeth; it should be aligned with the midline of the face. The upper and lower midlines should also be aligned for beauty and harmony. Symmetry between the right and left sides is of utmost importance.

If this is not balanced the human eye detects the discord unconsciously. The level of the upper and lower arches should be perpendicular to the midline if not a cant of the incisal plane looks wrong.

The lip line should follow the line of the front teeth or vice versa. The central incisors should be dominant with the lateral incisors and canines curving slightly up. If teeth are worn flat they give an aged appearance, we call this a reverse smile line. There should be open embrasures between the teeth. This space is called negative space and will significantly change the “personality” of the teeth. All of these issues should be discussed with your dentist before cosmetic work is done. The arch form is important to understand and get right. The problem is with narrow arches. There are things that can be done cosmetically to broaden the smile or display of teeth.

When looking from the front or side of the mouth we should see an even graduation of teeth diminishing evenly from the front to the back. The gum line at the front and side should be symmetrical. ☒

**BLEACHING** Tooth whitening will bring the tooth back to its original colour however if the ingestion of pigmented foods, liquids or smoking continues they will stain again.

Tooth whitening is one of the simplest cosmetic procedures that can be done to give the “wow” look to teeth.

There are many ways to whiten teeth which work. The whitening agent used should not be harmful, and yet get the best effect, without causing sensitivity in the shortest possible time. The systems which use “fancy” light sources do not in fact enhance the effectiveness. Because these procedures are done in surgery time they do not require patient compliance, so the outcome is more predictable and quicker.

There are 16 shades of teeth on the standard shade guide, plus 2 new ones on the white end of the guide since we have been bleaching teeth. With the in surgery procedure we can guarantee at least 6-9 shades lighter results in one visit which takes approximately 1-2 hours to do properly, provided you can go 6 shades lighter.

**Getting that whiter smile** A cost-effective, safe and efficient way of getting a whiter smile is through cosmetic bleaching.

Enamel stains or discolourations, trauma to baby teeth which has stained permanent teeth and a general discoloured pattern in teeth can all benefit from bleaching. Bleaching can also be the next step prior to cosmetic treatment to provide a uniform appearance.

A technique involving bleaching by your dentist at the practice combined with subsequent patient-applied bleaching can provide faster results for those wanting instant improvements.

Your dentist will assess your individual needs and record the health of your gums to prescribe the correct concentration of carbamide peroxide or hydrogen peroxide for your treatment.

It may be necessary for you to have some preventive and restorative dental care before beginning a bleaching treatment.

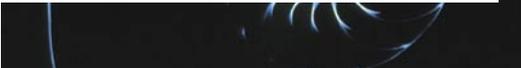
There can also be some side effects from bleaching, including gum irritation, sensitivity of the teeth.

It is important that your treatment is closely monitored by your dentist.

**NB:** Very Important - Bleaching should be limited to the treatment of problems with tooth enamel rather than used repeatedly to keep ahead of the results of stain-causing habits like smoking.

**A whiter shade of pearl** Whitening your teeth using a home bleaching kit prescribed by your dentist or professional in-office bleaching in the dental surgery can impact how we perceive our mouth. It has the potential to provide a positive influence on our overall assessment where discolouration, slight crowding or overlap of our teeth is present.

Whitening is a way of assisting a natural outcome that maintains our individual characteristics. The teeth remain in their same position, but we put less significance on this aspect as a result of the gleam of whiter teeth. The optical effect is strengthened by all teeth undergoing a uniform change in appearance.



Making whitening a first step in cosmetically altering your teeth may be the only step necessary as other minor imperfections become less significant with a whiter smile. It can be similar to the “try before you buy” principle. It allows you to judge for yourself if further changes are required to accomplish a positive attitude about your appearance.

For stained or discoloured teeth, bleaching can lighten teeth that have not responded sufficiently to professional cleaning. It is a safe procedure when done by a qualified dentist. Bleaching may not be appropriate in people who have oral symptoms of some diseases.

**Advantages of bleaching** Bleaching is ideal for undamaged teeth that only need lightening in colour.

The upper and lower teeth can be bleached.

Approved tooth-bleaching products are safe to use.

**Disadvantages of bleaching** Some blemishes will not improve. Bleaching works best for teeth that are stained yellow, brown or orange. Teeth with grey stains may lighten a little, but results will not be as good.

Care needs to be taken so that the bleach does not come into prolonged contact with the gums. This may cause short-term irritation or burning.

If your teeth are very sensitive, or if you have gum disease or worn teeth, bleaching may not be suitable.

Some over-the-counter preparations are very abrasive, and although they work in the short term, they can damage teeth over the long term. Dentists do not recommend these treatments.

Some white fillings may need to be replaced after bleaching.

Some teeth do not bleach evenly.

Fillings, porcelain veneers or crowns will not be whitened with bleaching. ❏

**PORCELAIN VENEERS** If your teeth are chipped, discoloured, have small gaps between them or are slightly crooked, then veneers may be an option. As the name suggests, veneers are thin porcelain shells that are bonded onto the front of your teeth to effectively hide these problems.

Rotations, overlapping and irregularities of teeth can be eliminated with porcelain veneers however in time these teeth may move due to mesial (forward) migration. To prepare teeth for porcelain veneers they have to be prepared i.e. cut so this is an irreversible procedure.

Gaps in teeth can be filled permanently with bonded resin fillings or porcelain veneers. Porcelain veneers are more expensive than resin bonded veneers, however they last longer, they don't wear down as easily, they don't stain and because of this they are more cost effective.

Two patient's impressions of porcelain veneers: “My new teeth have given me the self confidence I never had before” and “I used to mumble and never smile because I hated showing my teeth. Now I can't stop smiling”.

Stained, irregular and unevenly spaced teeth need no longer be something you have to grin and bare. Porcelain facings can change the shape and quality of your smile. A facing is a micro-thin (0.5mm) layer of tooth coloured porcelain, moulded to fit perfectly onto the front of your tooth to disguise irregularities or fill in gaps between teeth. Facings have been likened to false fingernails because they fit over



the tooth just as the false nail fits over the real nail, improving its appearance.

Porcelain facings can only be fitted by a dentist, who will advise you whether or not they are suitable for your particular problem. If facings are suitable for you, your dentist will take an impression of your teeth and send it to a dental laboratory where the facings will be tailor-made for your teeth. The facings are then returned to your dentist who will bond them to the teeth with a composite resin. Finally, he or she will clean and polish the edges so that the facings are not distinguishable from the real teeth.

They are a more conservative treatment than a crown and can often be used as an alternative if the underlying tooth is strong and healthy.

An appointment typically takes from one to two hours depending on the number of teeth to be treated. To prepare each tooth, your dentist will remove a thin layer, about the thickness of a fingernail, from the surface of the tooth. This allows room for the veneer to be glued into place later. A local anaesthetic may be required during this step. An impression is taken of your teeth and sent to a dental ceramist, who manufactures the veneers to fit your teeth.

Cementing of the new veneers occurs at the next appointment and may take a few hours. Your dentist will check on the colour and fit before finally bonding them into place. The teeth are cleaned with a chemical that helps bond the veneer to the tooth. After cement is placed between the veneer and your tooth, a light beam activates the cement to bond the veneer firmly.

Once the veneer is bonded to the teeth, the colour cannot be changed. After the veneer has been bonded, it is trimmed and polished.

**The care of veneers** Caring for your veneers will ensure that they last longer. Regular checks with the dentist who fitted them, or one who is experienced in the care of veneers, is recommended. During your visit, the veneers will be polished, and any irregularities will be trimmed. Mention to your dentist if you have noticed any problem during brushing or flossing.

Excessive chewing or biting, especially on foods like hard lollies, ice or bones may break the porcelain. Holding other hard objects in your teeth such as nails, pens or bottle tops may damage the veneers.

If they are struck by sharp objects, porcelain veneers can fracture, just like normal teeth. Wearing a mouthguard during sport is strongly recommended.

Good dental hygiene is important to extend the life of the veneers. Regular brushing with fluoride toothpaste and flossing after meals will help to prevent decay.

**Advantages of Veneers** Application is relatively painless.

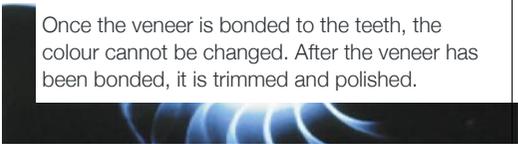
If the tooth underneath is strong enough, veneers can be a simpler cheaper alternative to crowns.

Veneers are resistant to staining due to age, tea, coffee or smoking.

The porcelain and the cement used in the cementing process are strong, making veneers comparable in strength to normal teeth.

When applied professionally and cared for regularly, veneers can last for many years.

Porcelain will not decay.



**Disadvantages of veneers** A veneer cannot be repaired if it is damaged or if the gum shrinks away from the top edge.

Veneers tend to be relatively expensive.

A small amount of tooth must be removed during preparation.

As porcelain is very hard it will wear away the enamel of the opposing teeth. ❏

**BONDING** Another technique similar to facings is known as bonding. This is when a tooth-coloured putty-like substance is moulded to the tooth, and then set in place using an ultra-violet light referred to as “white light”. It is then shaped and polished. These materials, however, can, and probably will, discolour.

Your dentist will be able to advise you as to whether facings or bonding treatments are most suitable for your particular problem.

Bonding is useful for improving small irregularities but is less successful than veneers in the treatment of some problems. The tooth is prepared by etching its surface with a gel. The surface is then painted with a bonding liquid that sets firmly when a special light is shone on it. A putty-like resin is moulded onto the tooth and shaped. The light is again used to harden it. Finally, the set resin is trimmed and polished.

**Taking care of your bonding** Brush and floss regularly; avoid sweet or starchy foods.

Regular maintenance by a dentist is recommended. Rough or snagged areas can be smoothed if treated early.

Some commercially available toothbrushes and toothpastes are too hard on bonded teeth. Your dentist will discuss the best teeth-cleaning materials to purchase.

Stresses on bonded teeth (such as biting into hard foods, for example, boiled lollies or carrots) may lead to breakages. If the front teeth have bonded edges, bite into foods using the side teeth.

As alcohol can cause deterioration of the resin, it should be taken in moderation.

**Advantages of bonding** Bonding is often a satisfactory alternative to small blemishes.

Tooth preparation is not normally required.

Only one visit to the dentist is usually needed.

An excellent colour match can usually be achieved.

Bonding may be a less expensive option than veneers in selected cases.

Bonding can be used as a conservative, temporary measure if more permanent treatment requiring tooth preparation is planned for a later stage.

A bonded surface can be repaired in the mouth and can be maintained as long as the person wants the dentist to look after it.

**Disadvantages of bonding** As bonding material is made of a bonded resin, it is not as strong as veneers and is more prone to chipping or breaking, but is easily repaired.

Bonding may need regular touch-up work as it will wear down and stain in time. ❏



**RESIN FILLINGS** Composite fillings can be an alternative to amalgam fillings. They are made of a plastic material mixed with small glass particles and are tooth coloured, rather than silver. They are suitable for repairing both the front and the back teeth.

After preparing the tooth, your dentist will place layers of the composite filling into the area to be repaired. Each layer of the composite material is hardened by exposure to a special light.

Once the cavity or defect is filled, your dentist can trim the composite to fit the tooth and then polish it.

**Advantages of composite fillings** Composite fillings are more attractive than amalgam fillings.

Teeth filled with composite material tend to be stronger, as it bonds to the surrounding tooth, while a tooth filled with amalgam may sometimes be weaker.

Composite fillings can be fitted into very small holes, so less drilling is needed in preparation for the fillings.

These types of fillings can help insulate the tooth from major temperature changes.

#### **Disadvantages of composite fillings**

Composite fillings take slightly longer to place than amalgam, and the technique your dentist uses is more complex. It is extremely technique sensitive so the dentist needs to take time and skill in placing them.

Composites are usually more expensive than amalgam. ❏

**AMALGAM versus RESIN** White filling materials are now lasting as long as the traditional black/silver amalgam fillings without the risk of toxicity. They look much better too! Some of the minor symptoms include fatigue, occasional joint stiffness, ringing in the ears, difficulty sleeping. Amalgam taken from teeth after 20 years has been found to have less than half the amount of original mercury. This lost mercury is leaked into your body where it stays and accumulates forever. Mercury is toxic and cumulative, but we don't know at what level it becomes a health risk. It is in the food we eat especially fish.

The longest lasting filling without doubt is the gold inlay which lasts at least three times as long as any other filling. I recommend gold where cosmetics are not an issue, say at the back of the mouth. ❏

#### **TREATING DECAY AND RE-BUILDING TEETH**

By not treating weakened and heavily filled teeth, there is a significant risk of tooth fracture and resultant tooth loss that will compromise the long term chewing efficiency with resultant general health implications.

The procedures used to achieve this long-term strength include:

- Tooth coloured bonded fillings
- Porcelain or gold inlays
- Porcelain or gold crowns

International research suggests a 7% incidence of root canal therapy if “unfilled teeth” are treated in an elective procedure and a 30% incidence of root canal therapy if heavily filled teeth are rebuilt to achieve long-term strength.

In the event of root canal treatment being necessary, referral to a specialist endodontist may be required.

We endeavour, with access to the latest technology and early intervention, to minimise this possibility. Teeth that are heavily filled are at a greater risk of internal leakage of bacteria that leads to root treatment and weakening of teeth.

It is my belief and experience, that high quality, comprehensive dental treatment is a much better long-term investment than patch-up dentistry to preserve teeth and prevent their untimely loss.

Reasonable life expectancy of cosmetic reconstructive procedures such as veneers and crowns should be 10 to 12 years. This can only occur if regular professional and home care maintenance is carried out and review of your gum health is assessed on a 4 to 6 month basis and your teeth are protected from the damage of night grinding.

I believe you should be offered a warranty on your major dental treatment (crowns, inlays, veneers and bridges)

**Excluding trauma** Provided (at least) six monthly attendance appointments are carried out

As well as the directed evening wear of your night guard is followed

In the event of regular four to six monthly maintenance visits not being attended, your night guard not being worn or a traumatic injury to your front teeth, this warranty would be null and void. ❏



**CRACKED TOOTH SYNDROME** As the name implies, cracked tooth syndrome relates to a variety of symptoms and signs caused by a crack in a tooth. To improve the chances of saving a cracked tooth, early diagnosis and treatment are important. Most cracked teeth can be saved. If a crack is located and treated early, your dentist may be able to prevent the crack from progressing through the tooth.

Cracked tooth syndrome usually occurs in a molar or premolar but may affect any tooth.

The syndrome may involve:

- Teeth with large fillings or restorations where the crack runs under a weakened cusp (the raised edge of a tooth)
- Teeth with minimal or no fillings where the tooth has been subjected to heavy biting forces due to grinding
- Teeth that have suffered trauma

These cracks may propagate and involve the pulp, nerve and root.

**Symptoms and Signs of Cracked Tooth Syndrome** Sharp and erratic pain upon chewing (especially when biting on grainy food) or after release of biting pressure; not all cracks cause pain.

Pain or discomfort when the crack is exposed to cold or hot food or liquids.

Sensitivity to sweet foods.

Difficulty in pinpointing which tooth hurts.

The crack may not be visible to the eye or detectable on a dental X-ray film.

If the crack extends below the gum, a pocket of gum disease extending along the root surface may exist.

Often, a patient will present with a history of other cracked teeth.

### Causes of Cracked Tooth Syndrome

Cracked tooth syndrome has become more common because people are keeping their teeth longer than in previous generations. As a result, people often have large fillings that may weaken the teeth and make them prone to fracture.

Many people's lives are more stressful nowadays, leading to clenching or grinding of the teeth, particularly at night. This is called bruxism. Bruxism can cause teeth to crack; see the Australian Dental Association patient education pamphlet *Bruxism*, available from your dentist.

Over the years, daily wear and tear from clenching, grinding and chewing can slowly cause cracks, especially if teeth are filled.

Chewing on hard foods or substances, such as ice, sweets or pencils.

Trauma such as a blow to the teeth, especially if the upper and lower jaws have been rammed together.

Diagnosis can be difficult because symptoms are not consistent. Also cracks vary greatly in length and location. Often, cracks are not discovered until a variety of symptoms are present. If a cracked tooth is suspected, your dentist will take your dental history and ask you questions about the sensitive tooth.



**Bite tests.** Bite tests are helpful in locating the pain. As pinpointing the pain is often difficult, your dentist may ask you to bite on a hard object that is focused on one cusp. This will allow the dentist to localise your bite pressure to one tooth or part of the tooth. When you bite down on the part of the tooth that is cracked, or release the biting pressure, you are likely to feel pain.

**Radiographic exam (X-rays)** The dentist may want to take an X-ray film to rule out other causes of tooth discomfort, such as decay. Cracks in teeth rarely show up on X-ray films. Cracks in the root may show up as a loss of bone around the cracked root or give the appearance of an abscess.

**Removal of a filling** If the suspect tooth has a filling, your dentist may remove the filling. This will allow the dentist to determine if a crack is present and, if so, the extent and direction of the crack. Some dentists use a magnifying device or an operating microscope to inspect the tooth.

**Staining** To test for the presence of a crack, your dentist may apply a coloured dye to the:

- Surface of the suspect tooth
- Tooth cavity after the filling has been removed
- Root of the tooth

**Transillumination** Your dentist may place a special light directly on the tooth surface. If a crack is present, it will block the light. Teeth without cracks allow the light to shine through.

**Temperature change** Your dentist may also use ice or hot or cold water to test which tooth is sensitive.

**Treatment for a cracked tooth** Early treatment is important. Propagating cracks may be stopped or slowed down, increasing the chances that the tooth can be saved. Treatment depends on the extent and position of the crack.

**Simple crack:** The treatment for most cracked teeth involves removing the weakened cusp and placing a large filling or crown (cap) on the tooth. If more than one cusp is fractured or if the tooth is heavily restored, a crown is an effective treatment.

The crown protects the tooth and often prevents the crack from progressing. When the tooth is prepared for the crown and a temporary crown put in place, the pain usually subsides quickly. Sometimes, before a crown or filling is placed, a stainless steel band is put in place with a sedative dressing to see if the tooth pain can be stopped.

If discomfort stops, a filling or crown will then be placed. If the discomfort does not stop, the dentist may suggest the need for root canal treatment.

**Complex crack:** If the crack has progressed to the pulp, root canal treatment may be needed before the crown or filling is put in place. Root canal treatment requires two or three additional appointments.

**Untreated cracked teeth** The longer a simple cracked tooth is left untreated, the more likely it will become a complex crack. The pulp inside the tooth may die, and infection in the tooth may occur. It will then be necessary to perform root canal treatment or, in some cases, extract the tooth.

In severe cases, the tooth may split in half. In this case, the tooth usually has to be extracted. A bridge, denture or dental implant may then be needed.



**Prevention:** If you clench your teeth or grind them together (bruxism), particularly at nighttime, you can have a special night guard made to protect your teeth. Your dentist can fit you with a night guard, also called an occlusal splint.

Avoid chewing on hard objects such as ice, hard sweets, pens or pencils.

Wear a protective mouth guard when playing contact sports.

Practice good dental hygiene to minimize the need for fillings.

Even with these precautions, teeth can still develop cracks. ❏

**INLAYS/ONLAYS** Inlays are fillings that were traditionally made of gold but now are often made of porcelain, ceramic or composite material. They are used to repair moderately damaged back teeth and need to be extremely strong to withstand the grinding pressures of these teeth.

Inlays are glued into place and are contained within the cusp tips of the tooth. A special glue is used to increase the strength of the bond.

**Onlays** Made of the same materials as inlays, an onlay is a more extensive repair that covers the tooth cusps.

An onlay or crown is much stronger than any other type of filling and actually increases the strength of the tooth.

**Application of inlays and onlays** The fitting of inlays and onlays usually requires two dental visits.

The first visit involves removing the old filling or the decayed area and preparing the surface for the new filling. An impression is made of the area and sent to the dental laboratory so the inlay or onlay can be constructed. A temporary cover or filling is applied until the next visit.

At the second visit, the temporary cover or filling is removed and the new inlay or onlay is fitted. Your dentist will ensure that it is a perfect fit and does not interfere with your bite. It is then bonded into place with powerful glue and polished.

**Advantages of inlays and onlays** Strength is one of the major advantages of inlays and onlays. Fillings usually weaken a tooth, but because inlays and onlays are bonded directly into the tooth, they can increase the overall strength of the tooth.

Porcelains, ceramics and composite material can be made in colours to match natural teeth.

They are durable and may last 10 years or more, unless they get decay under them.

In some cases, they are a good alternative to the more complex crown.

**Disadvantages of inlays and onlays** Inlays and onlays can be costly due to the high-quality materials used in their manufacture and the precision required in their fitting.

They require removal of tooth material.

There is a 20% risk of fracture of porcelain inlay/onlays.

CEREC or CAD-cam porcelain inlay/onlays are new high tech systems that your dentist may use to firstly take a 3D digital model of your tooth on a computer, then to make a porcelain ceramic restoration.

The best part is, all this can be done in a single visit, usually in less than an hour.

Your dentist will start by removing all traces of the old filling as well as any tooth decay that might be present. Then the CEREC 3D camera is placed in your mouth and a digital image or "impression" is taken. CEREC now makes computer models of your tooth.

Your dentist then uses the advanced high tech Computer Aided Design (CAD) features of CEREC to design exactly how your new restoration will look.

Once your restoration is designed on the CEREC computer, a solid block of porcelain ceramic is placed in the CEREC milling unit. Special tools then sculpt your restoration based on the restoration designed on the CEREC computer.

The completed restoration is then bonded into your mouth. The procedure can be completed in around an hour. The fit of these restorations is not as good as the traditional type of porcelain inlay/onlay.



**CROWNS AND BRIDGES** The outside of each tooth is made of enamel, which is extremely hard. Although teeth are strong and difficult to break, trauma, (such as a fall) may chip or break them.

Tooth decay may also severely weaken a tooth, with a high risk that the tooth may fall apart. Root canal treatment, where the pulp of the tooth containing nerves and blood vessels is removed, can also weaken a tooth, especially if it has large fillings. Teeth may also wear down over time.

In these cases, a crown is often the best way to save a tooth and strengthen it. A crown fits over the existing natural tooth and replaces the outside of the crown, the part of the tooth seen above the gums.

Crowns made of porcelain and gold often look unnatural, this is because they do not transmit light through the metal like natural enamel. It is now possible to make crowns in porcelain which are strong enough to resist fracturing and look natural.

It is very difficult to match the two front teeth (central incisors) when one has to be repaired with a crown or porcelain veneer. Often because of this it is necessary to make two identical crowns or veneers.

**Bridges** Bridges replace one or more missing teeth. They consist of an artificial tooth anchored to the natural teeth on each side of the gap. If a tooth is lost through an accident, or is too badly decayed to save with a crown, a bridge may be the treatment of choice. You can also ask your dentist or prosthodontist about implants, which are another way of replacing missing teeth.

Crowns and bridges are usually made of porcelain and gold alloy. Porcelain is strong and can be made to match the colour of the natural teeth. It is resistant to staining and can be cleaned if it becomes stained.

Gold alloy is used for its strength, hardness and durability. It is especially useful for molars which must withstand the forces of grinding and crushing. Gold alloy and porcelain are well tolerated by the gum and cheek. An allergic reaction to gold alloy or porcelain is rare.

Teeth have many functions apart from chewing and biting, so missing teeth should be replaced for the following reasons:

- To improve appearance
- To prevent stresses causing damage to other teeth
- To prevent the teeth near the gap from shifting
- To maintain the natural bite

Based on your dental and medical history, x-ray examinations of your teeth and jaws, and an oral examination, your dentist or prosthodontist will recommend the treatment which is best for you. You will require at least two appointments for preparation and fitting of a crown or bridge. Sometimes a tooth will need a root canal filling and perhaps a post, before crown or bridge treatment. ❏

**TEMPORARY OR PROVISIONAL RESTORATIONS** The temporary restorations provided during your treatment are intended as short-term restorations only. They should not be treated as permanent. This temporary restoration will last for a period not greater than eight weeks.

Follow up appointments are to be made at the end of each visit. Failure to make or keep these appointments could cause damage to the underlying tooth or gums.

The dentist can not take responsibility for damage, which results from your failure to keep post-operative appointments. ❏

**MISSING TOOTH** If you have a missing tooth, your dentist may recommend using a surgically attached implant to replace your tooth. A porcelain replacement tooth is precision-fitted to the titanium implant, hiding the space so well that it is virtually unnoticeable.

Alternatively, your dentist may use the teeth adjacent to the missing tooth (or teeth) to support a new replacement tooth. This is known as a bridge.

There are many options available to help improve your smile. There are also many factors to consider before undergoing any form of cosmetic dentistry including possible side effects and on-going maintenance requirements.

Your dentist will discuss all of these factors with you and will be happy to answer any questions you may have before any treatment commences.

**Replace that missing tooth** Factors beyond our control like sporting injuries, accidents and hereditary defects, can cause us to lose a tooth prematurely. With new techniques and technology. There are several options available that can correct this problem.

Solutions can be either removable or permanently fixed in place and your options depend on which tooth is missing and the strength of the supporting bone and teeth adjacent to the missing tooth.

Disadvantages of removable appliances include learning to adapt to placing the denture, altered speech in the beginning and care in cleaning the denture outside of the mouth. Dentures also have a tendency to accumulate food around them that can lead to further decay and gum problems, and they may move depending on the number and position of natural teeth.

Fixed options offer all day stability in chewing and aesthetics. A well known fixed method of replacing a missing tooth is with a bridge. As the name suggests, a bridge uses the teeth on one or both sides of the missing tooth as support for a replacement tooth.

The most conservative fixed solution is a single tooth, surgically placed, dental implant. ❏

**IMPLANTS** Implants are the most successful thing we do in dentistry. They replace missing teeth by using a man made root, made from titanium, which the bone grows onto. Thus implants conserve the bone around them. This feature makes them a very important cosmetic tool. They also conserve the teeth adjacent to them because these teeth don't need to be cut back to support the missing tooth as in a bridge.

**Dental implants** have become an important part of modern dentistry, and millions of people around the world have had a variety of implants.

An implant fixture is inserted into the jaw bone to provide a base for supporting and attaching the prosthesis.

**Prosthesis** is an artificial tooth, or row of artificial teeth, attached to the implant. The prosthesis may be a "crown" to replace one missing tooth or a "bridge" to replace several missing teeth. In a jaw with no teeth, the prosthesis covers almost the full dental arch. Some prostheses with many teeth are fixed permanently onto the implants with screws or special cement. Other types of prostheses can be taken out for daily cleaning. These are called "over-dentures".

Why dental implants are useful. Implants help solve some of the problems people may have with traditional dentures and bridges which rest on the surface of the gums.

When natural teeth are extracted, the bone which held them in place begins to shrink. This can cause dentures and bridges to become uncomfortable and ill-fitting. Eating and talking can be painful, difficult and embarrassing.

As implants provide points of firm attachment for dental prostheses, they can help solve problems posed by traditional dentures and bridges. Many people have reported that dental implants are more comfortable, convenient and attractive than the dentures they had previously worn.

They also report fewer problems when eating and talking. Patients report that biting and chewing are often very similar to biting and chewing with normal teeth.

In order to get bridges to fit correctly, adjacent healthy teeth need to be cut and reshaped, which is damaging. In contrast, natural teeth do not have to be altered or damaged when implants are used.

Implants are made of materials (such as metal titanium) which are compatible and can bond strongly to the living bone tissue. The bone tissue grows onto the surface of the implant.

When fixed firmly with the jaw bone, the implant will be strong enough to bear the daily forces of chewing and normal function.

If the implant fails to integrate with the jaw bone, the implant will not be strong enough to withstand the forces of chewing and will be removed. The surgeon may have to insert another implant fixture.





### When implant therapy should not be done

Some people should not have, or should delay having, implants for the following reasons (known as 'contraindications'):

- Unrealistic expectations – a realistic outlook is important. Implant therapy is not successful for everyone. Some reconstructions may be very difficult, and the results may not be as good as the person had hoped
- Pregnancy – tell your surgeon if you are or may be pregnant. General anaesthesia is likely to be an unnecessary risk for the mother and foetus. Pregnancy could affect treatment with pain killers, antibiotic drugs and other medicines. Pregnant women should wait until they have given birth before starting implant therapy
- Severe, chronic illness – these people may not be able to withstand anaesthesia and may not be able to maintain the oral hygiene required for implants
- Not enough jaw bone – if too much jaw bone has been lost due to ageing and extraction of teeth, the implant will not be successful
- Any conditions, diseases or treatments which delay healing
- Inability or poor motivation to maintain oral hygiene
- Some psychiatric disorders may affect the ability to understand and comply with all the instructions
- Abuse of alcohol and drugs, and drug dependency – these problems may interfere with a person's good nutrition, ability to follow the surgeon's advice, and maintenance of oral hygiene.

**Bone Grafts and Regeneration** In patients who do not have enough bone in the jaw, more bone can be encouraged to grow using a method called "guided tissue regeneration". If you require bone grafts or guided-tissue regeneration, your surgeon will discuss it with you.

**Smoking** Smoking can cause failure of the implant to bond with the jaw bone. Smoking can significantly increase the risk of failure. To improve the chances of success, do not smoke.

**Long-term problems Infections:** As for all types of surgery, infections can occur following the placement of implants. These infections can be around the implant.

In a few people who are especially vulnerable, an infection of the heart called "infectious endocarditis" may occur.

Tell your surgeon if you have had heart surgery of any kind, including the replacement of a heart valve.

These infections can be treated with antibiotics. If an infection cannot be cured, the implant may have to be removed.

After the implant surgery, if you have lasting pain around the implants, have a fever or feel generally unwell, tell your surgeon.

**Nerve injury:** Implants can press against major nerves in the jaw and bruise them. This can cause numbness, tingling and loss of feeling in the gums, cheeks, lips, chin, tongue and around the upper and lower jaws.

If a nerve is injured, it usually will heal. As it heals, the numbness and tingling go away.

In some people complete healing of the nerve may take six to 18 months. In rare cases, the nerve may not heal completely. Numbness or altered sensation may be permanent and may cause significant discomfort.

**Loose prosthesis:** The special screw which fixes the abutment to the implant fixture, or the prosthesis to the abutment, may loosen. This can cause the prosthesis to feel loose. The cause should be found, and then the screws should be removed, replaced and tightened.

In some people, every implant will be successful while in other people the implants may not integrate well with the jaw bone. While implants are not successful for everyone they will work in most people. They are about 95% successful. ❏

**PROTECT YOUR TEETH** You should always wear a protective mouth guard to play sport or while doing anything with a risk of damage to your teeth e.g. roller blading, bike riding etc. Also a protective grinding guard should be worn at night to stop fracturing teeth or porcelain through night grinding. This can also be worn while driving, lifting weights at the gym or anytime you may be aware you clench your teeth. ❏

### OZONE THERAPY, A NEW CONCEPT IN DENTISTRY

There is an 86-100% success rate in reversing decay. We no longer need to amputate the tooth with a drill. This is a chemical treatment which uses ozone to kill bacteria, fungi, prions, viruses and proteins. It is a much better killer of these germs than anything else. Once treated, decay will never return and we get a remineralisation of the tooth.

It is very safe, quick and no anaesthetics are required. Apart from decay it is used for the treatment of cracked or sensitive teeth. It also prevents decalcification of teeth, for example, when orthodontic brackets are used. It is also effective in the treatment of periodontal disease, root canal therapy, and treatment of herpes, aphthous ulcers, healing wounds, skin infections, denture sore mouth and tooth whitening.

Ozone not only disinfects wounds and promotes remineralisation of teeth, it also improves blood circulation. There is no recorded incidence of any side effects, when used properly. As no injections or drills are required nervous patients no longer fear the dentist.

### EROSION OR WEAR OF TEETH

Our tooth structure can also undergo a destruction called erosion, which occurs in the absence of germs. It is literally the melting away of your teeth due to acid. The source of this acid comes from the food we eat and our gastric juices (stomach). Many people may have experienced the condition called reflux, which is the reverse flow of stomach acid through the oesophagus into the throat and mouth. This is the same action that happens when we vomit, but to a much smaller degree.

The acidity of the food and drinks we consume play a significant role in erosion, especially if we have a dry mouth condition. As an example, orange juice,

apple juice and wine are nearly 10,000 times more acidic than neutral tap water, and some soft drinks are 100,000 times more acidic.

It is thought that between 25% and 50% of children and adults have signs of significant tooth wear.

Sometimes the whole of the enamel surface is worn away and the underneath layer of dentine becomes exposed. Dentine has a deeper yellowish colour and in about half of cases the teeth become sensitive to hot and cold stimuli. Commonly the upper front incisor teeth start to chip as they become thinner and occasionally they can become discoloured.

Using teeth to pry open plastic bottle tops, to tear plastic bags etc. or pull off pen tops can fracture, chip or loosen teeth.

A combination of lifestyle and personal factors can result in teeth showing various faults or blemishes over the years.

The worn down dentition presents special, complicating problems. Often the whole dentition has to be treated because restoring the front teeth to their original length will mean the back teeth no longer touch. When the front teeth close into biting position there should be simultaneous closure on the back teeth.

Therefore the back teeth have to be elongated in some way. This can be achieved through a build up of the back teeth with onlays or crowns and it can also be achieved through orthodontic over-eruption of these teeth.

Erosion at the gum line we used to think was caused by brushing too hard or the wrong way. We now know this is not true! This is called abfraction lesions and is caused by the flexion of the tooth under grinding forces. These forces cause stress fracture of the enamel at the gum line which in time causes the enamel to break off.

We are now seeing more wear on some teeth. This is caused by a number of things like grinding or clenching teeth. It can also be caused by acidic foods or drink (like sucking lemons, drinking soft drinks or sports drinks) Other causes on the rise are bulimia, gastric reflux or the use of “party drugs” containing amphetamines. ☒

**CONTINUAL ERUPTION** Teeth continually erupt throughout life. They appear to be stable when they are all present and in contact with one another however if you lose one the adjacent teeth will close the space and the opposing teeth will grow up or down until they touch something (another tooth or the gum).

**Tooth migration** occurs due to gum recession, the loss of adjacent teeth or opposing teeth and there is continual movement of teeth throughout life, in a forward direction. ☒



**CHANGES IN APPEARANCE OF TEETH CAN BE DUE TO:** Inherited traits – some people have a family history of dental irregularities such as gaps, misaligned teeth, spots or blemishes.

Staining can result from certain foods or beverages, especially tea, coffee and cola.

Smoking, which causes discolouration of teeth.

The use of some antibiotics in children, which can lead to permanent colour changes in permanent teeth.

Chips or cracks, which may be due to trauma such as sporting injuries or accidents.

Broken-down restorations, and age.

No treatment lasts forever. Most fillings and crowns etc last on average 10-15 years. **TIP.** Ask your dentist for this information before you start treatment.

When teeth erupt the incisors have an irregular biting edge. These are usually worn flat in time however teeth can chip or erupt in an irregular way which looks untidy this can sometimes be simply re-contoured to give a smooth, more aesthetic finish.

The gum line can also be irregular giving teeth different lengths. Asymmetry looks wrong to the eye. Simple gum re-contouring can be effective. ☒

### **AGE RELATED DISPLAY OF TEETH**

As we age we show less upper tooth structure and the lower teeth become more visible. This is because the upper lip gets thinner and drops as it loses elasticity. This can be compensated for when reconstructing the dentition to give a more youthful appearance by building the teeth out or lengthening them. ☒

**BLACK TRIANGLES** These develop between teeth when the gums recede. This can be eradicated with either bonded resins or porcelain veneers by extending the contact point between the teeth. ☒

**PIERCING PROBLEMS** Getting your tongue pierced can lead to fractured teeth, infection, airway blockage and can even hamper chewing. There have also been reported cases of the studs coming loose and being swallowed. Probably the most dangerous complication if the tongue swells up from infection, then breathing becomes obstructed. Many dentists have seen patients who have fractured their teeth by biting down on the metal stud in their tongue. The tongue is a muscle full of tissues and nerves for taste and speech, and piercing it is not a very good idea. ☒



## **TAX DEDUCTIBILITY FOR DENTAL TREATMENT** Do you qualify for the medical expense rebate?

An income tax rebate is available to a taxpayer whose net medical expenses exceed \$1,500. Net medical expenses are the medical expenses you have paid less any refunds you have received, or could receive, from Medicare or a private health fund.

The amount of the rebate is 20% of the excess over \$1,500. There is no upper limit on the amount of expenses you can claim but the sum of the rebates cannot exceed the amount of tax otherwise payable by you.

### **What are medical expenses?**

Medical expenses include payments made to, or for:

- Legally qualified doctors
  - Dental expenses
  - Nurses
  - Chemists
  - Public or private hospitals
  - Opticians or optometrists
  - Certain medical or surgical wigs
  - The upkeep of a trained guide dog
  - Artificial appliances
  - Therapeutic treatment at the direction of a doctor
  - Carers who look after a person who is blind or permanently confined to bed or a wheelchair
  - Some nursing homes and hostels
- Payments to dentists, orthodontists or registered dental mechanics, including the supply, alteration or repair of artificial teeth qualify for the medical expenses rebate.

**Plan your payments carefully** Any payments that you make for medical treatment for yourself or for a dependent relative may qualify for the rebate. It is generally best to ensure that only one of two spouses pays for qualifying medical expenses. For example, if John pays \$1,200 and Betty pays \$1,200 neither will benefit from a medical expenses rebate because the base figure of \$1,500 applies to each of them. If instead, either John or Betty paid the whole amount of \$2,400 in one name, a rebate entitlement of \$180 would arise. i.e. 20% of the total less \$1,500.

**What records must be kept?** Sufficient receipts or other satisfactory documentation in the English language must be retained to explain all of the expenses that a taxpayer has paid and claims as eligible for the medical expenses rebate. An example of other satisfactory documentation includes a detailed statement of account from the service provider or supplier, a supplier authorised record card such as a chemist card purchase record or similar documents. ☑

## **YOUR TEETH YOUR HEALTH**

Our teeth not only serve to chew the foods we eat, but they dramatically affect the way we look and feel about ourselves.

Teeth help to keep us healthy by allowing us to eat and chew the foods we enjoy. Teeth help us to look younger. Our teeth, gums and bone support the facial structures and keep them from sagging and caving in. Without teeth to support our facial tissues, we would appear much older.

Teeth help build our self esteem and confidence, by giving us an attractive and youthful smile.

Investing in your teeth is an investment in your health.

Aren't you worth it? 🦷

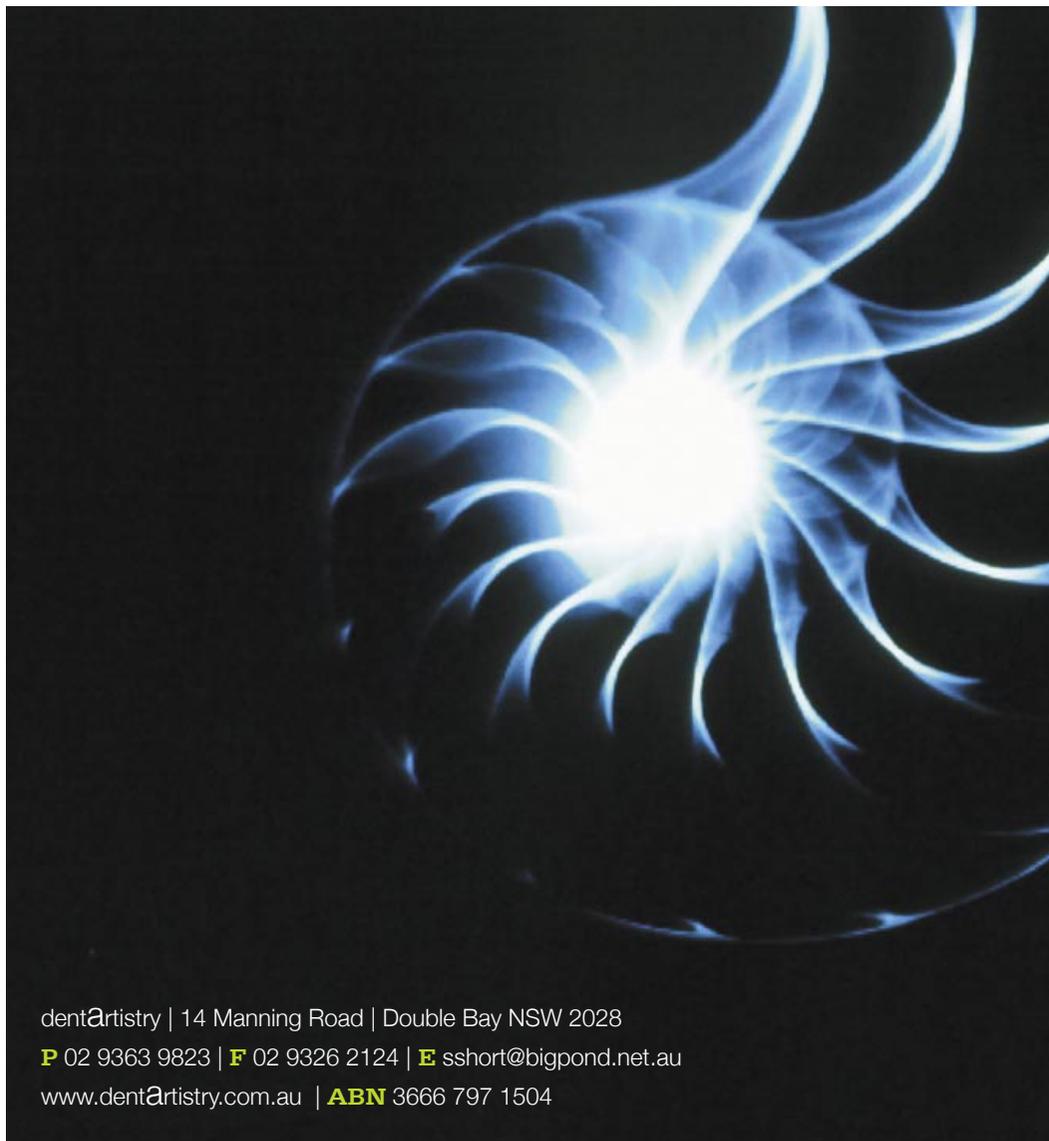
## **THE SIGNIFICANCE OF THE DENTARTISTRY SPIRAL**

The spiral represents the marriage of beauty and science, which is the core of dentArtistry. My purpose is to create structures with harmony and balance of proportions using the sciences of mathematics and biology to give to form and beauty.

It is thought the human brain perceives beauty at its lowest level. This perception does not involve cognitive thought. It is instinctual. The Fibonacci series of numbers is a sequence of numbers relating to one another with definite proportions called the phi of the golden proportion. It is the phi value which is found in nature giving proportions we find beautiful eg. the arrangement and placement of leaves on a stem, petals on a flower, the proportions of the human body, in architecture eg. The Parthenon etc. This golden proportion subconsciously triggers our emotions and appeals to our senses.

The spiral is formed geometrically based on the golden triangle. At dentArtistry we study form and shape as it relates to teeth and the face and apply this clinically to give you a perfect smile. ▣

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