

Luxurious Tooth: An Ornamental Dentistry

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Abstract: *Luxurious is a fascinating world, and the laws that govern it can be extended to dentistry as well. Tooth jewellery isn't a new trend; it's been around for a long time, but it's regaining popularity among the younger generation. Tooth rings, twinkles, dazzles, lip rings, and grills are some of the many ornaments used in dentistry. Dental jewellery, even though worn for fashion, may cause several complications like caries, increased plaque accumulation, recession, metal allergies, etc. As a result, dentistry is becoming a fashion trend in terms of enhancing several different smiles with confidence and adding a little extra zing to them. **Clinical significance:** Teeth jewellery causes sensitivity and irritation to the soft and hard tissues, as well as unnecessary loss of tooth structure for the placement of various ornaments, resulting in cracks and tooth weakening, and these jewels can be ingested by the patient. The focus of this review is to learn more about the evolution of dental ornament aesthetics and their complications.*

Keywords: Dental ornaments, Luxurious smile, Tooth gem, Aesthetic, Dental tattoo, oral piercing.

1. Introduction

Creating luxurious smiles which are tailored according to the individual's needs and desire by using different ornaments is not a new concept in dentistry; it has been practiced since ancient times and has become increasingly popular. Dentists face challenges from demanding patients who want perfectly aligned and sparkling white teeth.¹

Dentistry has evolved into a fashion statement, enhancing several different smiles with confidence and adding a little extra zing. Tooth jewellery is a type of self-expression that, when done correctly, can give a smile a special confidence boost.² It was once used in religious ceremonies and customs, but it is now more often associated with cosmetic purposes.³ Today's patient not only expects healthy teeth, a healthy periodontium, and normal neuromuscular function, but they may also desire beautiful teeth.⁴

As a dentist in the twenty-first century, we should be aware of these newer developments in addition to standard clinical procedures.⁵ Teeth will dazzle the world through tooth jewellery, with a new emphasis on glamour and beauty in fashion.³ In recent years, the dental ornament has become a common form of self-expression in terms of aesthetics, ostentation, and magnificence among young people. With the increase in modernization, peoples want to create their style statement which is distinctive for themselves and yet identifiable for others.²

2. History

History is very crucial because it takes us back to the past and appreciates the custom way of living of our ancestors. Studying the history of teeth give a better understanding of how things have been established.⁶

500 to 900 A. D.-Mayan dentists, who decorated teeth with gold, jade, hematite, and turquoise (figure 1). They used to

drill small holes on teeth which are not deep enough to reach the pulp to set gems and other semi-precious stones.⁷



Figure 1: Photo credit National Geographic

250 to 1870-In a custom known as "ohaguro" aristocratic Japanese when they reach puberty, they dyed their teeth black as a symbol of status, beauty, and health (figure 2). This black dye was made by dissolving iron filings in vinegar and it was believed that it preserve teeth and protecting them from yellowing and decay. This practice was popularized during the 8th through 12th centuries, but it was later banned in 1870 by the Meiji government. This practice was also popular in Southeast Asian and Oceanic cultures, particularly among Austronesian, Austroasiatic, and Kra-Dai-speaking peoples.⁸



Figure 2: Photo credit National Geographic

1178 to 1521-The Earliest written record of cosmetic dentistry was unknowingly created by some Chinese explorers when they wrote about their encounter with a "fierce tribe with gold-pegged teeth," in the Philippine mountains (figure 3). Archaeological evidence traced that these "gold-pegged teeth" were placed by hammering gold plates into the mouth. The teeth were stained black or red and decorated with gold.⁹



Figure 3: Multiple gold pegging of an upper central incisor.⁹

1401 to 1500-Unearthed skulls from the Ming Dynasty revealed teeth with intricate fish scale patterns made of gold (figure 4). Pre-Hispanic dental workers were trained to put these gold ornaments on the teeth of the aristocrat who want to flaunt their status.¹⁰

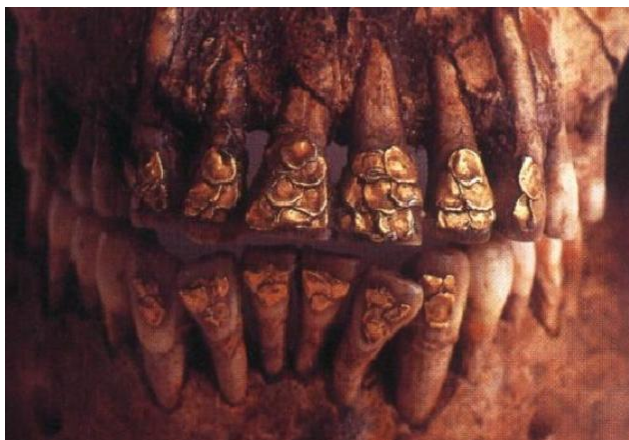


Figure 4: Photo courtesy The Story Behind The Bolinao Skull, IFY book

Into the 20th Century

In today's era, tooth ornamentation is less invasive, instead of drilling the tooth, the ornament is bonded onto the tooth much like an orthodontic bracket (figure 5).⁹ Ornaments are available in a diverse range from yellow or white gold studs to crystals and gems etc. Other variations of present-day tooth ornamentation are tooth tattooing, crowns painted with a design of one's choice, the addition of metal studs on restorative crowns, and dental grills.¹

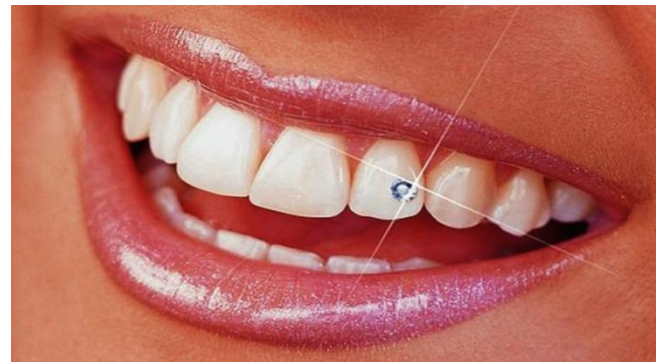


Figure 5: Photo courtesy Body piercing magazine

Tooth Jewellery

What is a Dental Jewel?

Dental jewel is a procedure that involves both cosmetic and dental. Precious gems or stones, such as diamonds, emeralds, and rubies, are mounted on the teeth' surface to add sparkle and a trendy edge. The jewels used to adorn the teeth come in a variety of colours, forms, and sizes. A tooth gem is a small rhinestone diamond, for example. Adhesives are used to secure it to the teeth. Small stones placed in the center of the tooth are preferred by some people. Others choose to cover their teeth with a jewel-encrusted hat. Some people want a grill, which is a decorative cover that fits over the person's front teeth. Lil Wayne and Jonathan Davis are two well-known examples of artists who wear them.³

Types of Tooth Jewellery

Tooth jewellery is of different types, as given below:

Grills

This tooth jewel is worn by 18 to 35-year-old hip-hop musicians and disc jockeys to add to the opulence of their performances. It is thought to represent financial success, which is particularly significant for the social underclass. The value of vocal dexterity in the African American community is reflected in the attention the grills draw to the mouth. They're made of gold and silver. Previously, they were fixed in place after tooth preparation, but these days, grills are usually removable. Grills, also known as "fronts," are typically removable, although certain wearers have had their teeth permanently altered with gold crowns to resemble a grill (figure 6). Some people have also attempted to attach a "homemade" grill with permanent cement, which is not intended for internal use and can cause tooth damage.¹¹

Manufacturing of grills

Impression of the front row of teeth must be made by a dentist. The latex negative is filled with plaster of paris to achieve a tooth shape as closely as possible; the plaster of Paris is used to fit the grill to the particular tooth profile. Then you inspect it for grip and comfort on the owner's teeth. For a less costly version of the grillz, however, a simplified method is used. The grill is filled with wax, which the proprietor softens with hot water before moulding to the form of the tooth. Wearing such grillz, on the other hand, can be more inconvenient and insecure than those that have been professionally designed.¹²



Figure 6: Custom made golden grillz¹²

Grillz are made of gold that ranges from 10 to 24 carats. This affects the price of the piece of jewellery, in addition to the sheen and versatility of the gold. The so-called "window style," tooth flaps, or a strip between the incisors are among the most well-known versions. Gemstones set in gold may also be incorporated.¹²

Twinkles & Dazzles

Twinkles are designed to be bonded to the tooth, and their proprietary back side is identical to an orthodontic bracket, allowing them to remain in place for a long time. Twinkles are made of pure gold and precious stones such as rubies, sapphires, and diamonds. The bonding isn't as long-lasting, but it can easily last longer than six months. These are pieces made of 24-carat gold and white gold that come in 50 different styles, some of which include diamonds, sapphires, and rubies. The twinkles that are available are: (twindent AB, Uppsala, Sweden). Upper incisal and canine teeth are the most widely used teeth for attachment.²

Bonding any stone to the tooth surface is a painless, harmless procedure that takes just 10-15 minutes to complete. Along with dental jewellery, other choices can be used to enhance a person's personality and make a fashion statement. Dazzlers are comprised of gems or diamonds embedded in a metal that is specially designed to be bonded to the tooth. These jewels have an orthodontic bracket-like backside that helps them stay in place longer (Figure 7).²



Figure 7: Twinkle & Dazzle (COURTSEY Peter et al.)¹

Application Procedure

The tooth is cleaned with a fluoride-free polishing paste after oral hygiene. Using a rubber dam, dry and isolate the tooth. Dental jewel application is painless and does not require anaesthesia. To increase the surface area for bonding, the tooth is etched with 37 percent orthophosphoric acid for around 15-20 seconds. To remineralize the etched area, the enamel is then treated with topical fluoride. Thoroughly rinse the surface with water for one minute and then blow dry for 10 seconds. (There should be no etchant left on the tooth). Apply a light-curing bonding agent to the

surface. Allow for a maximum of 20 seconds of exposure, then distribute bonding with air blowing then light-cure for 20 seconds. Place a small amount of flowable composite on the tooth's surface. To conveniently pick up the gem, use a jewel handler. It should be pressed into the centre of the composite (The composite must ooze on the sides so it is encircled by the composite, ensuring micro-mechanical retention, but make sure the jewel must be in contact with the enamel). Now you can adjust the jewel as the patient looks in the mirror to make sure it's in the right place. Start curing the composite from the top for around 60 seconds with the light-curing lamp. Light cure the composite from the sides for a few seconds and then from the back of the tooth for another 60 seconds to ensure that it hardens uniformly. It takes about 180 seconds to cure it. It requires 20 seconds to set. As a result, attaching the jewel securely takes about 4 minutes.¹³

Tooth Gems

Tooth gems are glass crystals placed on a thin aluminium foil. They aid in the creation of spark and come in a variety of shapes and colours. Round crystals, form crystals, white and yellow gold tooth jewels, gold letters and numbers, gold facings, gold tooth jewels with real gemstones, and many other shapes are available. There are nine different colours of glass crystals available, including diamond, rainbow, ruby, sapphire, emerald, emerald green, aquamarine, pink, and sapphire light (Figure 8). SKYCE and SAPPHIRE crystals are examples of tooth jewels. Skyce crystals (Ivoclar Vivadent AG, Schaan, Lichtenstein) are transparent, whereas sapphire crystals are white or blue. Skyce and sapphire are both high-quality tooth gems, but Skyce adds a little extra glitz to every smile. The Krysts are Swarovski Crystal that has been specially treated to make them fit for dental use, allowing them to adhere and remove without damaging the natural tooth. Kryst offers a stunning range of 12 colours and three sizes from which to choose our favourite colour and style.²



Figure 8: TOOTH GEM (Courtsey-Vazhiyodan A, Mohan S)¹³

Application

It is a painless treatment that can be applied directly to the tooth surface without the need for any preparation. It can be used on a damaged enamel spot or any pigmented region, as well as a mixture of photo polymeric fillings. The optimal template can be bonded to the patient's tooth structure, much like an orthodontic bracket. Skyce is a simple, quick, and

painless procedure that takes just 10-15 minutes to complete. Using 37 percent phosphoric acid, a retentive pattern is first formed on the enamel. The clear, flowable Heliobond is then used to adhere Skyce to the tooth. Skyce should be encircled with a small amount of heliobond to ensure micromechanical retention. It can be removed at any time or replaced with any other stone because the process does not require drilling and it can be directly bonded to the tooth surface. These crystal glass stones are available in two different diameters: 1.8 mm and 2.6 mm. Rainbow crystals are the most affordable kind of tooth jewellery. They are perfect for short-term attachment because they are made with a smaller budget in mind and come in ten different colours and two sizes-1.8 and 2.5 millimeters.²

Tooth Rings

The use of tooth rings is another choice that aids in the establishment of a standard of living among adults. It can be made of gold or silver. The maxillary central incisors are the most widely used preferred teeth, and the size of the perforation is determined by the thickness of the ring chosen. These rings are often set with precious stones. The rings may be made to link the two central incisors or the central incisor to the lateral incisor in some cases.²

Procedure

This treatment necessitates tooth preparation. Tooth rings are rings that are placed on the front teeth that have been perforated.¹⁴ The ring is hung through a small hole drilled into the disto-incisal corner of the maxillary incisors. The size of the perforation is determined by the ring thickness. The perforation should be polished and prepared as smoothly as possible. To prevent occlusion interference, the available overjet should be taken into account when choosing the diameter of the ring.¹

Dental Tattoo

Tooth tattoo is the name for a dental tattoo. It's a term used to describe dental experts' ornamental designs on teeth. Custom designs are applied to dental crowns until they are sealed and placed in the mouth. Dental tattoos come in a variety of colours, patterns, and types that can be applied to the tooth (Figure 9). The dentist creates a mould of the tooth and sends it to dental designers, who create designs that are cemented into the natural tooth.³ They are most commonly used in the age group between 14-35 years.² They are available in two varieties: temporary and permanent.

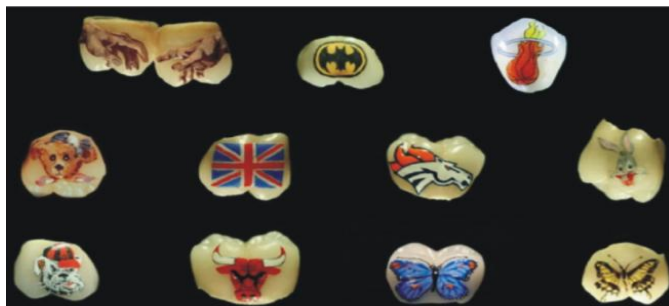


Figure 9: Courtesy Anmol C et al¹⁶

3. Procedure

Permanent tattoo

Dental tattoo application is very easy, and there are a few steps to follow in order to apply the desired dental tattoo. First, the dentist takes an image of the tooth, creates a mould, and confirms that it is the right size for the tooth. It is then sent to a lab where professional artists who specialize in tattooing do the tattoo work on the artificial crown. They carefully paint a miniature logo onto the tooth crown, which is then cemented onto the real tooth after the desired tattoo is applied. If the patient wants to remove the tattoo after a period of time, the upper layer of the crown may be ground away. While it is a painless operation, it can lead to complications.²

Temporary tattoo

'Ghasher tats' are another name for temporary tattoos. They are attached to the teeth with a special water-resistant adhesive that adheres to the tooth enamel. To withstand eating and brushing, their glue must be solid. The glue has a slight phosphoric acid flavour. After applying a drop of glue to the tooth, the tattoo adheres to it. They have a three-month shelf life. It takes 15-20 minutes to apply a tattoo.¹⁵

Oral Soft Tissue Piercing

Body piercing has been performed by people of all faiths and cultures all over the world as a type of decoration or even to show significance in a tribe or group since time immemorial.¹

The tongue (the most common site), upper lip (left side-Monroe piercing, right side-Madonna piercing), lower lip (labret piercing), cheeks (dimple piercing), philtrum (medusa piercing), maxillary labial frenum (smiley piercing), mandibular labial frenum (frowny piercing), mandibular lingual frenum (web piercing) nose (rhino piercing), and uvula piercing (Figure 10). Studs, barbells, and rings are among the pieces of jewellery worn. Surgical stainless steel, titanium, niobium, or gold are the products of choice.¹⁴

Procedure⁵

The location of the jewellery in a lip or cheek piercing is largely determined by aesthetics, with consideration for where the jewellery would rest intraorally. A cork is normally positioned inside the mouth after the location has been established to protect the tissue as it is pierced with a needle. The needle is inserted into the cork backing and the tissue. The disc backing is then screwed into place, and the needle is replaced with the labret stud. The time it takes for your body to heal can vary from weeks to months.⁵



Figure 10: Bachani J et al courtesy⁵

Removable Tooth Jewellery

Removable tooth jewellery is another fashion trend that is similar to tooth jewellery. The difference between other fashion trends and removable tooth jewellery is that the stones are permanently fixed on an invisible glass clear micro-skin that suits accurately the teeth instead of being directly bonded on the tooth (Figure 11). It is not necessary to etch or prepare the teeth. One of the benefits of reversible tooth jewellery is that it can be removed by the patient and then re-fitted if necessary.²



Figure 11: Courtesy. Titus Peter et al.¹

Procedure

It is not necessary to etch or prepare the teeth. In the lab, an impression is taken and a micro skin is formed, to which the precious stones are attached. They are safe to wear in the mouth and will not harm the teeth or soft tissues, and a variety of precious stones and gems in various sizes and colours are available.²

4. Complications in Ornamental Dentistry

Pain & Swelling

The most common immediate complication is pain and swelling at the site of oral piercings, which can be serious in some cases and also impair the individual's breathing depending on the site involved.¹⁶

Bleeding & Infection

Post-bleeding and infection at the site are other immediate complications of intraoral jewellery. Bleeding is a chronic issue that affects the majority of people. In the event of such a complication, jewellery should be removed immediately, local debridement performed, antibiotic therapy started, and chlorhexidine mouthwash recommended. High risk of infection and transmission of organisms such as HIV, hepatitis B, and C, herpes simplex virus, Epstein-Barr virus, etc may occur.^{16, 17}

Chipping and/or fracture to the teeth

Traumatic injury to the teeth such as chipping, the fracturing of tooth and restoration, and sometimes damage to the pulp. The severity of this complication differs from slight chipping of incisal edges or cracked tooth syndrome to previously restored tooth. Crown or bridge fracturing is also at the potential to damage.¹⁸

Speech impediment

The piercing of the tongue followed by the insertion of jewellery may obstruct the movement of the tongue and

affect a person's speech. Swallowing ornaments is also a severe complication that can be fatal.^{16, 29}

Gingival trauma and recession

Gingival inflammation, gingival recession, localized tissue overgrowth of the gingiva may occur. Piercing of tongue and lip are the main sites that are likely to develop gingival recession in the lower region of anterior teeth. The recession of gingiva causes other tooth-related problems including sensitivity and root caries and affecting the aesthetic appearance.¹⁶

Salivary flow alteration

Oral piercing may cause hypersalivation (increased salivary flow).¹⁶

Plaque related problems

Plaque aggregation and microbial biofilm formation are common at piercing sites due to the difficulty of removing food debris and preserving oral hygiene. Perforation of root canals is a zone of high contamination and a microorganism reservoir; similarly, pierced areas serve as a retentive environment for microorganisms.²⁰

Ulcer

The constant friction of soft tissue by microroughness of ornaments causes the formation of a traumatic and painful ulcer.²⁰

Abrasion & Erosion

Abrasion of teeth is caused by the rattling of the piercing against the surface of the tooth, which is caused by external mechanical forces caused by ornaments. Teeth erosion is caused by a reaction triggered by dental grills.¹

Metal hypersensitivity

When different metals are placed in the mouth, either through restoration, crowns, or bridges, or a combination of these leads to the oral galvanic effect. This type of metal hypersensitivity occurs between ornaments and metallic dental restorations.²¹

Endocarditis

It is one of the most uncommon oral piercing complications. A case study of 20-year-old women admitted to the University Medical Centre's emergency room in France developed endocarditis after tongue piercing. Bacteria colonization around the piercing caused bacteraemia and endocarditis, according to the report.²²

Ludwig's Angina

Ludwig's angina is a type of severe cellulitis that mainly involves the floor of the mouth. As the condition worsens, the airway may be compromised due to swelling with hardening of the spaces on both sides of the tongue.²³ In ornamental dentistry, sepsis causes connective tissue inflammation which spreads into the submandibular, sublingual, and submental spaces leading to Ludwig's Angina which is a major life-threatening complication.²⁴

Keloid tissue formation

The least common long-term local complication is the development of atrophy or hypertrophic-keloid lesions of

soft tissues. This is a form of scar that grows in size and becomes itchy and painful. It appears as raised scarring around the piercing site, which may be puffy and red.²⁰

Bifid tongue

It is a rare complication occurring due to piercing of the tongue, in this splitting of the tongue in the anterior or in the middle surface of the tongue occurs (Figure 12). Fleming & flood reported the case of 17 years old with the wrong placement of a tongue stud led to serious complication and subsequent infection. Surgery was carried to repair the tongue (Figure13).²¹



Figure 13: Healing defect three months post-operatively²¹



Figure 12: Defect in anterior midline of tongue²¹

Midline Diastema

Habitual movement of ornaments around the mouth or pushing it between the teeth can result in the spacing of teeth. Tabbaa et al. reported a case of a 26-year old female with a barbell stud piercing in her tongue (figure 14) which she habitually pushed between her upper central incisors for seven years leading to the midline diastema which required orthodontic treatment for correction (Figure 15). The oral jewellery was removed permanently and a fixed orthodontic appliance was used to close the diastema.²⁵



Figure 14: Picture taken after piercing 7 years back.²⁵



Figure 15: Patient with midline diastema.²⁵

Brain abscess

One of the rarest complications of tongue piercing was reported by Herskovitz et al. in 22-year-old healthy male with multiple tongue piercing leading to hematogenous spread of infection to the brain.²⁶

5. Conclusion

Dentistry is becoming more relevant when it comes to looking beautiful or trendy, rather than only treating dental problems or illnesses. Young people are getting more interested in tooth jewellery. With these dental gems, people want their smiles to look luxurious and attractive. These are, however, only advised for patients who maintain good oral hygiene. The dentist must inform the patient about the benefits and drawbacks of these procedures. Harm can be minimized and complications can be managed this way.

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