

# Servicing All Your Dental Needs

The Imperial Dental Centre puts clients first, always.

The Imperial Dental Specialist Centre is a one-stop dental centre which provides comprehensive solutions for all your dental, skeletal, soft tissue as well as craniofacial needs. Accredited by the Malaysian Healthcare Travel Council as Malaysia's premier dental centre, the Imperial Dental Specialist Centre was awarded the best International Dental Clinic in 2016 and is highly recommended for excellence in customer service and quality initiatives. In this article, we sit down with Consultant Orthodontist, Dato' Dr. How Kim Chuan as he explains orthodontic treatments and orthognathic surgery for severe cranial discrepancies. Later, we speak to Dental Surgeons, Dr. Stephanie Chong and Dr. Ariel Loke as they respectively talk about dental digital imaging and teeth whitening treatments. Later, Dental Surgeons, Dr. Kong Sheng Earn, Dr. Yew Kai Shang and Dr. Raymond Su chime in to discuss laser crown lengthening, post, core and crowns and E-Max dental prosthetics.



## Orthognathic and Orthodontic Services with Dato' Dr. How Kim Chuan

Here at the Imperial Dental Specialist Centre, we offer a combination of services that amalgamate both orthodontic treatments and orthognathic surgery to correct severe cranial facial discrepancies. When patients suffer from severe under bites or dental facial discrepancies, such cases are generally beyond the scope of orthodontic treatment and will necessitate surgical correction.

While surgical correction with a maxillofacial surgeon is required, patients presenting with severe under bites will first and foremost need orthodontic care before surgery can be performed. Patients with cranial facial discrepancies are initially required to undergo orthodontic treatment because surgeons will not be able to establish appropriate dental occlusions or bites without preliminary bracing or Invisalign treatment. In short, comprehensive treatment plans will require appropriate orthodontic planning and initial dental movements into suitable positions. Later, a maxillofacial surgeon will step in to surgically correct the jaw. Once surgical intervention is carried out, patients will have to undergo one last round of orthodontic care before treatments are finally complete.

### What can patients with severe dental discrepancies expect during orthodontic treatment?

When patients with severe under bites opt for treatment, we will recommend orthodontic care to correct his or her dental occlusion or bite. Although patients are able to functionally bite down and eat before any form of treatment, severe cranial facial discrepancies do affect in facial disfigurements that can only be corrected with a combination of orthodontic and surgical care. In order to correct the disfigurement, teeth alignment has to be decompensated to prepare for jaw surgery in anticipation of the new jaw position. In other words, suitable orthodontic care will affect in poorer or impeded occlusions where patients won't be able to bite but conversely, attain improved facial shapes. Once the teeth are remedied, surgical care will conclusively result in normal facial forms with teeth that comfortably occlude as well.

### Previous patients

Based on the pictures attached, you can clearly see that this patient suffered from cranial facial discrepancies where his bite is completely misaligned. Furthermore, it's also evident that after orthodontic treatment, the patient's teeth alignment was decompensated to prepare for jaw surgery in anticipation to the new jaw position. However, once surgical treatment was carried out, the patient not only looked much better but additionally achieved improved oral function as well.

Unlike what most would assume, severe cranial discrepancies will not necessitate extended periods of treatment time. After 12 to 15 months of orthodontics, patients should be prepped and ready for surgery. After surgery, patients will

*Pictures courtesy of Dato' Dr. How Kim Chuan.*



**Patient has severe skeletal class III malocclusion and crowding. Treatment entailed orthodontics coupled with orthognathic surgery.**



**Patient with severe skeletal class III malocclusion who had undergone Invisalign treatment in conjunction with orthognathic Surgery.**

experience a recovery period of four weeks coupled with another six months of orthodontic care.

### Severe facial discrepancies and Invisalign treatment

Patients suffering from severe facial disfigurements can either undergo orthodontic treatments with braces or Invisalign. The advantage related to Invisalign is that when compared to braces, Invisalign aligners are invisible and non-obvious. Furthermore, Invisalign also provides digital visualisations of treatment, which allows patients to foresee future treatment plans and give them a rough idea of when surgery will take place. In addition, not only are Invisaligns more precise, they may also affect in shorter treatment times because aligners can be changed at a quicker pace while achieving the same results. Last but not least, because post-surgical recovery periods will affect in jaws being wired shut, patients are forced to be on liquid diets. With Invisaligns however, patients undergoing their recovery period are given the option of removing their aligners, which allows them to comfortably open their mouths and eat.

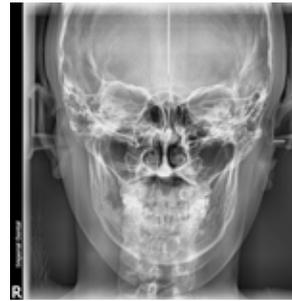


## Dental Digital Imaging with Dr. Stephanie Chong

### The Advantages of Diagnostic Imaging

Diagnostic imaging and techniques help to develop a more cohesive and comprehensive treatment plan not only for dental surgeons and their teams but patients too. Diagnostic imaging can be used for several purposes including decay identification beneath pre-existing fillings, disclosure of bone loss accompanied by periodontitis, and revelation of changes in the bone or root canal due to infection. In addition, diagnostic imaging also has capabilities of disclosing abscesses and other developmental abnormalities such as cysts and tumours and assist in treatment plans for implants, orthodontics, dentures, undermined caries and other dental procedures.

The imaging modalities can be divided into two-dimensional and three-dimensional modalities. Such images can include periapical radiographs, panoramic radiographs, occlusal radiographs, lateral cephalograms, posteroanterior skull views, cone beam computer tomography or CT scans and many more.



This image shows a posteroanterior skull view of the orbits and sinuses. It is used for identifying facial asymmetry.

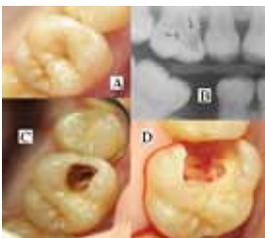
### Digital Versus Conventional Radiographs

Once photographic film has been exposed to X-ray radiation, it needs to be traditionally developed via certain processes which expose the film to a series of chemicals in a dark room as films are sensitive to normal light. This process is not only time-consuming; patients too could be exposed to additional radiation if retakes are necessary due to incorrect light exposures or mistakes in the imaging's developmental processes. Digital x-rays, which replace the film with an electronic sensor, address some of these issues and are fast becoming the gold standard in dental digital imaging. Apart from needing less radiation, digital radiographs are processed at a much quicker pace, often instantly viewable on a computer screen.

### Why are digital radiographs necessary for dental imaging?

Your practitioners will always weigh the pros and cons of recommending dental radiographs, as he or she understands the risks associated with radiation exposure. Hence, a dentist's decision to take an X-ray has to always be patient-specific and risk-based. Because modern X-ray devices and image capturing are highly sensitive, the amount of radiation required for diagnosis is extremely minimal, almost next to nothing if patients are frequent flyers and constantly in a plane. Furthermore, dental radiographs only takes images of necessary structures so patients can be rest assured that other bodily tissues will not be exposed to radioactive energy. For further precaution, your dental practitioner may even encourage patients to shield the rest of their bodies by wearing a lead apron as a precaution and for improved safety.

Pictures courtesy of 'Data' Dr. Hon Kim Chan.



- (A) Shows no apparent decay.
- (B) Arrows point to an extensive area of demineralization.
- (C) A large underlying decay within the crown.
- (D) Pulp chamber has been exposed. The mesial portion of the tooth is lost.



Image 1 – Periapical Radiograph shows Root Canal Treated upper front teeth with fractured crown.



Image 2 – Panoramic Radiograph shows the upper and lower dentition with the jaw and its surrounding structures and tissues.



Image 3 shows an occlusal radiograph of the maxilla which shows missing upper left lateral incisors and canine.



Image 4 shows a Lateral Cephalogram used for assessing the relation of the teeth to the jaws, jaws to the skull and soft tissues which are useful for orthodontic purposes.

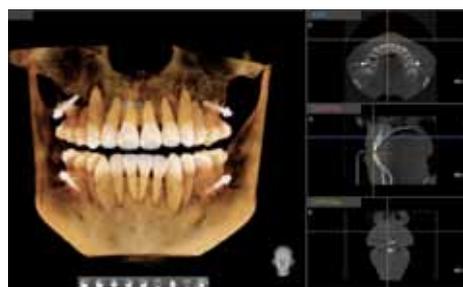


Image 6 shows CT scan of the upper and lower jaws with mini screws placed for orthodontic reasons. This image illustrates the maxilla and the mandible in 3D which cannot be detected in a normal radiograph.



## Teeth Whitening with Dr. Ariel Loke

Dental whitening treatment is a cosmetic procedure, which allows lightening of the tooth's colours via an application of chemical agents that oxidises the organic pigmentation of the teeth. Dental discolourations can be divided into intrinsic and extrinsic stains. Intrinsic staining has multiple causes, which include aging, fluorosis, tetracycline staining, trauma, caries and dark restoration and congenital defects. Extrinsic stains, however, are caused by patients' daily habits such as coffee, tea or wine intake, nicotine use, poor dental hygiene and plaque. Although teeth whitening treatments may easily manage most forms of extrinsic and intrinsic stains, severe discolourations such as tetracycline staining and congenital dental defects like dentinogenesis imperfect may require restorative procedures like veneers or crowns. In a nutshell, appropriate patient indications for teeth whitening treatments are generalised staining, smoking or dietary pigmentation, mild white spots or fluorosis and trauma.

### Teeth Whitening for Dental Trauma

When patients suffer dental trauma, they can experience tooth discolourations especially if there is blood pigmentation, a necrotic pulp, root canal fillings or filling materials and root resorption. If patients have suffered dental trauma, an internal bleaching or 'non-vital bleaching' of the darkened, dead tooth can be done after root canal treatment. During a 'non-vital bleaching' procedure, dentists will insert bleaching agents such as sodium perborate or carbamide peroxide into the pulp chamber and seal it. Patients will then find a progressive lightening of the darkened, non-vital tooth and can expect good, natural-looking results after two weeks.



Trauma tooth discoloration before internal bleaching.



After one week of internal bleaching.



After two weeks of internal bleaching.



Before Laser Whitening, Shade B2.



After Laser Whitening, Shade A1.

### Teeth Whitening for Generalised Staining

In-office vital bleaching can yield high satisfactory results in just one visit. Laser whitening is one of the latest dental whitening methods and utilises bleaching agents such as hydrogen peroxide or carbamide peroxide. After said chemicals are applied on the teeth's surface, heat generated by the laser will not only speed up but enhance whitening processes. While positive outcomes are highly likely, results aren't permanent and can return especially if dietary and poor lifestyle habits don't change. Lastly, patients may experience post-treatment sensitivity which lasts anywhere between 24 to 48 hours. To reduce chances of discomfort, it's best that patients refrain from eating or drinking anything too cold or hot for at least two days.

Pictures courtesy of Dr. How Kim Chuan.



## Laser Crown Lengthening with Dr. Kong Sheng Earn

Laser crown lengthening is a procedure which exposes more teeth by removing the gums that conceal them. Crown lengthening for the reduction of gummy smiles was traditionally carried out via scalpel and careful excision of the excess gums. This procedure will not only reduce a patient's gum exposure during smiling and talking but also allows the tooth to appear longer. Despite being a good treatment with positive outcomes, traditional crown lengthening procedures require meticulous planning and pre-operative measuring of how much teeth dentists would like to expose, versus the amount of gums that necessitate excision.

Laser or Light Amplification by Stimulated Emulated Response is widely used and known for its applications in the industrial, military and medical sectors. With ever-improving scientific and technological advances in the dental industry, laser technology is now a staple in dentistry and practitioners can utilise laser energies at specific wavelengths and intensities

for various clinical uses including laser crown lengthening. Laser replaces the conventional scalpel and is far superior when compared to traditional surgical methods. First and foremost, laser beams are of course far less frightening than a scalpel or blade. Secondly, because lasers don't affect in bleeding due to the heat and coagulative properties of the beam, the treatment is less invasive and reduces downtime and bacterial infection while improving healing as well.

In the images attached, the patient is currently undergoing orthodontic treatments but still suffers from a gummy smile due to excessive gingiva. In this patient's case, we have not only improved her smile line by recommending orthodontics but also combined the treatment with laser crown lengthening to improve cosmetic outcomes. In other words, by applying braces, we are able to push the teeth in while utilising laser energies to achieve optimal dental exposure.



Teeth appear short as gingiva covers the clinical crown.



Immediately after laser crown lengthening of the upper and lower teeth. Note the immediate aesthetic improvement after the teeth are exposed.



A week after the laser crown lengthening procedure. The gums have fully healed and remain at the planned stable position.

*Pictures courtesy of Dao' Dr. Ho Kim Chuan.*



Before laser crown lengthening.



After laser laser crown lengthening.



## Post, Core and Crowns with Dr. Yew Kai Shang

Teeth can be weakened due to decreased dental structures and such problems can be attributed to multiple causes including caries, previous restoration, fractures or trauma, and endodontic access and instrumentation from root canal treatment. When a patient has suffered retained roots from affected dental structures, dentists can choose to either save or extract them based on the anatomical position of the tooth, the functional load on the tooth, the amount of remaining tooth structure and the tooth's aesthetic requirements.

### Root Canal Treatment and Post

Based on the images provided, we were able to save the patient's tooth through root canal treatment followed by a post, core and crown. Root canal treatment is the process of removing the inflamed or infected pulp tissue within the tooth caused by bacteria. This treatment is especially applicable to those who have suffered deep tooth decay, a cracked tooth and traumatic dental decay. After the tooth has been treated, a post is placed within the tooth's root as it provides retention for restorative treatment, which involves the core

and crown. Furthermore, the post is essential because it provides the tooth with coronal stability. In summation, post placement is recommended if the remaining coronal structure offer inadequate retention for final restoration and when there is sufficient root length for the accommodation of the post while maintaining adequate apical seal.

### The Core and Crown Placement

The core aids in restoration by anchoring the crown, and is made up of amalgam or composite. Apart from retaining and anchoring the crown, core restoration has the ability to replace carious, fractured or missing tooth structures. Core restorations are normally recommended if the placement of missing coronal tooth structure is necessary or when the enhanced retention and resistance to displacement of final restoration is needed to prevent fractures. Last but certainly not least, final restorations will involve crown placement, which has the ability to not only protect the treated tooth, but also restore dental function while providing good aesthetic results.



Patient veering away from removable dentures to fixed prosthesis (crowns).



Post placement in preparation of coronal tooth structure.



Cemented crowns.



Full mouth radiograph showing upper incisors with dislodged crown due to trauma.



Radiograph shows teeth after root filling followed by post placement.

*Pictures courtesy of 'Date' Dr. How Kim Chuan.*



## E-Max crowns with Dr. Raymond Su

Full ceramic crowns or E-Max crowns are crowns which offer the best aesthetic results. They are normally placed on the anterior teeth. Based on the images, this patient presented with severe discolouration from trauma and many fillings within the teeth. On top of that, he also complained of dental crack lines caused by severe bruxism. Because this patient was unhappy with his appearance and complained of aged looks when he smiled, I recommended that he undergo full crowns on his upper anterior teeth. After undergoing four E-Max crowns, we were not only able to improve his smile but additionally take years off his face as well. Moreover, because this patient suffers from dental grinding at night, I have also recommended that he wear a night guard to not only protect his original teeth but his new crowns too.

### Why should patients choose E-Max crowns?

There are three forms of crowns available – full ceramic crowns, zirconia and porcelain fused to metal (PFM) crowns. Although PFM crowns may be a perfectly viable option, patients will age and undoubtedly experience receding gums. Once gums recede, the ugly black margins of the metal will be rather obvious. This is especially apparent if PFM crowns are placed on the anterior teeth. To improve aesthetics, patients undergoing dental prosthesis on the front teeth should opt for full ceramic crowns because not only are dark margins avoided, E-Max crowns are translucent and naturally reflect light just like a natural tooth. Furthermore, because PFM crowns are made of metal, colours are opaque and come off looking unnatural when light is reflected against the prosthesis.

### How is the treatment carried out?

Before full ceramic crowns are attached to the patient's tooth, we will firstly grind the teeth down to an appropriate size. After the teeth sizes are reduced, temporary crowns will be provided, as the laboratory will need at least a week to manufacture the full ceramic crowns. Once patients return to have their new E-Max crowns placed, the shape and size of the prosthesis can be further altered should patients be unhappy with the prosthetics' look, colour or shape. In my opinion, E-Max crowns provide patients with great long-term aesthetic solutions. E-Max crowns can be very durable if patients practice good oral habits and undergo regular maintenance and check-ups with their dentists. What's more, outcomes are very natural while providing the best possible aesthetic results.



Before treatment.



After treatment.



Before treatment.



After fitting of the Emax crown.

Pictures courtesy of Dato' Dr. How Kim Chuan.