



INTERCEPTION AND IMPLANTATION

Great teeth begin with an early start, says **Mariel Chow**.

Interceptive dental treatments are procedures that eliminate or reduce the severity of malocclusion in the developing dentition. With multiple types of indications affecting in poor dental growth, such problems can result in functional issues such as crowding, bone resorption and reduced or affected eruptions of permanent teeth. Young patients could also suffer speech difficulties, poor self-esteem and even tooth loss. Besides early interceptive dental treatments, there is also interceptive orthodontics, which takes advantage of a child's growth potential to achieve better or more stable dental alignment results.

In this issue's smile-related editorial with Imperial Dental Specialist Centre, Aesthetic Dental Surgeons Datin Dr. Alice Wong and Dr. Kong Sheng Earn explain the many types of early dental conditions, including their treatment, and the benefits of early orthodontic care. Later, Dato' Dr. How Kim Chuan pitches in to talk about how full mouth rehabilitation helped improve a patient's unattractive smile, loose teeth and periodontal disease.



Aesthetic Dental Surgeon, Datin Dr. Alice Wong.

INTERCEPTIVE DENTAL TREATMENTS WITH DATIN DR. ALICE WONG

WHAT ARE SOME OF THE MOST COMMON DENTAL PROBLEMS CHILDREN SUFFER DURING THE DEVELOPMENTAL AGE?

Children can undergo a range of dental problems during their early years. You can see from the attached images that patients can experience delayed eruptions of the upper front teeth, retained deciduous or baby teeth, ankylosis, ectopic eruptions of the permanent molar, hypodontia, diastema and ectopic upper canines. All these problems not only effect in poor aesthetics, but impede function as well.

WHAT IS DELAYED ERUPTION OF THE PERMANENT INCISOR AND WHAT ARE THE DISADVANTAGES RELATED TO THIS CONDITION?

Delayed eruption of the teeth is caused by multiple problems. Such include hereditary supernumerary teeth (existence of excessive

numbers of teeth in relation to the normal dental formula), cleft lips and palates, retarded eruption and abnormal tooth and tissue ratios. Other causes can also be brought upon by cleidocranial dysplasia – a condition that primarily affects the development of bone and teeth, odontoma – a benign tumour composed of dental tissue that has grown irregularly – and gingival fibromatosis – slow and progressive gingival overgrowth. Along with genetic causations, environmental factors such as retained baby teeth, cystic formation, endocrine abnormalities, bone disease, trauma and early baby teeth extraction can also affect in delayed eruptions.

While missing or delayed eruptions of the maxillary incisors majorly impact dental and facial aesthetics, a few studies have reported functional problems associated with speech difficulties and struggles with the pronunciation of the letter 'S'.



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Pictures courtesy of Imperial Dental.

Treatment for said indication is to firstly remove any retained deciduous teeth if there are no other obvious causative factors. Dental practitioners will also have to maintain sufficient space. Seventy-five percent of incisors erupt if space is created. Of these, 55 percent will align naturally while the rest will require orthodontic treatment.

WHAT ARE DETAINED DECIDUOUS TEETH AND ANKYLOSIS AND WHAT ARE THE DISADVANTAGES RELATED TO THESE CONDITIONS?

The deciduous tooth is retained baby teeth once it has made enamel contact with its successor. Any retained baby teeth should be extracted if there are no other causative factors or if the permanent incisor is close to eruption. Disadvantages related to retained baby teeth are crowding, ankylosis of the primary tooth, the presence of extra teeth and ectopic maxillary canines and other dental obstructions.

Dental ankylosis is a disorder affecting the fusion of tooth to bones, preventing eruption and future orthodontic treatment. The tooth suffering ankylosis will normally lose its vertical position and assumes a position below the occlusal plane, leading to submergence. This disorder may result in malocclusion, facial skeleton deformation and the loss of retained molars or neighbouring teeth due to susceptibility to caries or periodontal diseases. Recommended modes of treatment can be divided into extraction of the ankylosed tooth and surgery to expose, protect and reposition the emerging tooth.

WHAT ARE UNILATERAL RETAINED DECIDUOUS CANINES AND ECTOPIC ERUPTIONS OF THE PERMANENT FIRST MOLAR AND WHAT ARE THE DISADVANTAGES RELATED TO SUCH CONDITIONS?

The premature loss of one deciduous canine as a result of early root resorption is caused by a crowded lateral incisor. Interceptive dental treatment is the extraction of the primary canine on the opposite side of the arch to preserve the midline.

Ectopic eruption of the permanent first molar is when the molar erupts at an angle mesial to its normal path of eruption. Along with mesially tipped permanent molars, patients will also notice asymmetrical development and prematurely mobile primary molars. Treatment is necessary to guide the tooth into a more favourable path of eruption to avoid further damage to the affected dentition. While mild or moderate impacted molars can be guided easily, severe impactions necessitate more complex treatment and will require potential distalisation of the permanent molar and extraction of the primary and secondary molar.

WHAT ARE HYPODONTIA AND DIASTEMA?

Congenitally missing teeth or hypodontia is a common dental condition. Commonly affecting the lower second premolar and upper lateral incisor, patients with this condition can suffer

malocclusion, periodontal damage, insufficient bone growth, reduced chewing ability, inarticulate pronunciation and other problems. Treatment options will be a combination of space closure or space maintenance for future prosthesis.

Diastema is a space or gap between two teeth. Although it appears most often between one's two front teeth, gaps can occur between any two teeth. Despite it being solely a cosmetic problem, many don't like its poor aesthetic outcomes and undergo a range of treatments for it. Should supernumerary teeth cause diastema, removals of extra teeth will have to be carried out first before dentists and patients can proceed with other procedures such as orthodontics.

WHAT ARE ECTOPIC UPPER CANINES AND WHAT ARE THE COMMON PROBLEMS RELATED TO THIS CONDITION?

An ectopic upper canine is a canine that erupts out of its normal eruption path. An ectopic eruption of the canine is a common condition and can lead to problems such as impaction of the canine or resorption of the permanent lateral roots. Treatments include extraction of the deciduous canine and orthodontics.

Pictures courtesy of Imperial Dental.





Aesthetic Dental Surgeon, Dr. Kong Sheng Earn.

INTERCEPTIVE ORTHODONTICS WITH DR. KONG SHENG EARN

WHAT IS INTERCEPTIVE ORTHODONTICS?

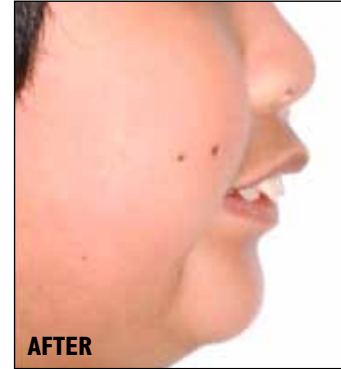
Interceptive orthodontics has the ability to reduce expectant malocclusions among children. Interceptive orthodontics only applies to those whom dentists believe will develop problems especially after taking into consideration muscular and dental effects on a child's skeletal growth. Interceptive orthodontics utilise the bone's growth potential at a child's growing or developmental age to achieve better or more stable orthodontic results. Interceptive orthodontics is also referred to as Phase One orthodontic treatments, meaning that patients will have to undergo a more comprehensive procedure – Phase Two orthodontic treatment – after skeletal growth has stabilised and all permanent teeth have erupted.

WHAT IS THE BEST AGE TO UNDERGO ORTHODONTIC TREATMENT AND WHY?

Children should undergo consultations as soon as their baby teeth have erupted, or no later than seven years old. A range of factors can cause orthodontic problems, including skeletal, muscular and dental factors. While dentists aren't able to control growth, we may be able to modify it with the help of orthodontics. For instance, thumb sucking among children and toddlers will cause cheek muscle hyperactivity which will affect in narrow and constricted upper jaws and protruding front teeth. Apart from poor habits, dental factors also negatively affect skeletal growth and



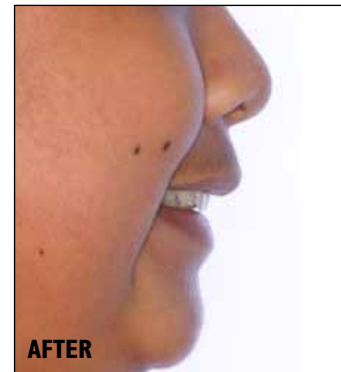
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Pictures courtesy of Imperial Dental.

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hinder future teeth alignment. A perfect example of this would be patients with cross bites in their front teeth. When the upper teeth are behind the lower teeth, the malocclusion will restrict forward growth of the upper jaw and cause future skeletal deficiencies. Last but not least, extraction of baby teeth before they naturally fall can also cause malocclusion. This will affect in the extracted baby tooth's permanent incisor drifting into a position occupied by another permanent tooth. As such, the latter tooth will not have space to erupt and will find itself in another space, affecting in malocclusion. While it's recommended that patients undergo assessments no later than seven years old, it's imperative that they undergo periodic check ups so that potential problems can be detected, reduced and eliminated.

WHAT ARE THE BENEFITS OF CHILDREN UNDERGOING ORTHODONTIC TREATMENT EARLY?

Maximum growth potential is usually attained during puberty, gradually reduces over time and stops at adulthood. After bone growth has completed, the orthodontist will not be able to take advantage of a child's growth potential or restrict skeletal or jaw development. For example, if a child has lower jaw deficiencies, his or her chin will appear sunken and look much smaller than the upper jaw, resulting in overjet. Moreover, the underdeveloped jaw may not be



IN THE PHOTOS PROVIDED, THE PATIENT COMPLAINED OF PROTRUDING AND PROCLINED UPPER TEETH, DIFFICULTY SEALING HIS LIPS, INCREASED OVERJET, A DEEP OVERBITE AND CROWDING. WHAT TYPES OF FUNCTIONAL OR COSMETIC PROBLEMS WOULD HE HAVE ENDURED WITH SUCH PROBLEMS?

Proclined upper teeth are more prone to trauma and if he falls, chances of broken teeth and avulsion are much higher. Secondly, should his upper lip rest in front of his lower one, the child will not be able to comfortably or naturally close or seal his lips. Furthermore, patients who experience deep bite or overbite can experience gum problems due to trauma caused by the front teeth. In such cases, the lower teeth may injure the upper gingiva while the upper teeth may injure the lower gingiva, causing gingival recession and root exposure. Not only that, crowding can impact oral hygiene because overlapping teeth will make brushing and flossing much more difficult. If foods get constantly stuck within the teeth's nooks and crannies, patients will be highly susceptible to decay, infection and periodontal disease. Lastly, malocclusions and poorly aligned teeth aren't only aesthetically unappealing, problems could also negatively influence speech and such indications can affect in poor self-esteem.

THE PATIENT'S TREATMENT PLAN INVOLVED INTERCEPTIVE ORTHODONTICS WITH INVISALIGN. WHY DID HE OPT FOR THIS TREATMENT OPTION?

Imperial Dental Specialist Centre always provides a range of treatment options to both the patient and his or her parents. They opted for Invisalign as opposed to braces because clear aligners were not only invisible but less painful due to lower levels of force and the lack of metal wires or brackets which can cause ulcers. During the child's treatment, we decided to extract the upper teeth because space was needed to retract the upper front teeth and relieve crowding. Since undergoing interceptive orthodontics and early treatment, we were able to reduce his protruded front teeth and hence, allowed natural lip sealing. Not only that, the patient's speech had also improved and he presented with improved dental cosmesis and self-confidence.



able to accommodate natural teeth arrangement, and affect in tooth crowding. Patients should undergo orthodontic treatment early because adults do not have any more growth potential and can only undergo alignments after arches have fully developed. If skeletal discrepancies are too severe, orthognatic surgery may be necessary should patients desire to improve facial profiles and aesthetics. When children are young and still developing, growth potential is utilised by molding the upper and lower jaw. Should jaw growth prove to be excessive, methods of interception and restriction can be carried out and such steps will definitely reduce or even solve development issues and severities.





Consultant Orthodontist, Dato' Dr. How Kim Chuan from the Imperial Dental Specialist Centre.

FULL MOUTH REHABILITATION WITH DATO' DR. HOW KIM CHUAN

ACCORDING TO THE CASE AND PHOTOS PRESENTED, THE PATIENT UNDERWENT FULL MOUTH REHABILITATION FOR SEVERELY COMPROMISED TEETH AND PERIODONTAL DISEASE. WHAT CAN YOU TELL ME ABOUT THIS PATIENT AND HIS TREATMENTS?

This patient presented with severe periodontal disease which led to very bad breath and multiple loose teeth. The patient was affected both functionally and emotionally as he was unable to eat properly and frequently experienced bleeding and swelling gums, which is commonly referred to as 'heatiness'. Along with functional issues, the patient also presented with an unappealing smile with hidden upper incisors and exposed lower incisors. Dental aesthetics have commonly regarded the upper teeth to be 'sexier' and smiles should therefore include maximum exposure of the upper incisors. Furthermore, the patient also wore upper arch dentures that were ill-fitting, unattractive and mobile. In addition, the patient also presented with a narrow and constricted lower and atrophied ridge which was not conducive for implant placement.



To combat both functional problems and improve aesthetics, this patient underwent a combination of treatments, or full mouth rehabilitation. Treatments included stabilisation of the periodontal disease, extraction of periodontitis-affected teeth with poor prognosis, bone augmentation and implants.

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Pictures courtesy of Imperial Dental.