



Case 1

Orthodontics as an Adjunct to Traumatic Dental Injuries (TDI) Care

Case summary:

Following a motorcycle accident, a healthy 14-year-old Hispanic female has experienced crown fractures in her maxillary anterior teeth. As a result, orthodontic treatment is required to facilitate tooth extrusion.

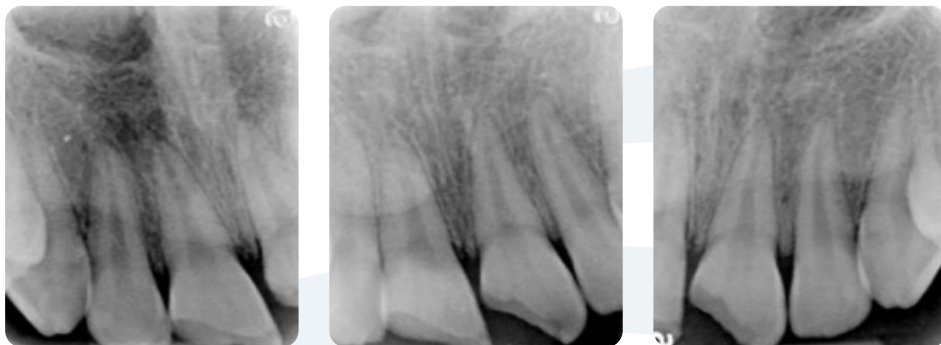
- The pretreatment frontal view indicates symmetrical facial features, with the upper and lower midline aligned. The upper lip rests slightly over the gingival margin, and the smile arc is age-appropriate and relatively straight
- At the time of the accident, the patient experienced multiple facial abrasions, dislocation, and crown fractures in three maxillary anterior teeth (#7, #8, and #9). Teeth #7 and #8 exhibited incomplete crown fractures, while tooth #9 had a complete crown fracture with pulp exposure. The fracture line extended below the gum line and was visible through apical film examination. Four weeks post-trauma, CBCT revealed that the fracture line in tooth #9 extended from the crown to the lingual side of the alveolar ridge. Teeth #7 and #8 exhibited apical bone resorption, pulp necrosis, and asymptomatic periapical periodontitis, while tooth #9 showed irreversible pulpitis.



Diagnosis:

Subluxation: #7,8,9

Uncomplicated crown fractures: #7,8; Complicated crown fracture: #9



Initial treatment:

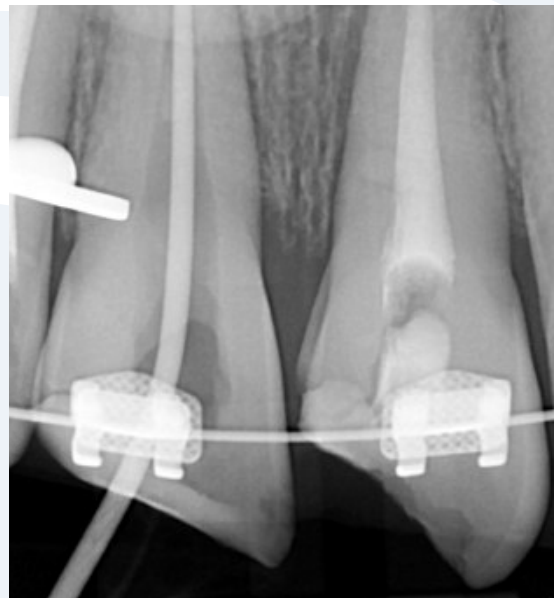
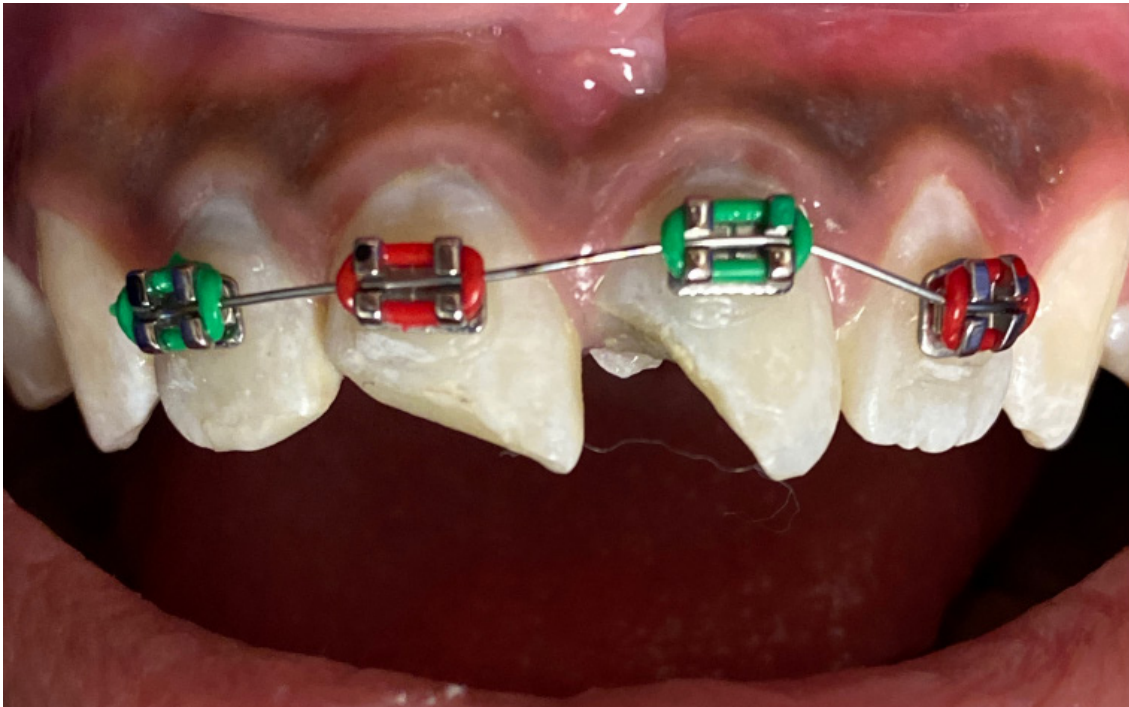
Direct pulp cap #9; Resin "band aid" #7,8,9





Treatment procedure:

- During the trauma consultation, a comprehensive evaluation was conducted according to the standard trauma examination process. Following this, debridement and direct pulp capping were performed on tooth #9, while the crown fractures on teeth #7, #8, and #9 were treated with resin covering protection using a conventional resin bonding process. This helped to reduce dentine hypersensitivity and cover any sharp broken edges across all three teeth.
- During the 4-week follow-up, endodontic specialists diagnosed all three teeth with irreversible pulpitis. Consequently, the pulp cavity was instrumented and filled with calcium hydroxide.
- After 8 weeks, orthodontic treatment was initiated to extrude tooth #9. The preliminary alignment and a small amount of extrusion were achieved using a 0.014 NiTi wire, followed by the use of a TMA wire to make the step and improve the arch form.
- After 9 months, the tooth extrusion treatment was completed, and the braces were removed. A Hawley retainer was then prescribed."
- After 11 months, root canal treatment was finished, and the teeth were bleached and restored with resin crowns. Everything went well during the retainer follow-up visit.





Case discussion:

[1] The examination and treatment process of trauma teeth for orthodontists

The examination of traumatic injuries typically involves examining soft tissue, bone vitality, and teeth in a specific order, from outside to inside. Treatment methods vary based on the trauma site, whether it's on the trauma site (tissue and teeth affected) and the tissue around the wound. During tooth examination, it's important to examine not only the traumatic teeth but also the opposite and adjacent teeth. More information on procedures and details can be found on <https://dentaltraumaguide.org> or the International Association of Dental Trauma (IADT) website.

If the traumatic teeth are slightly loose or displaced, the orthodontist may perform a gentle repositioning and early fixation with a light arch wire, such as 0.14NiTi wire or 0.175 twist wire. However, if there is an alveolar process fracture, a heavier arch wire is necessary for fixation. Alveolar fracture can be indicated with reference to the following two points: First, we can try to move a segment of the alveolae by gripping the facial and lingual. If the segment moves as a whole, it may be an alveolar ridge fracture, rather than simple crown fracture; In addition, we can see the line on alveolar apical to the injured teeth in the mouth, which also suggests that we have alveolar process fracture. If the traumatic displaced teeth have been dislocated and stabilized at the time of the patient's visit, there is no need to immediately reduce the teeth unless there is a definite occlusal interference.

Pulp vitality test results immediately after trauma are not always accurate or reliable, so it's generally reasonable to carry out the vitality test during a follow-up visit. Most orthodontists don't have electrical measurement equipment, so we can use oral mirrors for percussion or ice to test tooth vitality.

Dr. Ko pointed out that after tooth trauma, there are many tiny cracks in the alveolar bone surrounding it, and the alveolar bone at this time is like a sponge. Therefore, from the perspective of tooth movement, we do not need to stimulate a large amount of alveolar bone resorption at this time, but we need to maintain steady state as much as possible, hoping to obtain more bone deposition. Do we need to place archwires immediately after trauma? Dr. Henry Fields believes that the placement of arch wire immediately after trauma is mainly for the need of stabilizing teeth, which is suitable for cases with obvious tooth looseness after trauma. If the tooth is stable, you can wait for a return visit before wearing an appliance to adjust the tooth position, such like extrusion. In addition, if occlusal interference caused by traumatic tooth displacement is present, an appliance to move the teeth is recommended., otherwise we don't need to place arch wire at the time of trauma. Dr. John Christensen recommends using light archwires initially to provide gentle force in cases requiring immediate treatment. Trauma often causes tooth dislocation, and there is a long time between trauma time and medical treatment time in many cases, and nearly 50% of cases are separated by 5 hours or more. At this time, it is difficult to reposition teeth. In this case, it is more appropriate to use light arch wire to provide gentle force. Nickel titanium wire is the most convenient arch wire in orthodontic clinic, which is generally stocked by orthodontists, Dr. Henry Fields does not recommend the use of heat-activated nickel-titanium wire. If this arch wire is used, the deformation during ligation will be large, which may cause uncontrolled tooth movement when these forces are released later.

[2] Differential diagnosis and treatment of crown and root fracture

Incomplete crown fracture refers to a fracture of only the dentin and enamel, whereas if pulp exposure is present, it should be diagnosed as a complete crown fracture. In such cases, it is recommended that orthodontists refer patients to general practitioners or pediatric dentists within 48 hours after trauma to initiate follow-up dental treatment to protect the dental pulp and exposed dentin and enamel. Treatment options for different ranges of dental pulp exposure include direct pulp capping treatment, which involves covering the exposed area with protective materials or removing part of the pulp tissue before covering the exposed area with materials. It is important to note that regular dental pulp tissue protection methods should be used at the time of trauma, and complete root canal therapy is not necessary. As time passes, the broken parts of teeth will gradually separate, allowing for better evaluation of the fracture's extent.

When trauma affects two teeth, it is recommended to take at least 2 to 3 apical films from different projection angles to detect root fractures. It is critical to take apical films from different angles to check for root fractures because normal conditions may appear on one film while a significant root fracture may appear on another. CBCT can be used at the time of trauma or during follow-up treatment to determine the specific extent of the fracture and the prognosis of dental pulp after trauma.

[3] Treatment of crown fracture teeth with orthodontic extrusion

The main objective of orthodontic treatment for extruding traumatic teeth is to reveal the gingival margin of the crown fracture. This is essential for obtaining a good seal in future restoration, which is critical for a successful prognosis of the traumatized tooth. According to Dr. Henry Fields, using brackets for tooth extrusion is a safe and simple self-limiting process. An alternative to orthodontic extrusion is to remove a part of the gingival tissue using a soft tissue laser or scalpel. However, when the crown fracture extends to the top of the alveolar ridge, it is difficult to obtain gingival margin sealing by gingival cutting alone. In such cases, orthodontic treatment is necessary for tooth extrusion. The X-ray films after orthodontic extrusion show bone changes at the alveolar ridge. At this stage, it may be appropriate to consider periodontal crown lengthening surgery to ensure appropriate exposure for both the soft and hard tissues of the crown.

3.1 Tooth extrusion range:

The extrusion range of teeth after trauma is generally 2-4mm. If the tooth extrusion is larger than this range, lollipop effect will appear, the crown is too large and the root is too narrow, so the restoration is not good at this time. The tooth extrusion only needs to meet the need of the exposed crown fracture line. If we can completely expose the fracture line by extruding the tooth by 2mm, there is no need to do more tooth extrusion treatment.

3.2 Tooth extrusion ways:

Tooth extrusion can be achieved through two methods: gradual extrusion and rapid extrusion. Gradual extrusion involves the use of light arch wires, such as nickel-titanium wires, to apply continuous and gentle force for gradual extrusion. On the other hand, rapid extrusion uses heavy main arch wires and applies heavy forces to move the teeth quickly. After years of clinical experience, the two professors have found that heavy force doesn't have an absolute advantage. Gradual extrusion with a light wire is simpler to perform and more comfortable for patients, but it may have

weaker control over the directional movement of teeth. To ensure patient comfort after trauma in the early stages and improve control over the directional movement of teeth in the later stages, a nickel-titanium wire was used to align teeth at the beginning of treatment, and TMA wire was used to bend steps for continued tooth extrusion later on.

During the process of tooth extrusion, it's crucial to pay attention to occlusal interference. If occlusal interference occurs, timely adjustments should be made, and any removed sealing resin should be refilled. It's also important to restore the proper arch form during tooth extrusion. Using nickel-titanium arch wires, especially nickel-titanium segmental arch wires, at the beginning of treatment may result in the teeth not moving to the target position if the shape of the arch wires doesn't match the shape of the dental arch. To avoid this, Dr. John Christensen suggests not deforming the arch wire while ensuring that the bracket is bonded in a suitable position, keeping the arch wire in its original shape, and ligating it into the slot. Dr. Henry Fields recommends stabilizing the dental arch by adding more teeth at the beginning of treatment and extending the arch wire to the first premolars or even the first molars in the form of 2x4 or 2x6. This approach can better control the shape of the dental arch and avoid future iatrogenic problems. Therefore, ensuring sufficient anchorage to maintain the stability of the dental arch is an important factor in achieving successful tooth extrusion.

Finally, it's important to consider the mechanism of tooth movement during tooth extrusion. Orthodontic force is applied to the crown side of the center of resistance, resulting in upright changes during the extrusion movement. When the extrusion changes are within 2 mm, the upright change is not significant. However, when the extrusion reaches 3-4 mm, the teeth will show an obvious upright change. Therefore, it's crucial to take this mechanism into account during tooth extrusion.

[4] Maintenance after tooth extrusion treatment

From an orthodontic standpoint, it is recommended to keep every 1mm of teeth extrusion should be retained for about one month. Therefore, when the extrusion reaches 2-3mm, it is recommended to retain it for about three months. During this time, a periodontist can begin relevant treatment such as crown lengthening surgery to increase treatment efficiency. However, maintaining perfect oral hygiene with appliances is difficult, and periodontitis or gingival bleeding may occur. If the periodontist needs to remove the appliance before starting related treatment, the orthodontist should use retainers to maintain the position of teeth.

In this case, a Hawley removable retainer was used, allowing for easy adjustment of the base edge if the restoration's morphology changes later. After subsequent periodontal surgery and healing of the gums, a fixed lingual wire retainer can replace the Hawley retainer in the maxilla. Dr. Henry Fields noted that fixed lingual wire retainers are commonly used in cases with maxillary diastema, but they are generally not used in cases spanning 4 or 6 teeth due to their tendency to damage easily. In such cases, it's possible to consider a combination of an all-day fixed lingual wire and wearing a Hawley retainer at night. Dr. John Christensen suggested that if the patient has a history of tooth trauma or has a short root caused by other reasons, it can also be considered to use fixed lingual wire to maintain it, which is equivalent to the function of periodontal fixed splint and can help maintain the stability of teeth. Finally, Dr. Henry Fields recommends wearing mouth guards during sports involving impact to prevent tooth trauma.

Case 2

Orthodontic Early Intervention

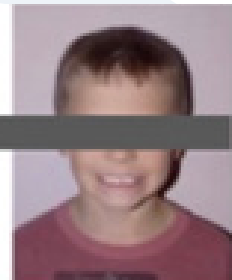
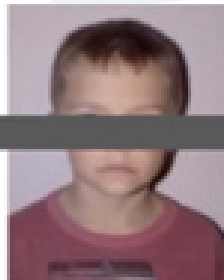
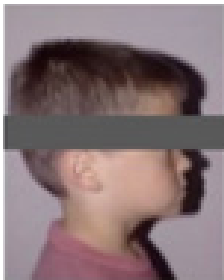
[1] Early orthodontic treatment of Class III patients

Case profile:

- Kevin, a male patient, first visited at the age of 7 years and 5 months. Upon clinical examination, he was found to have an asymmetric anterior crossbite, maxillary constriction, and deep reversed overbite. There was no history of similar issues in his family. His pre-treatment cephalogram revealed a skeletal Class III with anterior crossbite, while a panoramic radiography showed anterior crowding in the maxilla with 90-degree twisted lateral incisors.
- The treatment lasted for 27 months and was carried out in several stages. Firstly, Kevin waited for the eruption of his anterior permanent teeth for 14 months. After that, he wore a bonded maxillary expander for 6 months. Following the expansion, he used a palatal bar with maxillary protraction for 7 months, while simultaneously wearing a 2*4 fixed appliance. Finally, he wore a CCP retainer after treatment.
- After treatment, Kevin's crossbite was over-corrected, resulting in the establishment of excessive overjet. However, his skeletal Class III pattern had improved, and the maxillary space was now sufficient for his canines, as seen in the post-treatment panoramic radiography.

Initial Records

7 yr. 5 mos



Diagnosis

- 1) Ant. and right post.X-bite
- 2) Max. constriction & retrusion
- 3) Deep bite
- 4) No familial history of underbites.



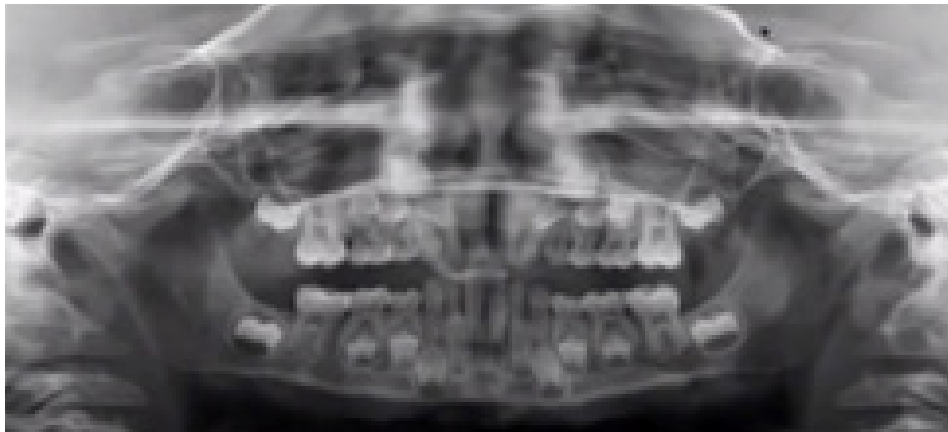
Initial Records

02/06/20



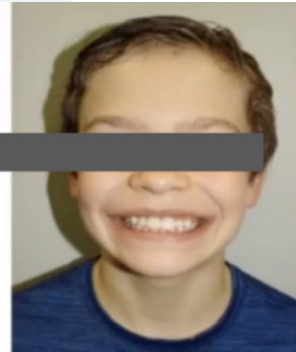
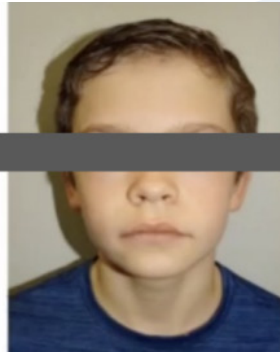
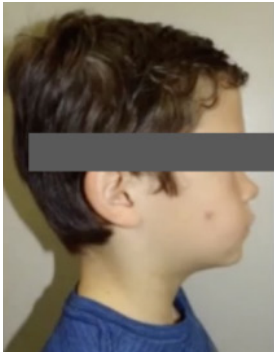
Notice Max. incisors have erupted

10/16/2018



10 yr. 9 mos.

02/21/2022



Final Ph. 1 Records

- Tx. Time (23 mos.)
- 1) Bonded exp. w/ FM. 6 mos.
 - 2) Max. braces E21-12E
 - 3) Pal.Bar w/ FM. 7 mos.
 - 4) Retain w/ CCP



**Final Ph. 1
Records
02/21/2022**



Case discussion:

(1) Timing of early treatment for Class III patients

Class III patients can be easily detected at an early age, with even general practitioners or parents noticing differences in their children's appearance. For those with a family history of the condition, early treatment is recommended. However, in the case of children without such a history, the problem may be due to a habitual protrusion of their mandible, and in such cases, there is no rush to start treatment at an early age. The ideal time to begin treatment for such patients is when their permanent incisors begin to erupt. Early treatment can help establish a stable anterior overjet and overbite, which can help maintain the treatment effect in the long run. Boys can begin treatment around the age of eight, while girls may start earlier, with their maxillary protraction treatment being completed by the age of eight. If the child is not treated until they are nine or ten years old, the maxillary protraction effect may be limited, according to Dr. Hutta's clinical experience.

(2) Appliances for early treatment of Class III patients

Early correction methods for Class III patients are relatively certain, with a bonded maxillary expander with maxillary protraction being effective for patients with either maxillary retrusion or mandibular protrusion. However, if the bonded maxillary expander is kept in the mouth for more than six months after arch expansion, it may be difficult for patients to maintain oral health. It is recommended to replace the palatal rod with maxillary protraction after the arch expansion.

The bonded maxillary expander uses the same screw as the Hyrax expander, with bilateral posterior teeth covered with pads and built-in steel wire that extends to the lip side as the retractor for maxillary protraction. In Class III patients, labial gingival retreat of mandibular incisors is common due to incisor trauma from the anterior cross-bite. The greatest advantage of the bonded maxillary expander is that it can immediately release the locking relationship of anterior teeth at the time of bonding. Even if the patient does not have obvious maxillary constriction, such as no obvious posterior crossbite, arch expansion treatment can still be performed. If the child is expanded 8 to 10 times, the maxillary suture can be effectively activated to prepare for maxillary protraction. According to individual situations, Dr. Hutta typically undergoes 28 to 36 turns before wearing maxillary protraction.

After maxillary arch expansion, a 2X4 fixed appliance can be used to align anterior teeth and relieve occlusal interference. The arch wire should be cinched back to maintain a good arch form, otherwise the maxillary incisors may deviate from the original arch form when aligned under the action of segmental arch.

There are many kinds of maxillary protraction that can be used in clinics today. Dr. Dutta generally uses Ormco protractions, with blue for boys and red for girls. The maxillary protraction generally includes a frontal part, chin part, T-bar, and rubber bands. The rubber bands should be hung on the inside of the connecting rod as far away from the corners of the mouth as possible. First, 5/16 6-ounce rubber bands are used to allow patients to adapt before being replaced with whale or walrus rubber bands, with two on each side, which is equivalent to 28 ounces on each side. The maxillary protraction direction is downward and forward relative to the T-bar, resulting in close contact between the incisors, preferably in a state of deep overlap of the anterior teeth.

(3) Objectives of early treatment for Class III patients

Class III children's treatment goal is generally set to achieve excessive anterior overjet. For boys, there is no need to worry about over correction since their mandible shows lasting growth increment during follow-up. It is hoped that maxillary protraction will provide sufficient treatment and improvement with just one treatment. Therefore, over correction of anterior overjet is recommended considering subsequent mandibular growth.

During maxillary protraction treatment of Class III children, the maxilla moves forward, inducing skeletal and dental changes, while the mandible rotates downward and backward. Lingual inclination changes are also observed in the mandibular anterior teeth, even though no braces are on them. These therapeutic changes effectively improve anterior cross-bite in Class III children. The key to successful Class III early treatment is establishing normal anterior overjet and overbite to create a good occlusal contact relationship and maintain treatment stability.

(4) Treatment effectiveness of early treatment for Class III patients

Family history plays a crucial role in the success of Class III early correction treatment. Relevant information can be obtained through consultation and observation of parents' facial patterns. While early treatment can prevent the need for future surgical treatment in 60-70% of cases, 30-40% may still require surgical or compensatory orthodontic treatment with bicuspid extraction due to continued mandibular growth. The effectiveness of early treatment is also affected by the age of treatment initiation and family history. Starting treatment earlier improves the treatment outcome, but family history is also a key factor to consider.

[2] Early orthodontic treatment of Class III patients

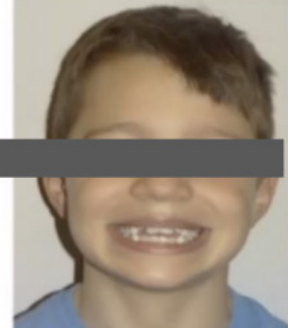
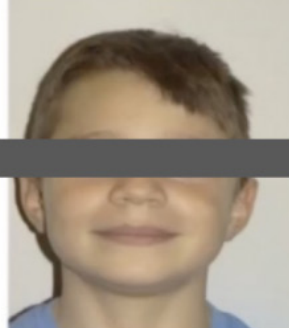
Case profile:

Case 1: Ela is a male patient with maxillary constriction, anterior openbite, and maxillary protrusion. He had a finger sucking habit, tongue thrusting habit, and snoring history. Before treatment, the cephalogram showed maxillary incisor protrusion and a normal mandible, while the panoramic radiography showed insufficient space for maxillary canines to erupt. The whole treatment lasted for 13 months, beginning with the use of a maxillary Hass expander plus tongue crib

for 6 months, followed by the use of high-pull headgear with 2X4 fixed appliance for 7 months, and finally the CCP retainer. The panoramic radiography after treatment showed increased eruption space of canines, improved maxillary incisor protrusion, and openbite, and the patient successfully got rid of tongue thrusting and finger sucking habits.

8 yrs. 6 mos.

Initial Records



Treatment Plan

- 1) Bonded Haas exp. w/ thumb reminders
- 2) HPHG
- 3) Braces E21-12E
- 4) CCP Retainer



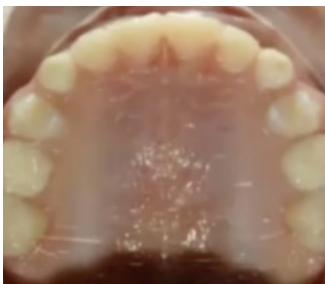
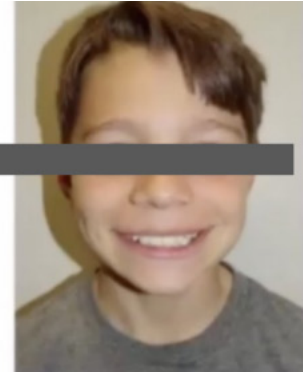
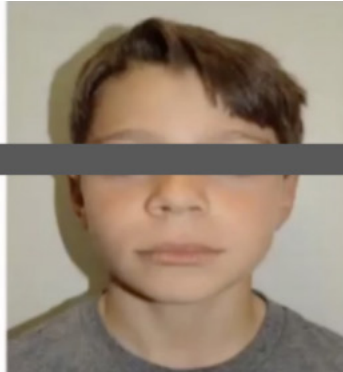
Initial Records

02/17/2021



8 yrs. 6 mos.

Initial Records



Treatment Plan

- 1) Bonded Haas exp. w/ thumb reminders
- 2) HPHG
- 3) Braces E21-12E
- 4) CCP Retainer



Final Ph. 1 Rx.



Case 2: Liya is a female patient with maxillary constriction, anterior openbite, maxillary protrusion, and mandibular retrusion with excessive lower facial height. She also had a finger sucking habit, tongue thrusting habit, oral breathing, and snoring history. Before treatment, the cephalogram showed skeletal Class II facial type with a steep mandibular plane. The whole treatment lasted 13 months, starting with the use of a maxillary expander plus tongue crib for 6 months, followed by high-pull headgear and 2X4 fixed appliance for 7 months. After wearing the retainer, the patient was asked to wear the high-pull headgear for an extra 9 months, adding up to a total of 16 months. By comparing pre-and post-treatment cephalograms, it can be seen that her profile is significantly improved, the mandible moved forward, and the mandibular plane steepness was reduced.

8 yr. 8 mos.



Diagnosis

Constricted maxilla w/ ant. open bite.
Thumb habit anterior tongue posture.
Mouth breather and snoring history.
Max. protrusion, mand. retrusion.
Increased lower ant. facial height.
Unfavorable growth pattern in all 3 planes

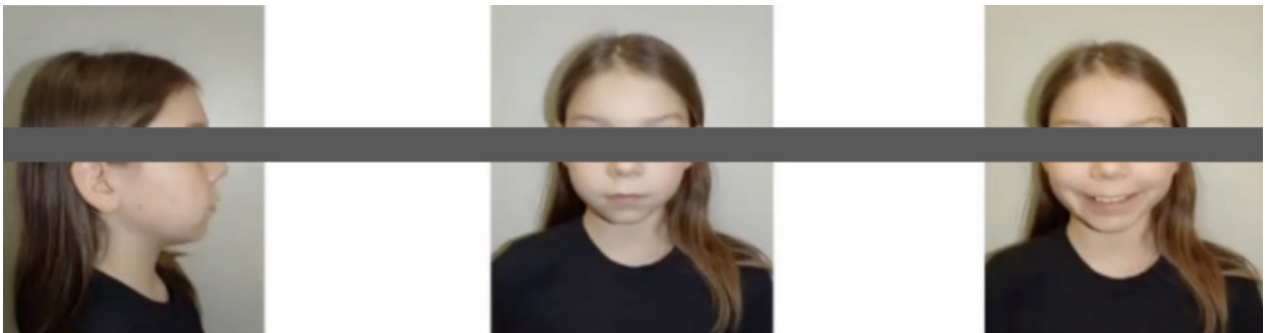
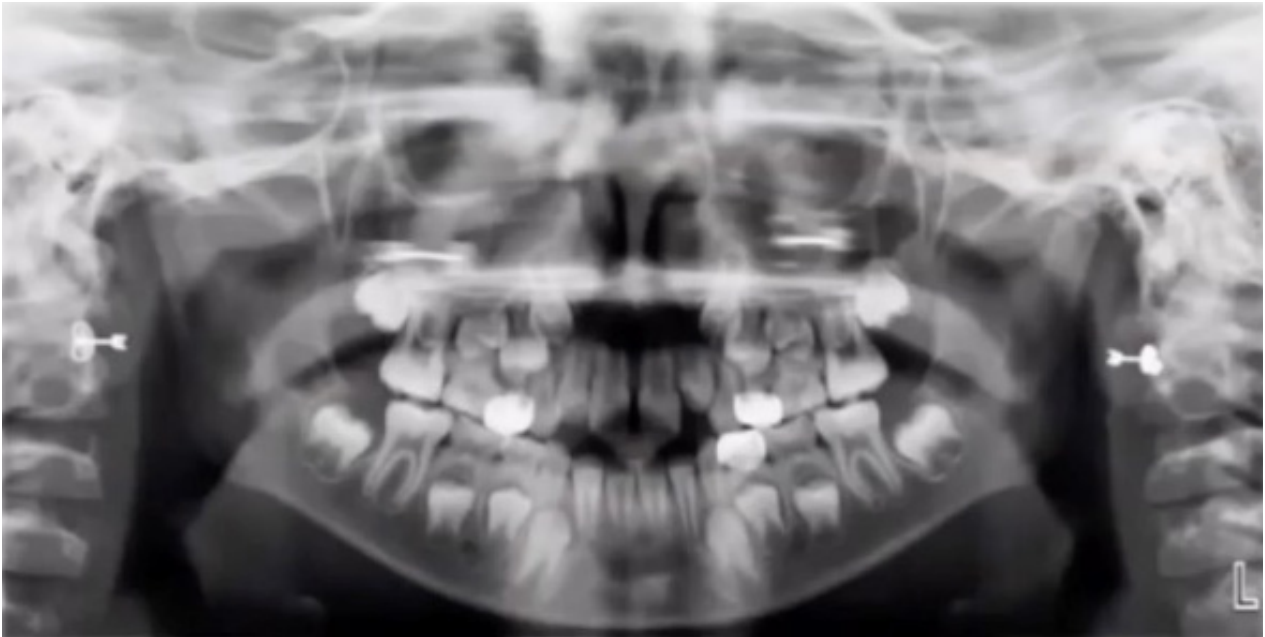


Initial Records

8 yrs. 8 mos.



Steep Mandibular
plane angle



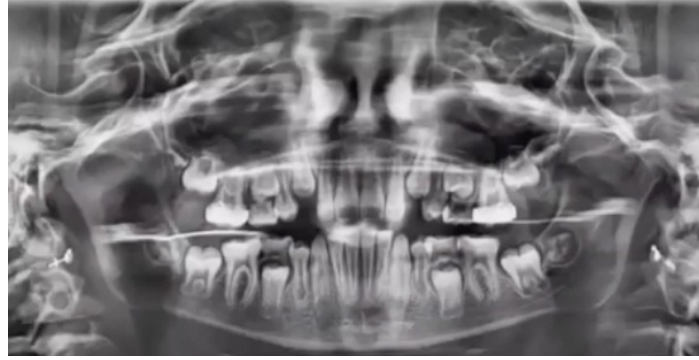
Tx. Plan Summary

13 months

- 1) Bonded Haas exp.(6 mos.)
- 2) HPHG(7 mos.)
- 3) Brace E21-12E(7 mos.)
- 4) CCP Ret. w/HPHG(9 mos.)
- 5) Total HPHG 16 mos.

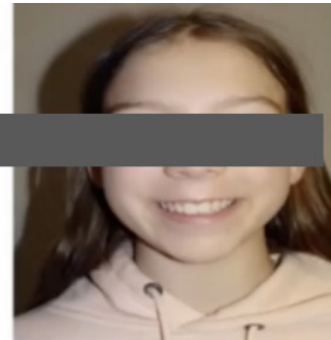
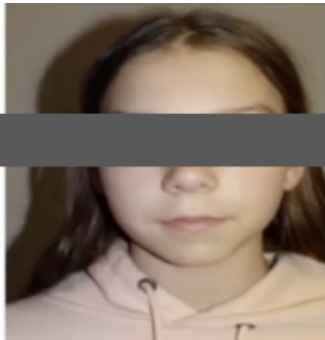


Final Ph. 1 Pan

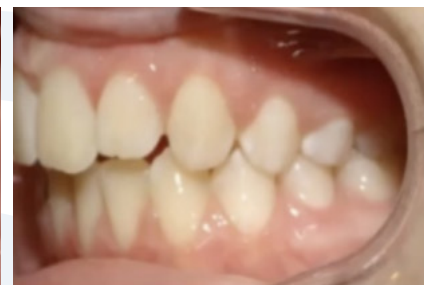


9 yrs. 10 mos.

11 yrs. 8 mos.



Phase 2 Records



Phase 2 Records



11 yrs. 8 mos.

8 yrs. 8 mos.



Initial LHP

11 yrs. 8 mos.



Phase 2 LHP

Case discussion:

(2) Timing of early treatment for Class II patients

To effectively treat Class II patients, headgear is a common method used in orthodontics. For early treatment, it is recommended to start using headgear before puberty, considering the peak growth velocity and the child's cooperation level. Children in pre-puberty tend to be more cooperative compared to adolescents.

The main goal of early treatment for Class II patients is to stop unfavorable growth patterns. Maxillary constriction is often present in these patients and arch expansion is a proven method to correct it. Whether the patient has maxillary protrusion or mandibular retrusion, arch expansion can be an effective treatment. Dr. Hutta recommends starting treatment with a maxillary arch expander to obtain the appropriate maxillary width, and then follow up with cervical or high-pull headgear. In cases where the patient has a 10-12mm anterior overjet, without intervention, it can develop into a 15mm overjet that is difficult to treat with a single round mandibular forward movement. In these situations, Dr. Hutta usually opts for the Herbst appliance, using two rounds of treatment.

(2) Selection of appliances for early treatment of Class II patients

A Maxillary expander is a common appliance used for early treatment of Class II children. After maxillary expansion, partial fixed appliances are used to align the anterior teeth. It's important to note that the arch wire should not be placed until the expansion is complete to avoid unnecessary force on the root.

Once the expansion is complete, the screw can be sealed and fixed with resin to prevent the expansion device from retracting. Typically, arch expansion is carried out with 28-34 turns. In clinical practice, patients should receive clear instructions regarding the frequency or amount of arch expansion, rather than relying solely on routine visits. This can help prevent over-expansion if the patient forgets to return to the clinic. Arch expanders typically have built-in 45-47 turns of expansion, but patients only need to expand the arch 28-34 turns before their next visit to the clinic.

Unlike Hyrax expander, Hass expander covers the palatal plate with resin base and allows for the addition of a tongue crib to correct finger sucking or tongue thrusting habits. Although fixed expanders can be more challenging to maintain oral hygiene than removable arch expanders, they eliminate the risk of losing or damaging the appliance. Cannulas can also be placed on both sides of the base to allow for the arch wire to pass through, enabling control of tooth movement.

Dr. Hutta utilizes headgear as an early treatment option for Class II children, along with maxillary arch expanders. In treating excessive maxilla growth, he recommends a customized headgear. Here are the instructions: 1) The child should wear the headgear for a few weeks to learn how to wear it properly. 2) During a follow-up appointment, place the headgear in position and measure the distance from the inner bow to the surface of the maxillary anterior teeth. Mark the corresponding point of the dentition midline on the inner bow. 3) The laboratory will weld a probe at the marked point, leaving some margin for clinical adjustment. 4) Adjust the U-shaped curvature of the posterior segment of the headgear according to the amount of anterior teeth intrusion, so that the position of the probe can be adjusted to the gingival side by the corresponding amount. 5) When the headgear is passively worn, the probe should be on the gingival side of the maxillary arch wire. Press the probe in place and adjust it on the occlusal side of the anterior arch wire. The dental arch wire should be a relatively hard stainless steel rectangular wire to avoid deformation and teeth shifting. Within about four months, the maxillary incisors will intrude, which is as efficient and simple as using implants in adult intrusion treatment. While the use of headgear can be challenging for oral hygiene maintenance, it avoids the risk of loss or damage associated with removable appliances.

Dr. Hutta uses a transparent CCP retainer to maintain the treatment effect of arch expansion. This retainer covers the anterior tooth segment and extends to cover the palatal area, which is reinforced to ensure stability. It can be used in conjunction with a palatal bar, and only needs to be worn at night for up to one year after expansion treatment. The retainer is easy to adjust and can maintain stability even if permanent teeth are replaced. It can also be used to mark the position of mandibular advancement if the functional mandible forward movement is carried out in the early stages. This retainer does not need to be worn during the day at school, reducing the risk of loss.

In addition to the arch expander or headgear used in the maxilla, Dr. Hutta also introduced an appliance used in the mandible – the Frozat appliance. It is actually similar to a mandibular quad-helix appliance, which is fixed and bonded to the mandibular first molar via a band. This appliance can upright bilateral mandibular posterior teeth by expanding arch, and even if the mandibular anterior teeth do not wear any appliance, they can be gradually aligned under the force of tongue body. On the other hand, for children with obstructive sleep disordered breathing, the synchronous change of mandibular posterior tooth width with maxillary expansion will be more conducive to helping children improve their breathing state through the coordinated position change between maxilla and mandible. The manufacturing process of this appliance includes: 1) clinical collection of mandibular model; 2) The mandibular first molar band try-in; 3) Use 0.032 stainless steel wire to bend the arch wire, and bend the arch wire back from behind the molars; 4) Try it on the patient's mouth to ensure that the appliance is suitable in the passive state; 5) Applying force with a three-fork pliers, firstly bending the extended arch wire part to the outside, and then expanding the width between the two sides of the bands, the widening amount is about the width of a molar, if the arch wire is placed back on the model for compari

son after applying force, it can be seen that the widths of the extended arch wire and the band part are increased; 6) Bonding the appliance in the mouth. In order to prevent the extension arch wire from popping out and interfering with the patient's occlusion when expanding the bow in the buccal direction, it is necessary to add resin barrier on the lingual side of the mandibular first primary molar. Please do not bond the resin block with the arch wire. For the next adjustment, just take out the appliance and apply the force, and then press the arch wire back under the resin block.

Dr. Hutta's treatment philosophy, developed over 35 years of early orthodontic treatment experience, focuses on completing the adjustment of abnormal facial structure and muscle dysfunction at the end of mixed dentition while also helping patients give up habits like finger sucking or tongue thrusting. This approach aims to reduce the severity of these issues from a three-dimensional perspective, leading to better outcomes and greater efficiency in Phase II treatment. Dr. Hutta emphasizes the importance of choosing the appropriate treatment method based on accurate diagnosis, even with the availability of various appliances.

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