Overbite

The lower incisors lose the stopper on the palatal side of the upper incisors and continue growing until they reach the gingival palatal tissue. Because of the retroinclination of the upper and lower incisors, a shortening of the arches is observed but is more common in the upper than in the lower arch. In general, the arches are more square in shape because of the influence of the muscular pull (Fig. 1a).

In addition, the labial mental sulcus is very pronounced, and the lower lip covers the middle third and often the upper third of the upper incisors. The lips can appear retragnostic.

Another important issue is to determine if the deep overbite is located in the anterior region, in the posterior region or in both. In general, these patients come to the office looking for an esthetic improvement in order to normalize the position of the central and lateral incisors. Others are recommended by prosthodontists to normalize the position of the anterior teeth in search of more room for a normal restoration (Fig. 1b).

Usually in these patients the muscles are very well developed and the occlusal plane altered with a very pronounced Spee’s curve. The normal path of mastication would be changed.

Because they are non-growing patients, no orthopedic alterations can be expected. The treatment is limited to an orthodontic correction with or without orthognatic surgery.

It is very important to observe the presence or absence of a gingival smile because this issue determines the biomechanics that will be employed.

When the upper incisors are not visible during normal speech, the solution is to intrude the lower incisors in order to correct the deep overbite. If not, the result will be the typical smile of an older person.

In these cases we must consider the option to extrude the lateral sides or intrude the lower incisors.

Some patients will need temporary reconstruction of the occlusal surfaces in the posterior region, and on the palatal and labial surfaces in the anterior region, during treatment. At the end of the orthodontic treatment, a definitive reconstruction is necessary in order to maintain the results achieved.

Corrected deep overbite in adults requires an individualized treatment plan, especially in the vertical plane. A bite plane is effective in retaining the overbite correction, and long-term use is recommended. As brachyfacial patients have more tendencies to relapse than mesofacial ones, the same type of retention is not possible.

Figures 2a and 2b show a 26-year-old patient who came in search of a second opinion regarding a change in the position of her upper left lateral incisor. She had been treated twice before, between ages 8 and 10 with a removable appliance and between ages 14 and 16 with fixed appliances. She admitted she hadn’t used the retention appliances as was indicated.

When we observed the facial photograph, we could see that the chin was slightly deviated to the left. She had a gingival smile, and the gingival line was not parallel to the lower lip as was described by Bjorn Zachrisson some years earlier.

The overbite was nearly 100 percent at the central incisors. She presented a Class I canine and molar on the right side and a Class II on the left side. The right first molar was in crossbite and the midline was slightly deviated (Figs. 3a–3c).

The upper arch was a little straight in the anterior region. The upper right lateral incisor was in labial position, and a 2.5 mm discrepancy at the lower arch was present (Figs. 4a, 4b).

Looking at the lateral X-ray, we can confirm the magnitude of the deep overbite in the anterior region (Fig. 5).

The major objectives of the treatment plan were to correct the position of the left lateral upper incisor, normalize overjet and overbite, achieve a Class I molar and canine and improve her smile (Figs. 6a, 6b).

0.022-inch pre-programmed esthetic brackets with a metal slot were used with a 0.016-inch NiTiCo wire to begin the alignment. The brackets on the lower arch are bonded with a NiTi reversed curve.

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After the alignment of the upper arch was completed, the brackets on the lower arch were bonded with a NiTi reversed curve in order to correct the retroinclination of the lower incisors (Figs. 7a–7d).

After eight months of treatment, and when the alignment and leveling of the arches was attained, full-time Class II elastics were recommended in conjunction with 0.016-inch by 0.022-inch stainless steel (SS) wires. Some over-correction of the deep overbite is advisable. After that, triangular elastics with a Class II component on the right and left side were suggested with individualized SS wires.

Figures 8a–8f and 9a and 9b show the results at the end of 20 months of active treatment. The midline is corrected, and the overjet and overbite are normalized. The gingivo-periodontal tissues are almost normal.

To maintain the results, a fixed retention was recommended on the upper arch and a Hawley appliance with a bite plane was suggested for the upper arch. It is advisable that the patient uses them for a long period of time.

Figure 10 shows panoramic and lateral X-ray at the end of the treatment, just before debonding where the normalization of the incisal inclination and the occlusal plane are evident.

We have to remember that the normalization of the position and inclination of the upper and lower incisors are critical when we have to treat these patients. To obtain a normalized anterior and posterior disocclusion, it is fundamental to maintain a healthy and long-lasting stomatognathic system.

Of course, the type of biomechanics depends on the patient’s problem. It is completely different when you have to intrude the upper incisors versus the lower ones or extrude the molars in your treatment plan.

Figures 12a–12e show a 42-year-old patient who was in search for a second opinion regarding the correction of his anterior deepbite.

After eight months of treatment, the results continued to be stable, not only from the occlusal point of view but at the gingival tissues too. At night the patient continues to use the bite plane.

Figs. 11a–11e: Three years later, the results continue to be stable, not only from the occlusal point of view but at the gingival tissues.

Figs. 12a–12f: This is a 42-year-old patient who was in search for a second opinion regarding the correction of his anterior deepbite.

The lateral X-ray (Fig. 13) showed extrusions of the upper and lower incisors.

The treatment plan included not only the normalization of the overjet and overbite, but also the closing of the space of the upper right first molar that was extracted two months before the orthodontic treatment began.

0.022-inch esthetic pre-programmed brackets with an esthetic 0.018-inch SS wire with a closing loop.

The overbite at the anterior region was nearly 95 percent. No gingival problems were present, and the oral hygiene was fair.

The lateral X-ray (Fig. 15) showed extrusions of the upper and lower incisors.

The treatment plan included not only the normalization of the overjet and overbite, but also the closing of the space of the upper right first molar that was extracted two months before the orthodontic treatment began.

0.022-inch esthetic pre-programmed brackets with an esthetic 0.018-inch SS wire with a closing loop to begin the mesialization of the molar were placed to begin phase one of treatment (Figs. 14a–14e).

Ten months later, a reactangular 0.016-inch by 0.022-inch SS wire with an omega loop was placed in the upper arch while pre-programmed SS brackets were placed in the lower arch.

Some triangular elastics were used in order to maintain a Class I molar and canine on the left side while Class III elastics on the right side were recommended to complete the mesialization of the upper right second molar (Figs. 15a, 15b).

Figures 16a–16e show the results at the end of the treatment. The anterior deepbite is completely corrected. The Class I canine and molar are maintained, and on the right side the second molar occupies the space where the first molar originally was. The third molar is in the position of the second molar. Lower anterior crowding is totally corrected, and a fixed retention wire is recommended for a long period of time.

Figure 17 shows the panoramic X-ray at the end of the treatment just before debonding.

Three years later (Figs. 18a–18d), the overjet and overbite continue to be stable, but a little diastema between the upper central incisors is visible. The Class I molar and canine maintain a Class I occlusion, and the upper retention wire is still in place.

Conclusion

The treatment of deepbite in adult patients requires a careful diagnosis, prognosis, treatment and retention plan. The type of biomechanics we decide to use is determined according to the labiodental relationship the patient has when he or she is speaking and smiling.

In order to achieve objectives ahead of time, the use of new types of alloys should be considered. The amount of periodontal attachment is another determining factor when the treatment objectives are planned.

The maintenance of the results is
directly related to the fulfillment of the retention plan. The musculature plays an important role and affects the stability of the results.

Event though the treatment of deep overbite malocclusion in patients without growth is a challenging one, excellent results can be achieved when an individualized treatment plan is considered.

References are available from the publisher.

Figs. 16a–16e: Results at the end of the treatment.

Fig. 17: Panoramic X-ray at the end of the treatment just before debonding.

Figs. 18a–18d: Control three-years later.