



Case brief:

Class II Surgical Patient

3M™ SmartClip™ SL3 Self-Ligating Brackets

Dr. Daniel Díez Rodrigálvarez, Madrid, Spain

Age:19 / Sex: Female

Chief concerns: Complains about her malocclusion. "I have my upper teeth protruding and my lower ones dig into the palate; my jaw clicks."

Diagnosis and initial treatment plan:

Facial analysis:

- Favorable labio-dental relationship observed during the smile
- Increased interlabial gap
- Concave profile with an elevated mentolabial angle
- Normal three-quarter views on both sides

Dental analysis:

- Bilateral Class II dental relationship
- Overjet: 14 mm
- Overbite: 100%
- Upper arch shape: Triangular
- Lower arch shape: Parabolic
- Lower crowding: 7 mm



Profile at rest (initial)



Face at rest (initial)



Face smiling (initial)



Retracted buccal (initial)



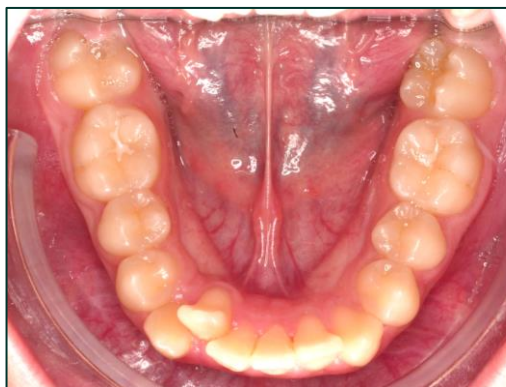
Retracted anterior biting (initial)



Retracted buccal (initial)



Occlusal – maxillary (initial)



Occlusal – mandibular (initial)

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Centric and TMJ Health (Temporomandibular Joint):

TMJ findings:

- Bilateral condylar remodeling
- Alteration of the cortical bone of the left TMJ
- Panoramic X-ray:
- Panoramic image without significant findings
- Presence of impacted third molars

Transversal analysis:

- Skeletonally compressed mandible
- Compensated by the straightening of lower and upper molars

Vertical and Anteroposterior Analysis:

Cephalometric analysis:

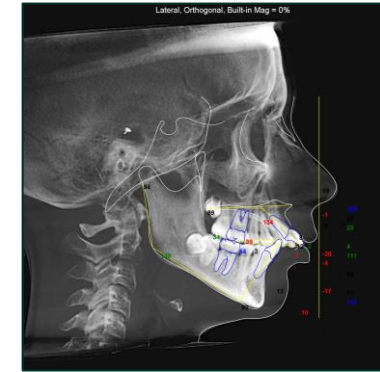
- Skeletal Class II with retrognathism
- Upper incisors are very proclined

Airway assessment:

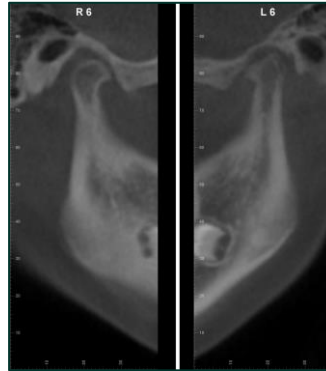
- The airway appears insufficient, particularly in the lower oropharyngeal area
- Related to mandibular retrusion



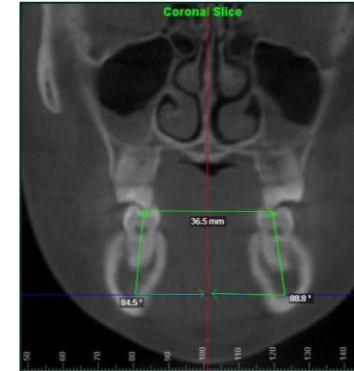
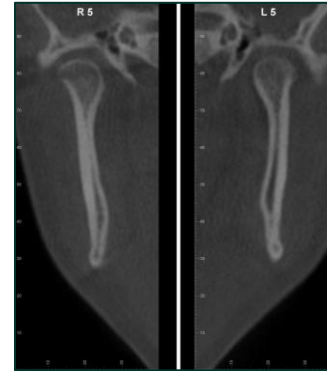
Panoramic radiograph (initial)



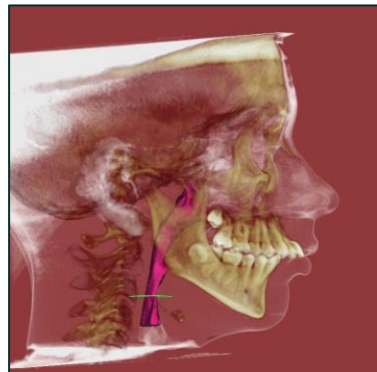
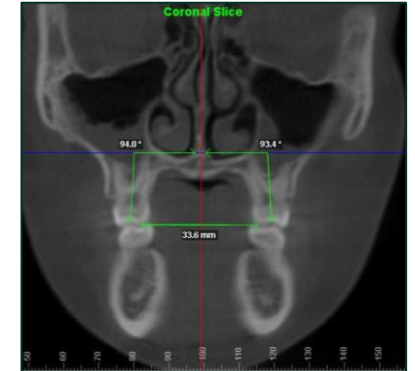
Cephalometric radiograph (initial)



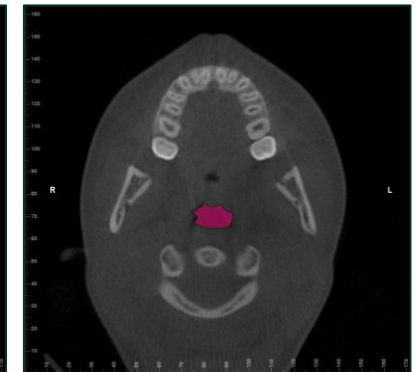
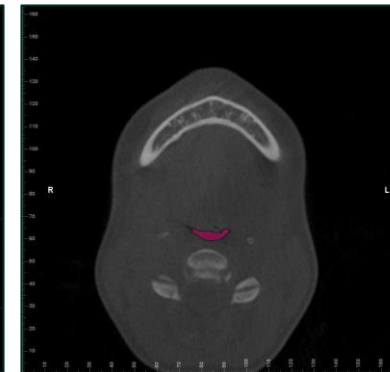
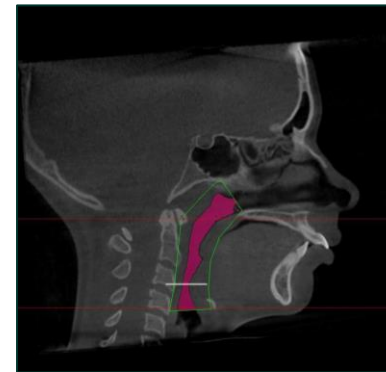
TMJ (temporomandibular joint)



Transversal analysis



Airway



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Archwire sequence:

Upper:

0.014 NiTi

0.016x0.022 NiTi

0.019x0.025 NiTi

0.019x0.025 SS

Lower:

0.014 NiTi

0.016 NiTi

0.016x0.022 SS

0.019x0.025 SS

Treatment plan:

Extractions:

- Extraction of premolars to retrocline the upper and lower incisors
- Aim to regain proper inclinations of the incisors and resolve crowding

Surgical intervention:

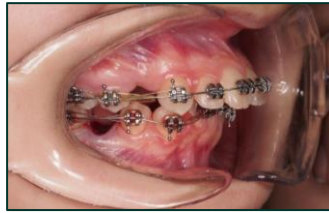
- Bimaxillary orthognathic surgery with anterior rotation of the occlusal plane

Anteroposterior Surgical Tooth Objective (STO):

- Correction of the angulation of the incisors
- Maxillary advancement of 4 mm
- Mandibular advancement of 12 mm

Pre-surgical case preparation:

Retracted buccal – left



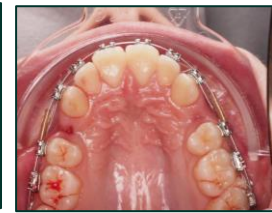
Retracted anterior biting



Retracted buccal – right



Occlusal – maxillary



Occlusal – mandibular



Extraction of the first upper and lower premolars performed on the same day as the placement of the lower bracket system (42 not bonded). Passive retainers placed on upper: 13 and 23/ lower: 34 and 44.



In the archwire sequence, the upper arch is advanced by one step relative to the lower arch.



Open coil spring between 41 and 43





Retracted buccal – left



Retracted anterior biting



Retracted buccal – right



Occlusal – maxillary



Occlusal – mandibular

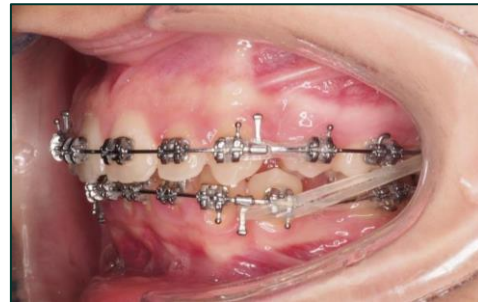
- The arch sequence, due to the length of the bracket slot, flattens the curve of spee and resolves the overbite without any vertical auxiliaries
- Ensured the placement of hooks at a distance from the canines for closure traction
- Maintained the slot of the brackets and the arch as parallel as possible, optimizing sliding and reducing friction
- Allowed the use of very light space closure forces



Retracted buccal – left



Retracted anterior biting



Retracted buccal – right



- Space closure with maximum anchorage in the lower arch and minimal anchorage in the upper arch
- Class III elastics to assist in the decompensation of the incisors prior to surgery

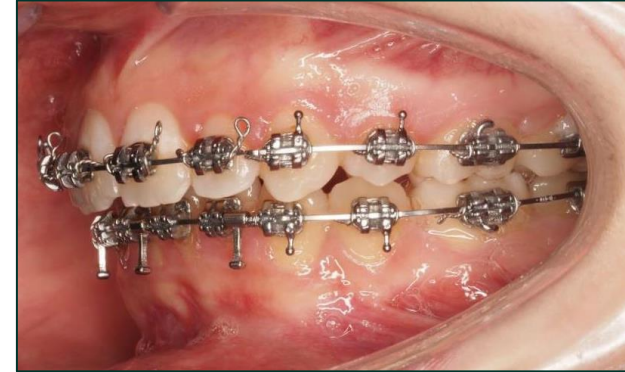
- Activation of the curve in the closing arches to avoid the loss of incisor torque in the upper arch and to prevent the increase of the curve of Spee in the lower arch.



Retracted buccal – left



Retracted anterior biting



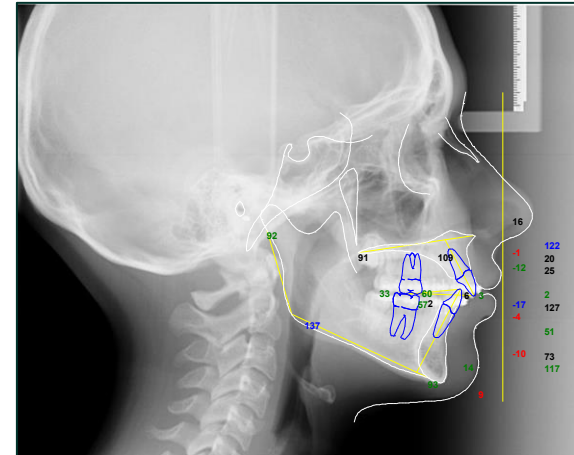
Retracted buccal – right



Occlusal – maxillary



Occlusal – mandibular



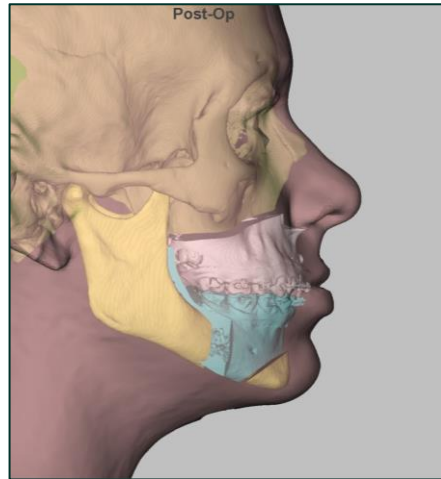
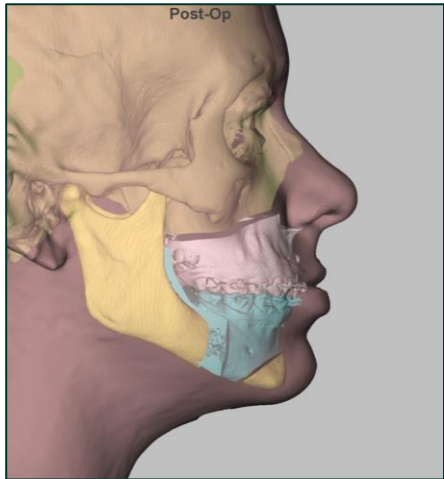
Lateral cephalometric radiograph

- Closed the extraction spaces and ensured both arches were flat and parallel to each other
- Placed surgical stainless steel (SS) arches with hooks in the anterior-inferior sector and Kobayashi ligatures in the upper arch
- Performed a lateral cephalometric radiograph to check the correct pre-surgical inclination of the incisors

Pre-surgical facial analysis:



Virtual surgery:



Immediate post-surgical:



The patient is without a final splint and has fragmented arches.

Progress:

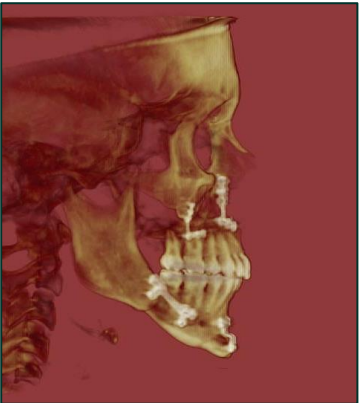


It is recommended to remove only the upper arch and prescribe a thermoplastic clear retainer for nighttime use.

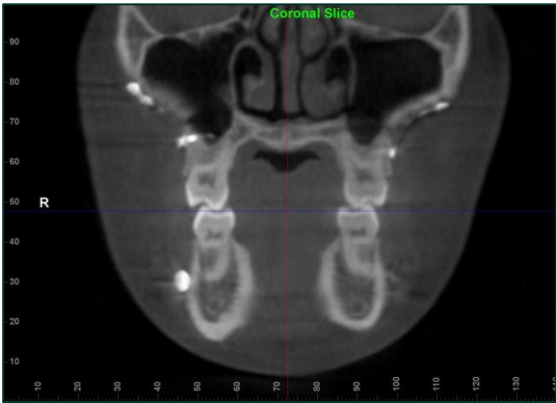
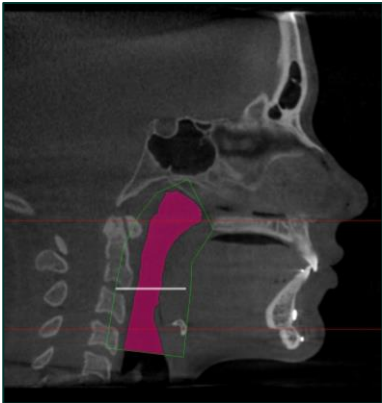


Six weeks later, the lower arch was removed and a fixed retainer was bonded on 33 and 43.

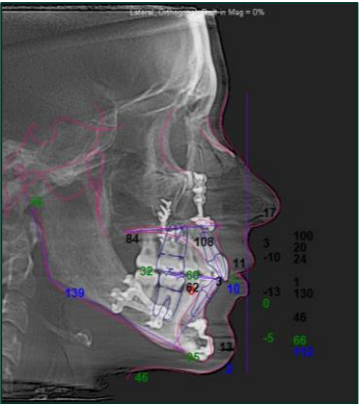
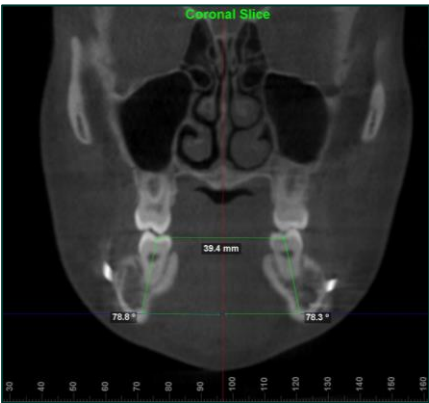
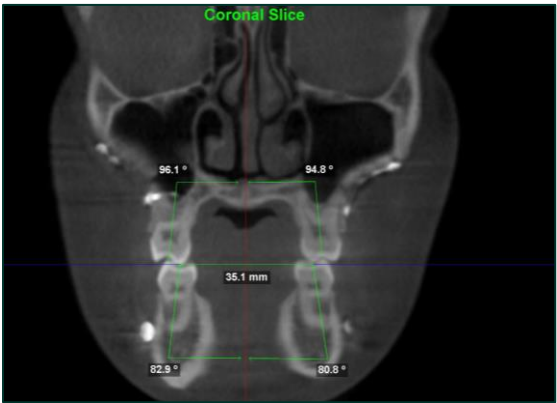
Final records:



Airway (final)



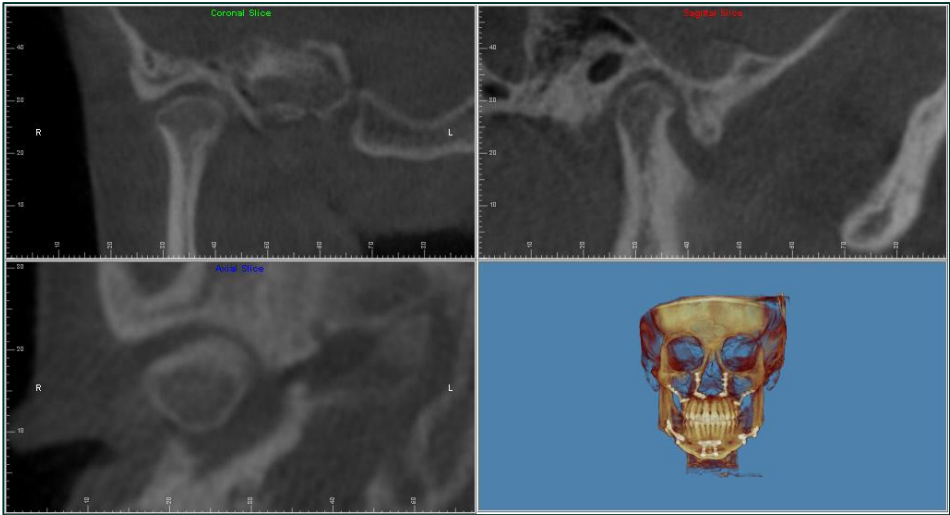
Transversal Analysis (final)



Cephalometric radiograph (final)



TMJ (Temporomandibular Joint) (final)



Results:



Retracted buccal – left



Retracted anterior biting



Retracted buccal – right

Final occlusal result with good intercuspation, correct midlines, and proper curve of Spee and Wilson.



Face at rest (final)



Profile at rest (final)



Face smiling (final)

In this type of surgical patient, the following benefits are taken advantage of: During the leveling phase, crowding is resolved without loss of anchorage, as low friction allows the arch to slide freely distally. This low friction also facilitates the closure of spaces with light forces and differential anchorage, determining at each moment whether a reciprocal space closure is desired, with anterior retrusion or posterior mesialization. The increased slot length enables perfect conformation of the arches pre-surgically, effectively controlling rotations, incisor torque, and, most importantly, the correct leveling of the curve of Spee. The robustness of the brackets, combined with the excellent adhesion of the built-in Flash Free adhesive system, eliminates the need for bands and allows the use of the first molar bracket. Throughout the development of the case, all these advantages can be verified at each step.