Adult treatment with Aevo System™ and Clear Aligners

Class II, deep bite, moderate crowding, non-surgical

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Dr. Tarek El-Bialy is a registered orthodontist and a professor at the University of Alberta. He graduated from the University of Illinois with a US certificate of specialty in Orthodontics, Master's Degree in Oral Sciences and PhD in Bioengineering. He is the author of more than 115 scientific papers and has been a speaker on orthodontics around the world.

Patient:

Age: 37 years

Chief concern: Correct bite and crowding without surgery.

Diagnosis:

- Convex profile and recessive chin projection
- Missing teeth: three wisdom teeth (upper right still there)
- Left molar and canine is Class II (upper teeth ahead of lower teeth)
- Right molar and canine are Class II (upper teeth ahead of lower teeth)
- Moderate crowding in upper and lower teeth
- Overbite: 80% (vertical overlap of anterior teeth)
- Overjet: 5mm (horizontal distance between upper and lower teeth)
- Lower and upper jaw are constricted, and midline is shifted 1mm left

Initial Records:
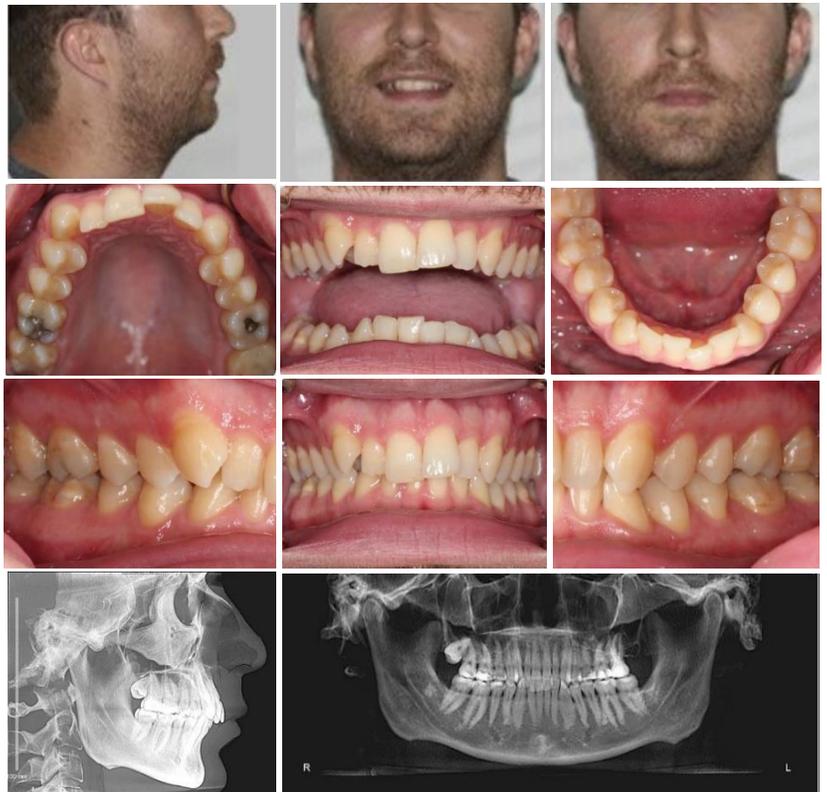
Treatment Plan:

Non-surgical aligner treatment.

- Initial upper molars de-rotation mesio-buccally, slight distalization and intrusion to avoid interference with lower molars that are extruded relative to excessive lower Curve of Spee.
- Upper molar intrusion would allow forward mandibular autorotation to also allow improve facial profile as well as help improve class II buccal occlusion.
- Lower arch expansion also planned to allow spaces to intrude lower incisors allowing forward lower jaw projection.

- Upper incisors palatal root torque to avoid tipping lingually with class II elastics. Class II elastics (3/16 -4.5 ounces) were recommended for the patient to use full time to help Class II correction by dentoalveolar changes.
- IPR was planned in the lower anterior segment to help correcting lower incisor crowding without proclination.
- Aevo System was recommended to the patient to utilize the low intensity pulsed ultrasound (LIPUS) to enhance tooth movement and minimize possible orthodontically induced tooth root resorption that would be expected in moving teeth beyond skeletal anatomical limits.

Clincheck set up and staging:

Treatment results:

- 17 months from initial records to retention, 87 + 40 + 14 upper and lower aligners.
- Estimated treatment time was 30 months, without using the Aevo System.
- Actual active treatment time was 15 months with the Aevo System™ and Invisalign®.
- Patient changed aligners at 3–5 day intervals with the addition of the Aevo System™.

Cephalomteric superimopsition:

Before (black tracing) and after (red tracing)
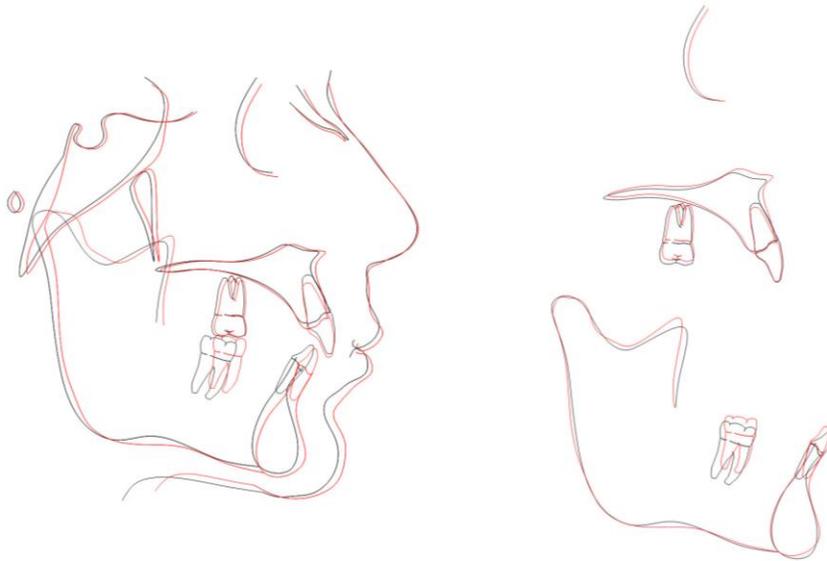
Clinical discussion:

Utilization of LIPUS by using the Aevo System™ allowed the planned orthodontic tooth movement by force application using Invisalign clear aligners to be predictable and the clinical outcome mostly matched the clincheck/digital tooth movement. The short treatment time to treat such an adult case with skeletal class II, shows the promise of using LIPUS in similar cases to obtain acceptable non-surgical, non-extraction results with acceptable patient facial profile.

This case shows that utilization of LIPUS technology can enhance tooth movement in adults beyond traditional surgical correction for similar patients. Patient compliance was good, and teeth were tracked very well.