

Clear Fixed Appliance vs. Aligner Treatment for Arch Development

Clinician: Dr. Stuart Frost, Phoenix, AZ
Patient: A.M.

Pretreatment Diagnosis

Class I (end-to-end molar on right), female patient, 38 years old, presented inquiring about clear aligner treatment. She had had orthodontic treatment by another clinician years before. I had treated both of her children with the Damon® System and she had been pleased with the results. Given that her chief concerns were the crowding in her lower arch and the widening of her smile, I was able to convince her that passive self-ligation would offer her the results she wanted and could satisfy her need for an esthetic option with Damon Clear,™ which was then in prototype form. She had no jaw popping or clicking.

Facial/Soft Tissue/Macroesthetics

Mildly convex profile with a mildly convex nasolabial angle. Slight lip strain when lips were at rest with lower midline shifted to the right.

Smile/Miniesthetics

Excessive gingival display in the maxilla, narrow arches with 3 to 4 mm of crowding in the lower arch and 1 to 2 mm of crowding in the upper arch. Consonant smile arc.

Teeth/Microesthetics

Esthetically-shaped teeth in both arches and excellent hygiene. Inconsistent gingival architecture in the lower anteriors and upper R3.



Initial

Appliances Used

Damon Clear Prototype

Damon Q™

Treatment Objectives and Plan

Treat nonextraction, eliminating the crowding by widening the arches, using the Damon Clear **prototype** brackets U3-3 and Damon Q elsewhere. Employ variable torque to foster the proper inclinations in the anterior teeth and Dr. Tom Pitts's bracket positioning to maintain the smile arc.

Treatment Sequence

Bonding

U/L: Direct-bonded 7-7, engaging .014 round Damon Optimal Force Copper Ni-Ti^{®1} archwires.

U: Placed a stop between U1s.

1 Month

1st Visit

U: Transitioned to a .014 x .025 CuNi-Ti archwire. Ligature-tied U2-2. Added a stop distal to UR1.

L: Transitioned to a .018 round CuNi-Ti archwire.

U/L: Started Quail, 3/16", 2 oz., Shorty CL II elastics (bilaterally L6 to U4, full-time), maintaining them throughout treatment.

Damon Clear/DQ Variable Torques Employed

- U1s:** Standard torque (+15°)
- U2s:** Low torque (-5°)
- U3s:** Standard torque (+7°)
- L2s:** Low torque (-11°)
- LL3:** Super torque (+13°)
- LR3:** Standard torque (+7°)



1 Month

¹All Copper Ni-Ti wire used is Damon Optimal Force Copper Ni-Ti.

1.5 Months

2nd Visit

U: Transitioned to a .018 x .025 CuNi-Ti archwire. Maintained ligature ties U2-2 and moved the stops between U1s and between UL1-2. Positioning of the stops is at the assistant's discretion.

L: Transitioned to a .014 x .025 CuNi-Ti archwire. Ligature-tied L3-3, maintaining it throughout treatment.

U/L: Maintained Shorty CL II elastics.



1.5 Months

3 Months

3rd Visit

U: Repositioned the UR3 and dropped the wire size to a .014 x .025 CuNi-Ti archwire. Maintained ligature ties U2-2 and moved stops mesial and distal to UR1.

L: Maintained the .014 x .025 CuNi-Ti archwire and ligature ties L3-3.

U/L: Maintained Shorty CL II elastics.



3 Months

4.5 Months

4th Visit

U: Transitioned to a .018 x .025 CuNi-Ti archwire and maintained ligature ties U2-2. Removed all stops.

L: Maintained the .014 x .025 CuNi-Ti archwire and ligature ties L3-3.

U/L: Maintained Shorty CL II elastics.



4.5 Months

5.5 Months

5th Visit

U: Maintained the .018 x .025 CuNi-Ti archwire. Ligature-tied U3-3.

L: Maintained the .014 x .025 CuNi-Ti archwire and ligature ties L3-3.

U/L: Took interim panograph and repositioned UR4, LR1 and LR3. The repositionings were minor so did not have to reduce the wire dimensions. Maintained Shorty CL II elastics.



5.5 Months

6.5 Months

6th Visit

U: Transitioned to a .019 x .025 TMA archwire, adding 15° of buccal crown torque to the UL3, maintaining ligature ties U3-3.

L: Transitioned to a .017 x .025 TMA archwire and put a step-up bend in the LR4. Maintained ligature ties L3-3.

U/L: Maintained Shorty CL II elastics, but transitioned to nighttime only.

7.25 Months

7th Visit

U: Maintained the .019 x .025 TMA archwire, putting a step-down bend UL1. Maintained ligature ties U3-3.

L: Maintained the .017 x .025 TMA archwire and ligature ties L3-3.

U/L: Maintained Shorty CL II elastics.



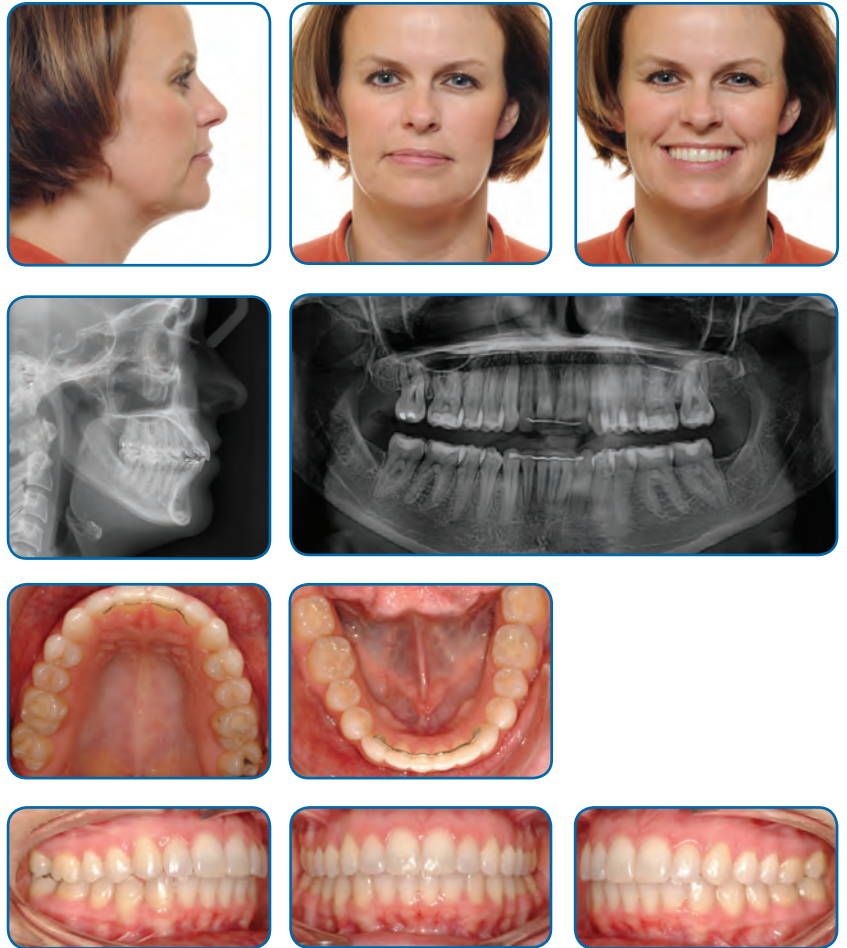
7.25 Months

7.75 Months

Final Visit, 35 weeks

7 Treatment Appointments, 2 Emergency Visits

U/L: Removed all appliances. Shaped and polished the teeth. Took impressions for 1 mm Essix-formed clear overlay U/L retainers. Bonded permanent retainer U2-2, just on the 2s, starting at the UR2, shaping the wire tooth by tooth using .016 x .022 Bond-a-Braid™ lingual retainer wire (Reliance Orthodontic Products, Itasca, IL). Bonded lower retainer, every tooth, L3-3 using an .026 stainless steel wire, forming looping bends on each end. The lower fixed retainer is to be bonded for life. If the upper fixed retainer comes loose after 18 months, we rebond it if the patient originally had 3-4 mm or more of spacing pretreatment. Two weeks later, took final records and delivered clear retainers.



7.75 Months - Treatment Complete

Case Discussion

We achieved all treatment objectives and satisfied the patient's chief concerns. Interestingly, widening the patient's transverse arch width, especially the U2-2, had the added benefit of diminishing the excess upper gingival display. In this case and others, I began experimenting with using #4 test fishing line rather than ligature wire to consolidate teeth. It has proven to work effectively and since it is clear, it is more appealing to patients.

While the patient had originally inquired about clear aligner treatment, the fee would have been substantially more and would not have allowed us to reach her objectives. While clear aligner treatment can satisfy the objectives of certain adult cases, esthetic fixed appliance treatment allows us to achieve outstanding results.

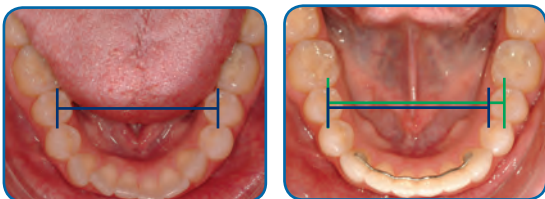
What I Would Do Differently Today

The patient had a lateral tongue thrust at the UR3, which plagued me throughout treatment. Were I to treat the case today, I would place lingual tongue reminders in the LR3 that would likely have resulted in a more satisfactory Class I right cuspid relationship.



Initial

Final



Arch Development

Wire Sequence Chart

Clinician: Dr. Stuart Frost, Phoenix, AZ Patient: A.M.

Maxillary Hardware

Mandibular Hardware

Herbst/Elastics

