



CLINICAL EXPERIENCE WITH THE USE OF PULSATILE FORCES TO ACCELERATE TREATMENT

Orton-Gibbs S, Kim NY. J Clin Orthod. 2015 Sep;49(9):557-73.

PURPOSE

- To report the first extensive single-center experience with a new pulsatile force (PF) delivery device: AcceleDent®, a noninvasive accessory designed to accelerate orthodontic tooth movement.

METHODS

- 117 patients (mean age 31 yrs, 64% female) opted to use AcceleDent as an adjunct to their treatment between November 2009 and May 2014.
- The following factors were recorded for each patient:
 - Appliance type
 - Acceptance rates for all patients offered AcceleDent
 - Preferred place of AcceleDent use
 - Reduction in treatment time
- The expected treatment time was estimated by the clinician, based on more than 25 years of clinical experience, and before knowing whether or not the patient opted to use AcceleDent.
- The accuracy of predicted treatment time in fixed-appliance patients without AcceleDent was verified by comparing actual against predicted treatment time in a consecutively treated control group matched to the AcceleDent group of patients, which was also consecutively treated.

RESULTS

- Predicted treatment times were estimated in the first 14 consecutively treated fixed-appliance cases with AcceleDent and 14 cases without AcceleDent.
 - Predicted treatment times were between 18 and 24 months with no significant difference in predicted treatment time between the AcceleDent and control patients.
 - In the control group, the predicted treatment time was accurate to within an average 1.6 months (7%).
 - After adjusting for prediction error, the AcceleDent group finished 33.5% faster than predicted, saving an average 6.23 months of treatment time.

PREDICTED AND ACTUAL TREATMENT TIME IN FIXED-APPLIANCE PATIENTS

	No. Patients	Predicted Treatment Time	Actual Treatment Time	p
Control	14	22.29 months	20.71 months	0.24
AcceleDent	14	20.04 months	12.39 months	<0.0001

TREATMENT EFFICIENCY

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(Continued)

WIRE SEQUENCING PROTOCOL

- In fixed-appliance cases, the faster tooth movement achieved with AcceleDent® will shorten the interval between visits for leveling and alignment, as well as in the detailing phase.
- During space closure, appointments can be maintained at normal intervals but with two fewer visits as the mechanics continue to be active.

TYPICAL NON-EXTRACTION TREATMENT MODEL

Archwire Sequence	APPOINTMENT INTERVAL	
	Without AcceleDent	With AcceleDent
.013" superelastic	8 weeks	6 weeks
.018" superelastic	8 weeks	6 weeks
.018" x .025" superelastic	8 weeks	6 weeks
018" x .025" stainless steel	6 weeks	4 weeks
Detailing/settling	6 weeks x 4 visits	4 weeks x 4 visits
Total (including debonding)	54 weeks (9 visits)	38 weeks (9 visits)

TYPICAL MID-ARCH EXTRACTION TREATMENT MODEL

Archwire Sequence	APPOINTMENT INTERVAL	
	Without AcceleDent	With AcceleDent
.013" superelastic	8 weeks	6 weeks
.018" superelastic	8 weeks	6 weeks
.018" x .025" superelastic	8 weeks	6 weeks
018" x .025" stainless steel with space closure	8 weeks x 6 visits	8 weeks x 4 visits
Detailing/settling	6 weeks x 2 visits	4 weeks x 2 visits
Total (including debonding)	84 weeks (12 visits)	58 weeks (10 visits)

AUTHOR CONCLUSION

This article demonstrates that the successful incorporation of AcceleDent into an orthodontic practice can significantly reduce treatment time, making it an attractive adjunct for both patients and clinicians.

✓ KEY POINT

This real-world clinical evaluation demonstrates that AcceleDent accelerates orthodontic treatment in patients with fixed appliances.

acceleddent.com

OrthoAccel Technologies, Inc.
1-866-866-4919 | sales@orthoaccel.com

