Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 21s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Application Of Alexander Principle 'Driftodontics' Mechanics To 1st Premolar Extraction Cases Compared To 1st Premolar Extraction Cases Treated with Conventional MBT System- An Assessment

Dr. Neelam Dhakar[1], Dr. Purva Joneja[2], Dr. Samvit Mishra[3], Dr. Maitreye Priyadarshini[4], Dr. Shwetneel[5], Dr. Sameen Faraz[6]

[1]PG student, Department of Orthodontics, Bhabha College of Dental Sciences, Bhabha University, Bhopal, Madhya Pradesh, India

[2]Professor and Head, Department of orthodontics, Bhabha College of Dental Sciences, Bhabha University, Bhopal, Madhya Pradesh, India

[3]Professor, Department of Orthodontics, Bhabha College of Dental Sciences, Bhabha University, Bhopal, Madhya Pradesh, India

[4]Consultant Orthodontist, Bhopal, Madhya Pradesh, India

[5]Consultant Orthodontist, Bhopal, Madhya Pradesh, India

[6]PG student, Department of Orthodontics, Bhabha College of Dental Sciences, Bhabha University, Bhopal, Madhya Pradesh, India

***Corresponding Author:**

Dr. Purva Joneja,

[2]Professor and Head, Department of Orthodontics, Bhabha College of Dental Sciences, Bhabha University, Bhopal, Madhya Pradesh, India

Email ID: drpurvajoneja@gmail.com

Cite this paper as: Dr. Neelam Dhakar, Dr. Purva Joneja, Dr. Samvit Mishra, Dr. Maitreye Priyadarshini, Dr. Shwetneel, Dr. Sameen Faraz, (2025) Application of Alexander Principle 'Driftodontics' mechanics to 1st premolar extraction cases compared to 1st premolar extraction cases treated with conventional MBT system- An assessment. *Journal of Neonatal Surgery*, 14 (21s), 1596-1602.

ABSTRACT

Background- Inspite of the tremendous improvements in technology that allow for fewer patients to require extractions, there are always patients who have significant enough crowding that ultimately necessitate the removal of premolars. Alleviating the lower anterior crowding prior to placement of the fixed appliances shortens the time in braces, and allows self correction by natural drift. One such treatment strategy which allows all this is Driftodontics. Potential benefits from a period of physiologic dental drift post-extraction, was proposed by Bourdet. "Driftodontics" is a term that can be attributed to Dr. R.G. "Wick" Alexander in his textbook. The benefits include shorter period of fixed appliance therapy because of unprompted alignment of the teeth, oral hygiene problems due to appliance therapy decreases because of less time period of appliance in the oral cavity and the dentoalveolar support also increases.

Objective-

1. To measure and compare the apical root resorption in mandibular anterior teeth in 1st premolar extraction cases selected on the basis of anterior crowding irregularity index treated with Driftodontics and MBT system cases (Angle's class 1, class 2 division 1and class 2 division 2 malocclusions).

2. To compute and compare the clinical mobility in mandibular anterior teeth in 1st premolar extraction cases treated with Driftodontics and MBT system cases.

3. To calculate and compare the total number of appointments and overall chairside time taken in both study groups.

Methodology- This is an In-vivo and In-vitro cross-sectional study with examination which includes the measurement of apical root resorption in mandibular anterior teeth on IOPAs (RVGs) by using modified Lind's method and measuring the mobility of mandibular anterior teeth based on Miller's mobility index on patients undergoing orthodontic treatment with

driftodontics from alexander principles and conventional MBT system. Data is collected by taking Pretreatment and Post-retraction records and also by recording the number of appointments as well as chair side time.

Result-

The t-value (6.903) and p-value (0.000)* indicate a statistically significant difference, showing that Driftodontics required fewer appointments than Conventional MBT.

The p-values for all teeth were below 0.05, confirming statistically significant differences in root resorption, showing reduced root resorption in driftodontics than conventional MBT.

p-values for mobility being statistically significant (ranging from 0.007 to 0.034)**. This indicates that Conventional MBT causes significantly more post-treatment tooth mobility compared to Driftodontics, reinforcing that Driftodontics provides a more stable post-treatment outcome.

Conclusion- This study suggests that Driftodontics may provide a more efficient treatment approach, reducing the burden on patients in terms of time and frequency of visits, more comfortable, reduce dentoalveolar stress, showing reduced root resorption, decreased post retraction mobility and shows more stable post retraction outcome. Hence, the study shows that Driftodontics is more advantageous and comfortable than Conventional MBT.

Keywords: *Driftodontics, Crowding, 1st Premolar Extraction, Mandibular anterior, Root resorption, Mobility*

1. INTRODUCTION

RICHARD G. WICK ALEXANDER designed an appliance to deliver excellent treatment results in an easy organized manner which he published in “The alexander discipline1” in 1986. Simplicity, to encourage cooperation, comfort, and control, was his main concern.

In the Alexander Discipline, a certain number of principles are followed that give this technique its uniqueness. The Alexander Discipline, however, is much more than a bracket system or arch form. Certain specific mechanics were first created or popularized by this technique[1,2,3]. Among them:

1. One arch is treated at a time, beginning with the maxillary arch[1,2].

2. Driftodontics: In extraction cases, the maxillary arch is treated while allowing the crowded mandibular arch to “drift” before placing brackets[1,2].

Are two main points to focus

The Alexander Discipline has benefited from these growth dynamics while remaining true to its three goals: high quality result, ease and convenience for the patient, and minimized chair time1.

Physiologic drift is defined as the natural migration of teeth, with no applied force, into space created by extraction, congenital absence, decay, proximal grinding, or orthodontic tooth movement[4].

Traditionally, the extraction of teeth has been immediately followed by appliance therapy. This practice, which is still the most common approach, was proposed to prevent adverse and unwanted tooth movement, especially of those teeth adjacent to the extraction sites1.

However, initiating therapy immediately following extraction may not be necessary[2,3].

There are, after all, potential benefits from a period of physiological dental drift post extraction, as first proposed by Bourdet5. The benefits include better occlusal relationships, increased dentoalveolar support, and a shorter period of full appliance therapy owing to spontaneous realignment of dentition[6-9].

According to theories put forth by WEINSTEIN and PROFITT, the relative stability of a tooth in the arch is maintained by equilibrium by intrinsic and extrinsic forces.

When the teeth are missing or a tooth is extracted, the remaining teeth in the arch will spontaneously move to establish a new equilibrium. Extraction, caries, proximal reduction, or congenital absence can induce a spontaneous movement of remaining teeth to establish a new equilibrium. Extraction, caries, proximal reduction or congenital absence can induce a spontaneous movement of the remaining teeth to establish a new equilibrium. Bourdet termed this adjustment as “physiological drift”. When permanent teeth are extracted without any appliance therapy and the remaining teeth physiologically drift into the spaces, then it is defined as driftodontics. It is observed more frequently in the lower arch compared to the upper arch[11-12].

2. MATERIAL AND METHODS

Participants

- This is a comparative study between 2 different groups i.e., experimental group and control group.
- The experimental group includes the patients undergo treatment by Driftodontics based upon the philosophy of Alexander Discipline and control group includes the patient undergo by conventional MBT treatment.

Participants Selection

- A sample size of total 12 will be selected.
- Patients under age group of 13 to 30 years.
- Patients with molar relation Angle's class 1, Angle's class 2 division 1 and Angle's class 2 division 2 malocclusion with mandibular anterior crowding undergoing all 1st premolar extraction were selected.
- Patients with mild, moderate and severe Little's irregularity index are compared.
- Patient with no prior mobility in mandibular anterior teeth.
- 2.3 Data collection and analysis-
- The data is collected in form of Pre-treatment and post-retraction IOPAs which were taken by RVG technique and apical root resorption were calculated in form of Root Crown ratio where crown and root was marked according to the Modified Lind's method.
- Computation of clinical mobility is done by Miller's tooth mobility grading
- Number of appointments and chairside time was noted on every visit.
- Statistical analysis will be performed using Microsoft excel. Then selected elements of the database have been subjected to statistical analysis.

3. RESULTS

Table 1- Comparison of mean root resorption among both the study groups

Root resorption	Group I (Conventional MBT) (n=06)	Group II (Driftodontics) (n=06)	t-value	p-value
	Mean±SD	Mean±SD		
43	0.25±0.16	0.07±0.043	2.652	0.024*
42	0.22±0.115	0.03±0.024	3.880	0.003*
41	0.26±0.092	0.05±0.039	5.229	0.000*
31	0.22±0.122	0.06±0.038	3.023	0.013*
32	0.21±0.109	0.04±0.039	3.414	0.007*
33	0.19±0.128	0.04±0.041	2.588	0.027*

n- Number of samples, SD- Standard deviation, *- Statistically significan

Figure 1- Comparison of mean root resorption among both the study groups

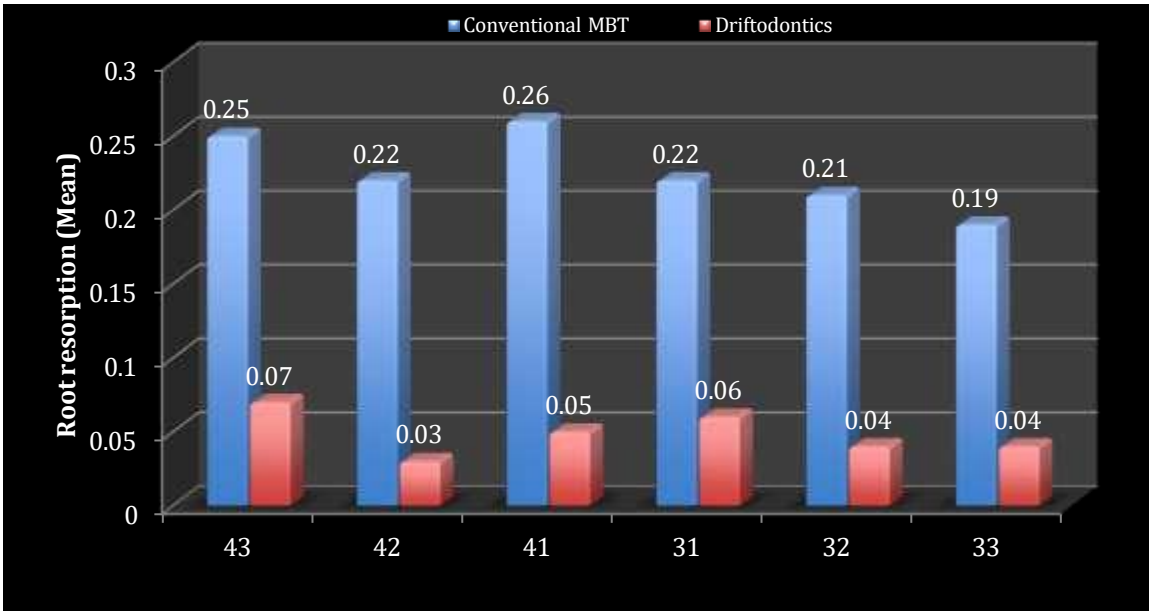

Table 1 measures root resorption in six different teeth (43, 42, 41, 31, 32, 33).Across all teeth, Table 1 compares root resorption between the two study groups, showing significantly higher values in **Group I (Conventional MBT)** compared to **Group II (Driftodontics)** across all examined teeth. The resorption levels in Group I ranged from **0.19 mm to 0.26 mm**, whereas in Group II, they were consistently lower, ranging from **0.03 mm to 0.07 mm**. The **p-values for all teeth were below 0.05**, confirming statistically significant differences. These findings suggest that **Driftodontics exerts gentler forces on the roots**, reducing the likelihood of excessive resorption. The lower resorption levels in Driftodontics may be attributed to **lower friction, and reduced stress on the periodontal ligament**, making it a **safer option for long-term root preservation** compared to Conventional MBT (Figure 1).

Table 2- Comparison of Clinical mobility using Millers tooth mobility grading among Conventional MBT and Driftodontics group after retraction.

Mobility(After retraction)	Mean±SD							p-value
	43	42	41	31	32	33	Total	
Conventional MBT	1.17±0.40	1.50±0.54	1.67±0.51	1.67±0.51	1.50±0.83	0.83±0.40	1.39 ± 0.5	0.0001*
Driftodontics group	0.33±0.51	0.67±0.51	0.50±0.83	0.67±0.05	0.50±0.54	0.17±0.40	0.47 ± 0.5	
t-value	3.101	2.712	2.907	3.354	2.449	2.828		
p-value	0.011*	0.022*	0.016*	0.007*	0.034*	0.018*		

SD- Standard deviation, *- Statistically significant

Figure 2- Comparison of Clinical mobility using Millers tooth mobility grading among Conventional MBT and Driftodontics group after retraction

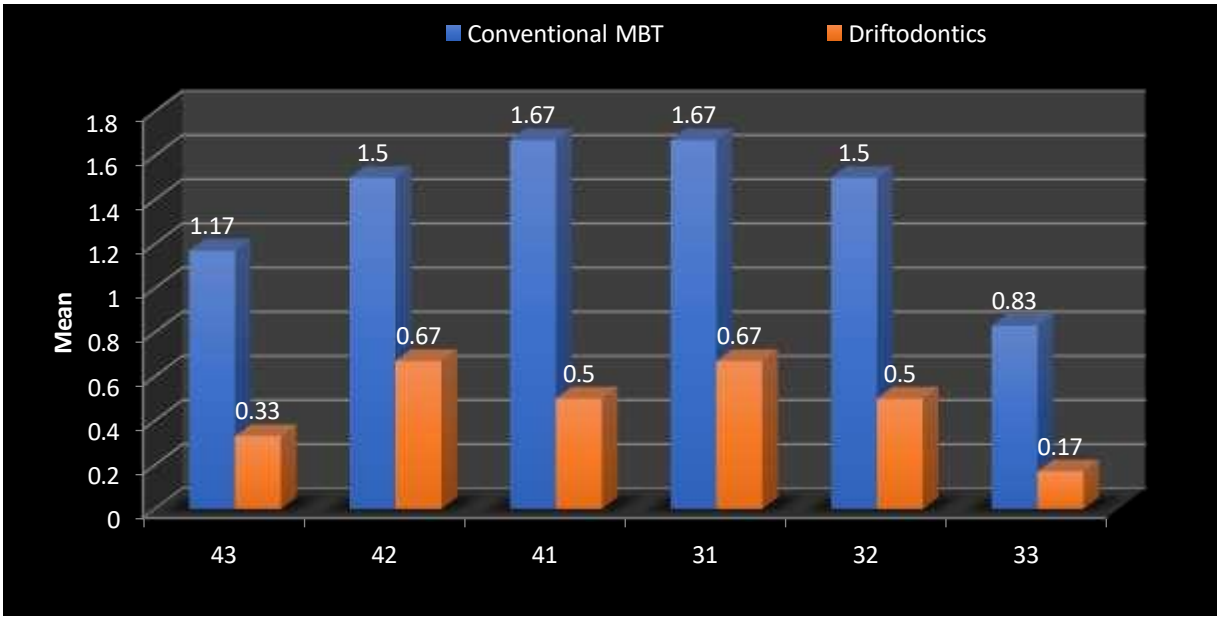

Table 2 directly compares mobility after retraction between the two groups. Tooth mobility was significantly higher in Group I than in Group II for all teeth, with the total mean mobility being 1.39 ± 0.5 for Group I and 0.47 ± 0.5 for Group II. The t-values ranged from 2.449 to 3.354, with *all p-values being statistically significant (ranging from 0.007 to 0.034*)**. This indicates that Conventional MBT causes significantly more post-retraction tooth mobility compared to Driftodontics, reinforcing that Driftodontics provides a more stable post-retraction outcome (Figure 2).

Table 3- Comparison of mean number of appointment required for the treatment in both the groups

Mean number of appointment	Group I (Conventional MBT) (n=06)	Group II (Driftodontics) (n=06)	t-value	p-value
	Mean±SD	Mean±SD		
	17.83±0.75	14.83±0.75		
Minimum	17	14	6.903	0.000*
Maximum	19	16		

n- Number of samples, SD- Standard deviation, *- Statistically significant

Figure 3- Comparison of mean number of appointment required for the treatment in both the groups

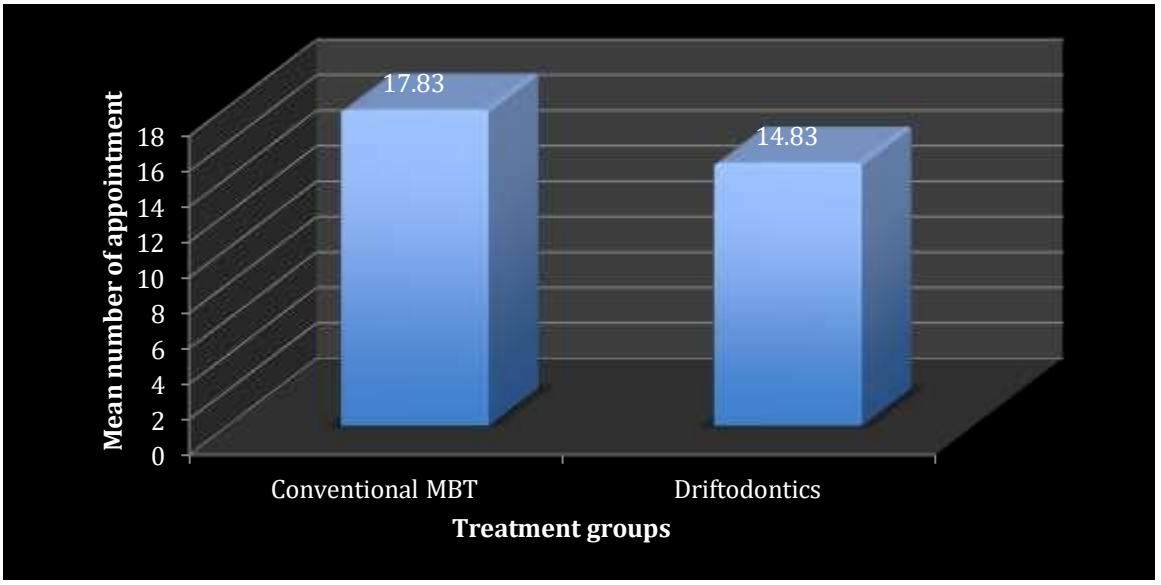

Table 3 evaluates the efficiency of the two treatment approaches based on the number of visits required. The mean number of appointments in Group I (Conventional MBT) was 17.83±0.75, while in Group II (Driftodontics), it was significantly lower at 14.83±0.75.The *t-value (6.903) and p-value (0.000)** indicate a statistically significant difference, showing that Driftodontics required fewer appointments than Conventional MBT.

The mean chair-side time in Group I was 10.18±1.454 minutes, whereas in Group II, it was 8.67±1.474 minutes. The t-value (1.793) and p-value (0.103) indicate that the difference was not statistically significant. However, a slight reduction in chair-side time may still be beneficial for clinical efficiency.

4. DISCUSSION OF RESULTS

The goal of the current study is to inculcate and compare the Driftodontics based on Alexander Principle and Conventional MBT system in first premolar extraction cases with mandibular anterior crowding. In order to look up to the benefits of physiological drift include better treatment with less tissue damage, minimal root resorption, increased dentoalveolar support, and a shorter period , less chairside time , better oral hygiene of full driftodontics therapy.

This is an in-vivo and in-vitro cross-sectional study conducted on patients undergoing orthodontic treatment. Examination includes the measurement of mandibular anterior teeth crowding by Little's irregularity index, measurement of root resorption in mandibular anterior teeth by modified Lind's method by comparing pre-treatment and post-retraction IOPAs, Clinical examination of mobility classify on the basis of Miller's mobility index, and computation of number of appointments as well as total chairside time required in treatment from start till retraction of patients undergo orthodontic treatment done by "driftodontics" from alexander principle and conventional MBT prescription.

Here the study suggest that Driftodontics exerts gentler forces on the roots, reducing the likelihood of excessive resorption. The lower resorption levels in Driftodontics may be attributed to lower friction, and reduced stress on the periodontal ligament, making it a safer option for long-term root preservation compared to Conventional MBT.

This study also indicates that Conventional MBT causes significantly more post-retraction tooth mobility compared to Driftodontics, reinforcing that Driftodontics provides a more stable post-treatment outcome.

Driftodontics may provide a more efficient treatment approach, reducing the burden on patients in terms of time and frequency of visits, more comfortable, reduce dentoalveolar stress and shows more stable treatment result.

Hence, this study shows that Driftodontics is more advantageous and comfortable than Conventional MBT.

5. CONCLUSION

Traditionally, the extraction of teeth has been immediately followed by appliance therapy. This practice, which is still the most common approach, was proposed to prevent adverse and unwanted tooth movement, especially of those teeth adjacent to the extraction sites.

However, initiating therapy immediately following extraction may not be necessary.

There are potential benefits from a period of physiological dental drift post extraction of four 1st premolar. The benefits include better cooperation from patient, spontaneous correction of incisor crowding, increased dentoalveolar support, and a shorter period of full appliance therapy owing to spontaneous realignment of dentition. Driftodontics exerts gentler forces on the roots, reducing the likelihood of excessive resorption and provide a more stable post-retraction results . The lower resorption levels in Driftodontics may be attributed to lower friction, and reduced stress on the periodontal ligament, making it a safer option for long-term root preservation compared to Conventional MBT. Driftodontics requires lesser number of appointments and causes significantly lesser post-retraction tooth mobility.

REFERENCES

[1] Tweed C. Clinical Orthodontics. St.Louis: C. V. Mosby Co, 1966.

[2] AlexanderRG. The Alexander Discipline. Glendora, CA: Ormco Corporation, 1986.

[3] Creekmore, TD. Teeth want to be straight. J Clin Orthod 1982;82:745-764.

[4] Bourdet M. Researches et Observations Sur toutesles parties de L'art du Dentiste, Paris, 1957.

[5] Cookson A. Space closure following loss of lower first premolars. Dent Prac 1971;21:411-16.

[6] Dale JG. Chapter 5 In:Graber Tj, Swain BF, editors. Orthodontics: current principles and techniques, St. Louis: C.V. Mosby Co, 1985.

[7] Wager LE. Preorthodontic guidance and the corrective mixed-dentiton concept. Am J- Orthod 1976;69:1-12.

[8] StephensCD. The rate of spontaneous closure at the site of extracted mandibular first premolars. Brit J Orthod 1983;10-93-97.

[9] Campbell-WilsonM. Preliminary investigation into the movement of the lower labial segment following loss of the first premolars. Brit J Orthod 1975;2:2-28.

[10] Chun YS. Physiologic drift of the mandibular dentition following the extraction of four first premolars. The korean journal of orthodontics. 1996;26(1):33-41.

[11] Papandreas, S.G.; Buschang, P.H.; Alexander, R.G.; Kennedy, D.B.; and Koyama, I.: Physiologic drift of the mandibular dentition following first premolar extractions, Angle Orthod. 63:127-134, 1993.

[12] Alexander CD, Alexander JM. Facebow correction of skeletal Class II discrepancies in the Alexander Discipline. Semin Orthod. 2001; 7(2): 80–84