



Case Series

Usage of powerscope in class II patients: A case series

Rahul Paul¹, Deepti Yadav^{1*}, Prakher Saini¹, Uchit Gupta¹, Dipankar Sarkar¹, P Tarishma¹¹Dept. of Orthodontics and Dentofacial Orthopaedics, Inderprastha Dental College and Hospital, Ghaziabad, Uttar Pradesh, India.

Abstract

Patient Selection and Diagnosis: This study included five patients (mean age 16.6 years; range 15–18 years) selected from the Department of Orthodontics and Dentofacial Orthopedics. All patients presented with skeletal Class II malocclusion and a positive Visual Treatment Objective (VTO). The inclusion criteria were based on cephalometric readings, specifically an ANB angle greater than 3 degrees and a Witt's appraisal greater than 1 mm. Additionally, assessment of skeletal maturity indicated that all patients were at the CVMI 4 stage. Skeletal, dental, and soft tissue parameters were recorded to evaluate treatment changes.

Treatment Protocol: The treatment was executed in three distinct stages for all cases: Stage 1: Leveling and alignment. Stage 2: Fixed functional appliance therapy (PowerScope). Stage 3: Finishing and detailing.

Conclusion: PowerScope provides significant clinical benefits, including effective mandibular advancement with minimal side effects, reduced dependence on patient compliance, and a low risk of appliance breakage. It is particularly well-suited for noncompliant patients and can substantially improve the soft tissue profile and overall facial esthetics. PowerScope supports stable and long-lasting treatment outcomes by promoting sagittal advancement of the mandible.

Keywords: Class II malocclusion, Powerscope, Fixed functional appliance, Mandibular retrusion, Non-compliance

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1. Introduction

Patient cooperation plays a crucial role in the success of orthodontic treatment. When patients do not follow treatment guidelines properly, it can lead to extended treatment durations, damage to teeth and supporting tissues, the need to remove more teeth, and increased stress for both the patient and the orthodontic team.¹ Over the past few decades, various devices and techniques have been developed to reduce the reliance on patient compliance, especially for treating Class II malocclusion.² However, these approaches are not limited to noncompliant individuals but can also be effectively used for cooperative patients. For instance, these methods can be applied in patients nearing the end of their prepubertal growth phase, in the early stages of the permanent phase, or when the second upper molars have already emerged.³ Based on how they function and where they get their anchorage, these appliances can be grouped into two main types:

1. Intermaxillary noncompliance appliances rely on anchorage between the maxilla and mandible and work on both arches to help move the lower jaw forward.⁴
2. Intramaxillary noncompliance appliances use anchorage within the maxilla itself, or from a fixed point, and are designed to move the maxillary molars backward without involving the mandible.⁵

The management of Class II malocclusion is primarily influenced by the severity of the discrepancy and the patient's developmental stage, while also considering compliance. According to McNamara, mandibular retrusion is observed more commonly in Class II malocclusion cases than maxillary protrusion.⁶ As a result, functional appliances that promote forward growth of the mandible are commonly recommended for managing Class II malocclusion caused by mandibular retrusion. Powerscope is a modern advancement

*Corresponding author: Deepti Yadav
Email: deepti.yadav@yahoo.com

in treating Class II malocclusion and is directly derived from the Herbst Type II appliance. It was developed through a collaboration between Dr. Andy Hayes and American Orthodontics. This paper discusses a non-extraction method for managing skeletal Class II malocclusion using the Powerscope appliance.⁷

2. Appliance Design⁸

The Powerscope appliance features a telescopic push-rod design and is universally sized to fit all patients. It is preassembled with attachment nuts, allowing for fast and convenient application during chairside procedures. Also, comes with additional shrimps to allow different amounts of advancements, subject to the treatment plan.



Figure 1: Powerscope assembly appliance insertion⁸

In contrast to conventional Class II correctors, this device does not require pre-assembly, measurement, or manual adjustment of the appliance. It is designed for direct wire-to-wire installation, with anchorage points positioned mesial to the upper first molar and distal to the lower canine. This configuration produces a predominantly horizontal force vector, which may also impart a minor intrusive component on the maxillary molars.

3. Appliance Activation⁸

As illustrated in the diagram, the push rods of the appliance on both the right and left sides have a visual activation indicator in the form of a dot marking. This marker assists in assessing the appliance's activation status. When the dot is visible, it signifies that the appliance is inactive. To restore activation, crimpable shims are placed onto the appliance shaft.

4. Case Series

Five patients with skeletal Class II malocclusion who sought orthodontic treatment were selected from the Department of Orthodontics and Dentofacial Orthopedics, having a positive VTO (Visual treatment objective). The selected patients ranged in age from 15 to 18 years, with a mean age of 16.6 years. To select the class II patients for Powerscope

appliance, cephalometric readings were taken into consideration, including ANB > 3° (the angle formed between hard tissue point A, Nasion, and point B) and Wits > 1mm (the distance between the perpendicular lines drawn from hard tissue point A and Point B over the occlusion plane). All patients fall under CVMI 4 after evaluation for skeletal maturity index. Skeletal, soft, and dental tissue parameters were considered to evaluate the changes (Table 1, Table 2, Table 3).

4.1. Treatment progress

For all the cases, treatment was divided into three stages. Stage 1: Levelling and alignment, followed by stage 2: Fix functional appliance therapy, and finally stage 3: Finishing and detailing. For Stage 1 treatment, it started with 0.014" NiTi wire in maxillary and mandibular arches, followed by 0.016" NiTi, 0.017x0.025" NiTi, and 0.019x0.025" NiTi. Leveling and alignment were done to 0.019x0.025" SS within 7-8 months. After achieving leveling and alignment, stage 2, involving the placement of the Powerscope, was done over 0.019x0.025" SS in both upper and lower arches. In the lower arch, a labial root torque was given to counteract the labial Proclination effect of the fixed functional appliance, and the TPA (Transpalatal arch) was attached to the first maxillary permanent molar to avoid side effects on molars. After 3 months (T1), the evaluation parameters were recorded and compared with pre-treatment parameters.



Figure 2: Visual treatment objective



Figure 3: Pretreatment intraoral images



Figure 4: Treatment progress (0.014 NiTi ligated in upper and lower arches)



Figure 5: Treatment progress (0.019x0.025" SS ligated in upper and lower arches)



Figure 6: Powerscope insertion



Figure 7: Facial Changes after fixed functional therapy

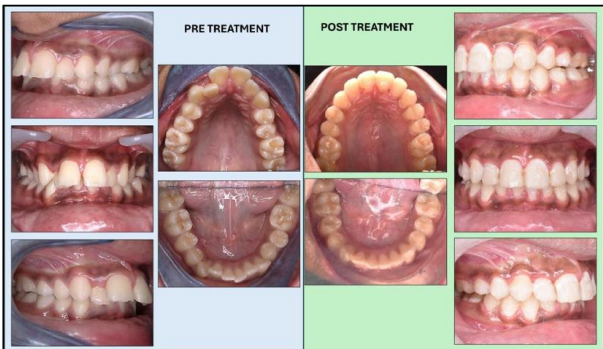


Figure 8: Pretreatment left and post treatment after removal of Powerscope and fixed appliance.

Table 1: Skeletal changes observed in the selected five patients

Patient	Age	Gender	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)
			ANB (0)	ANB (0)	Witts (mm)	Witts (mm)
P1	16	F	5	3	2	2
P2	15	F	8	3	1	1
P3	17	M	9	4	1	1
P4	18	M	5	3	1	1
P5	17	F	7	3	1	1

Table 2: Soft tissue changes observed in the selected five patients

Patient	Age	Gender	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)
			UL-S plane	UL-S plane	Z-angle	Z-angle	LL-S plane	LL-S plane	H angle	H angle
P1	16	F	6	2	24	78	28	2	18	14
P2	15	F	5	2	28	75	22	3	16	13
P3	17	M	5	2	33	76	32	1	14	11
P4	18	M	7	2	25	75	20	2	17	13
P5	17	F	5	2	28	78	22	3	17	12

Table 3: Dental changes observed in the selected five patients

Patient	Age	Gender	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)	T0 (Baseline)	T1 (3 months)
			Overjet	Overjet	Overbite	Overbite	IMPA	IMPA
P1	16	F	6	4	6	2	97	99
P2	15	F	5	3	7	3	96	98
P3	17	M	6	3	6	5	94	96
P4	18	M	5	4	4	4	100	105

5. Discussion

Over the past few decades, advancements in biological knowledge and orthodontic technology have significantly enhanced the effectiveness of conventional treatment modalities.⁹ Nevertheless, the overall success of these treatments remains influenced mainly by the degree of patient cooperation. Class II malocclusion remains a persistent challenge in orthodontic practice. Numerous treatment strategies and various appliances have been employed to address this condition, which is often attributed to underlying skeletal discrepancies.¹⁰ Functional appliances apply orthopedic forces to the mandibular condyle, promoting skeletal modifications by stimulating remodeling in both the condylar region and the glenoid fossa. This leads to repositioning of the condyle within the glenoid cavity and triggers autorotation of the mandible. These appliances are generally categorized into two main types: removable and fixed. Among the fixed functional appliances, PowerScope, recently introduced by American Orthodontics, has been added to the clinician’s armamentarium.¹¹

In this case series, orthodontic patients were treated with Powerscope. Skeletally, Powerscope treatment helped reduce the skeletal Class II component, as depicted by the reduction in ANB angle, for all patients (**Table 1**). For soft tissue changes, there was a significant decrease in convexity of the profile, accompanied by a reduction in lower lip distance from the S-line, which brought the profile into a more harmonious relationship. This also improved facial aesthetics (**Table 2**). For dental Changes, there was a reduction in overjet and overbite at the end of treatment, achieved with the use of 50 buccal root torque. This helps maintain the relationship of basal bone to lower incisor, preventing their Proclination due to the use of Powerscope. Overall correction of class II was achieved, resulting in improved facial aesthetics without compromising comfort when compared with traditional methods.

The PowerScope appliance offers several clinical advantages for managing Class II malocclusion. It is a fixed, one-piece device available in a universal size, eliminating the need for laboratory setup or custom fabrication. Its wire-to-wire installation is quick and simple, functioning independently of patient compliance. The internal nickel–titanium (NiTi) spring provides a consistent 260 g of force, ensuring continuous activation throughout treatment. The

appliance is compatible with both banded and bonded molar tubes and does not require headgear tubes or special band assemblies. Furthermore, it reduces the likelihood of debonding at the canine attachment or buccal tube. The appliance features a compact, contoured, polished structure that improves facial aesthetics, enhances patient comfort, and supports effective oral hygiene. The incorporation of a ball-and-socket joint allows for physiological lateral mandibular movements, while the telescopic assembly provides consistent stability and engagement throughout the treatment duration.

6. Conclusion

Extraction-based correction of Class II malocclusion resulting from functional mandibular retrusion is generally discouraged, as it may adversely affect the patient’s soft tissue profile. Class II correctors like the PowerScope appliance offer a more favorable treatment approach in such cases. PowerScope provides significant clinical benefits, including effective mandibular advancement with minimal side effects, reduced dependence on patient compliance, and a low risk of appliance breakage.¹² It is particularly well-suited for noncompliant patients and can substantially improve the soft tissue profile and overall facial esthetics. PowerScope supports stable and long-lasting treatment outcomes by promoting sagittal advancement of the mandible.

7. Source of Funding

None.

8. Conflict of Interest

None.

References

1. Zhong W, Zhou C, Yin Y, Feng G, Zhao Z, Pan Y, et al. Expert consensus on orthodontic treatment of patients with periodontal disease. *Int J Oral Sci.* 2025;17(1):27. <https://doi.org/10.1038/s41368-025-00356-w>
2. McSherry PF, Bradley H. Class II correction-reducing patient compliance: a review of the available techniques. *J Orthod.* 2000;27(3):219–25. <https://doi.org/10.1179/ortho.27.3.219>
3. Batista KB, Thiruvengkatachari B, Harrison JE, O’Brien KD. Orthodontic treatment for prominent upper front teeth (Class II malocclusion) in children and adolescents. *Cochrane Database Syst Rev.* 2018;2018(3):CD003452. <https://doi.org/10.1002/14651858.CD003452>.

4. Fontana M, Cozzani M, Caprioglio A. Non-compliance maxillary molar distalizing appliances: an overview of the last decade. *Prog Orthod*. 2012;13(2):173–84. <https://doi:10.1016/j.pio.2011.10.002>.
5. Kinzinger GSM, Eren M, Diedrich PR. Treatment effects of intraoral appliances with conventional anchorage designs for non-compliance maxillary molar distalization. A literature review. *Eur J Orthod*. 2008;30(6):558–71. <https://doi:10.1093/ejo/cjn047>
6. McNamara JA. Maxillary transverse deficiency. *Am J Orthod Dentofacial Orthop*. 2000;117(5):567–70. [https://doi:10.1016/s0889-5406\(00\)70202-2](https://doi:10.1016/s0889-5406(00)70202-2)
7. Keerthi VN, Kanya SD, Babu KP, Mathew A, Kumar AN. Early prevention and intervention of Class II division 1 in growing patients. *J Int Soc Prev Community Dent*. 2016;6(1):S79–83. <https://doi:10.4103/2231-0762.181191>.
8. Kalra A, Swami V, Bhosale V. Treatment effects of “PowerScope” fixed functional appliance - a clinical study. *Folia Med (Plovdiv)*. 2021;63(2):253–63. <https://doi:10.3897/folmed.63.e52892>
9. Alam MK, Abutayyem H, Kanwal B, A. L. Shayeb M. Future of Orthodontics—A Systematic Review and Meta-Analysis on the Emerging Trends in This Field. *J Clin Med*. 2023;12(2):532. <https://doi:10.3390/jcm12020532>.
10. Lone IM, Zohud O, Midlej K, Proff P, Watted N, Iraqi FA. Skeletal Class II Malocclusion: From Clinical Treatment Strategies to the Roadmap in Identifying the Genetic Bases of Development in Humans with the Support of the Collaborative Cross Mouse Population. *J Clin Med*. 2023;12(15):5148. <https://doi:10.3390/jcm12155148>
11. Arora V, Sharma R, Chowdhary S. Comparative evaluation of treatment effects between two fixed functional appliances for correction of Class II malocclusion: A single-center, randomized controlled trial. *Angle Orthod*. 2018;88(3):259–66. <https://doi:10.2319/071717-476.1>
12. Paulose J, Antony PJ, Sureshkumar B, George SM, Mathew MM, Sebastian J. Power Scope a Class II corrector – A case report. *Contemp Clin Dent*. 2016;7(2):221–5. <https://doi:10.4103/0976-237X.183044>.

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