Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 22s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Prevalence of Class 3 Malocclusion and Failed Endodontic Treatment and Treatment with Myofunctional Appliances and Retreatment File Systems, respectively

Dr. Kishor B. Bagalkot[1], Dr. Nirav Vyas[2], Dr. Neha Choudhary[3], Dr.Abinash Mohapatra[4], Dr. Chaitanya Metkar[5], Dr. Bhupendra K. Lokhande[6]

[1]Professor, Department of Orthodontics ,PMNM Dental College and Hospital ,Bagalkot. Karnataka.

[2]Senior Resident,Division of Conservative Dentistry and Endodontics, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi, India.

[3]MDS (Orthodontics and Dentofacial Orthopaedic),Owner Dantalaya Care Dental Clinic, Patna ,Bihar.

[4]Prof & Head of Department,Department of Pedodontics & Preventive Dentistry, Kalinga Institute of Dental Sciences, KIIT (Deemed to be University), Bhubaneswar, Odisha.

[5]Reader in VYWS dental college & hospital Amravati, department of conservative dentistry & Endodontics.

[6]Reader in VYWS dental college & hospital Amravati, department of conservative dentistry & Endodontics.

***Corresponding Author:**

Dr. Kishor B. Bagalkot

Cite this paper as: Dr. Kishor B. Bagalkot, Dr. Nirav Vyas, Dr. Neha Choudhary, Dr. Abinash Mohapatra, Dr. Chaitanya Metkar, Dr. Bhupendra K. Lokhande, (2025) Prevalence of Class 3 Malocclusion and Failed Endodontic Treatment and Treatment with Myofunctional Appliances and Retreatment File Systems, respectively. *Journal of Neonatal Surgery*, 14 (22s), 901-904.

ABSTRACT

Background: This study was conducted to assess the Prevalence of Class 3 Malocclusion and Failed Endodontic Treatment and Treatment with Myofunctional Appliances and Retreatment File Systems, respectively.

Material and methods: This study comprised of 50 participants who underwent oral clinical examination. The subjects had been explained about the study procedure and were asked for consent. All the subjects gave consent for the study and had been included in the trial. The prevalence of class 3 malocclusion and failure of endodontic treatment was assessed and the findings had been noted down. The treatment of the above-mentioned conditions had also been performed. Statistical analysis had been carried out using SPSS software.

Results: There were total 25 cases of class 3 malocclusion and 25 cases of endodontic failure. Hence, both the conditions had 50% prevalence each. For class 3malocclusion, myofunctional appliances had been given. Chin cup was given in 12 cases, reverse pull headgear was given in 6 cases and Frankel III appliance had been fabricated for 7 patients. Protaper Universal retreatment file system was used in 3 cases only. Whereas, Neo-endo and R-endo systems were used in 16 cases and 6 cases, respectively.

Conclusion: From the findings of this study, it can be concluded that the prevalence of class 3 malocclusion as well as endodontic failure was 50%. Various myofunctional appliances as well as retreatment file systems had been fabricated and employed for the management of class 3 malocclusion as well as endodontic failure, respectively.

Keywords: *Prevalence, Treatment, Malocclusion, Retreatment*

1. INTRODUCTION

Class III malocclusion can occur as a result of insufficient maxillary growth in both the downward and forward directions, coupled with either excessive forward growth or diminished downward growth of the mandible.[1]

Consequently, a hypodivergent growth pattern exacerbates the Class III condition due to increased upward and forward rotational growth of the mandible, whereas a vertical growth pattern may mitigate the issue through downward and backward rotation, assuming that excessive facial height does not become a concern.[2]

The nonsurgical management of Class III malocclusion presents significant challenges within our field. Nevertheless, timely diagnosis and early intervention for Class III malocclusion can be beneficial in lessening the severity of the condition during late adolescence.[3]

Studies of human inheritance have provided sufficient evidence to establish the fact that mandibular growth is mainly affected by heredity.[4,5] Familiar genetic inheritance has a strong influence on skeletal craniofacial dimensions contributing to Class III malocclusion and a significantly higher incidence of this malocclusion has been found to have a familial occurrence between members of many generations.[6]

This study was conducted to assess the Prevalence of Class 3 Malocclusion and Failed Endodontic Treatment and Treatment with Myofunctional Appliances and Retreatment File Systems, respectively.

2. MATERIAL AND METHODS

This study comprised of 50 participants who underwent oral clinical examination. The subjects had been explained about the study procedure and were asked for consent. All the subjects gave consent for the study and had been included in the trial. The prevalence of class 3 malocclusion and failure of endodontic treatment was assessed and the findings had been noted down. The treatment of the above-mentioned conditions had also been performed. Statistical analysis had been carried out using SPSS software.

3. RESULTS

Table 1: Group-wise distribution of subjects.

Group	Prevalence	Percentage
Group 1 (Class 3 malocclusion)	25	50
Group 2 (Endodontic failure)	25	50
Total	50	100

There were total 25 cases of class 3 malocclusion and 25 cases of endodontic failure. Hence, both the conditions had 50% prevalence each.

Table 2: Treatment of Class 3 malocclusion

Condition	Treatment	Number of cases
Class 3 malocclusion	Chin cup	12
	Reverse pull headgear	06
	Frankel III appliance	07

For class 3malocclusion, myofunctional appliances had been given. Chin cup was given in 12 cases, reverse pull headgear was given in 6 cases and Frankel III appliance had been fabricated for 7 patients.

Table 3: Treatment for endodontic failure

Condition	Treatment with different retreatment file systems	Number of cases
Endodontic failure	ProTaper Universal	03
	Neo-endo	16
	R-endo	06

Protaper Universal retreatment file system was used in 3 cases only. Whereas, Neo-endo and R-endo systems were used in 16 cases and 6 cases, respectively.

4. DISCUSSION

Class III malocclusion can occur as a result of insufficient maxillary growth in both the downward and forward directions, coupled with either excessive forward growth or diminished downward growth of the mandible.[7,8]

Consequently, a hypodivergent growth pattern exacerbates the Class III condition due to increased upward and forward rotational growth of the mandible, whereas a vertical growth pattern may mitigate the issue through downward and backward rotation, assuming that excessive facial height does not become a concern.[8,9,10]

This study was conducted to assess the Prevalence of Class 3 Malocclusion and Failed Endodontic Treatment and Treatment with Myofunctional Appliances and Retreatment File Systems, respectively.

In this study, there were total 25 cases of class 3 malocclusion and 25 cases of endodontic failure. Hence, both the conditions had 50% prevalence each. For class 3malocclusion, myofunctional appliances had been given. Chin cup was given in 12 cases, reverse pull headgear was given in 6 cases and Frankel III appliance had been fabricated for 7 patients. Protaper Universal retreatment file system was used in 3 cases only. Whereas, Neo-endo and R-endo systems were used in 16 cases and 6 cases, respectively.

Rao S et al[11] assessed the outcomes and factors associated with the failure of primary endodontic treatment. A total of 250 teeth from 219 patients (104 male and 146 female) were examined in the Conservative Dentistry and Endodontics department, who reported symptomatic root canal-treated teeth. Data through clinical examination and radiographic examination was recorded on a proforma designed for the study of each patient regarding endodontic failure. According to the type of tooth maximum number of teeth that were reported with failure are the molars (67.6%), followed by premolar (14.0%), incisor (12.8%), and lastly, canines (5.6%). Based on the location of affected teeth, the maximum teeth that presented with failed root canal treatment were from mandibular posteriors (51.2%), followed by maxillary posteriors (31.60%), maxillary anterior (13.2%), mandibular anterior (4.0%). Endodontic failures were mostly found in underfilled root canals and poorly sealed post-endodontic coronal restoration and strong association with peri-apical radiolucency.

Alyami D et al.[12] conducted a study to assess the prevalence of malocclusions and the necessity for orthodontic intervention among school-aged adolescents in Najran city, Kingdom of Saudi Arabia (KSA). This cross-sectional research involved a sample of 1,094 Saudi male adolescents, aged between 13 and 18 years, all of whom had no prior history of orthodontic treatment. A survey instrument specifically designed to evaluate malocclusion was utilized, with data collected following a clinical examination performed by a single, experienced, and calibrated examiner. The assessment of orthodontic treatment necessity was carried out using the Index of Orthodontic Treatment Need (IOTN). The results indicated that 61.2% of the participants exhibited Angle's Class I malocclusions, 27.5% had Class II malocclusions, and 11.4% presented with Class III malocclusions. A statistically significant difference was noted among the various malocclusion classes ($P < 0.001$). The majority of participants displayed normal overjet, with no instances of crossbite, reverse overjet, deep bite, or open bite. Among the sample, 573 individuals (52.37%) were classified as having no treatment need, while 185 (16.91%) required slight treatment, 123 (11.24%) had moderate treatment needs, and 109 (9.96%) and 104 (9.50%) were categorized as having severe and extreme treatment needs, respectively. A significant difference was also found between those with no or slight treatment needs (grades 1 and 2), moderate needs (grade 3), and those requiring definitive treatment (grades 4 and 5) ($p < 0.001$). The overall prevalence of malocclusion and the need for orthodontic treatment among the school-going adolescents in Najran city was determined to be 47.63%, with 9.63% of the sample necessitating immediate orthodontic care.

5. CONCLUSION

From the findings of this study, it can be concluded that the prevalence of class 3 malocclusion as well as endodontic failure was 50%. Various myofunctional appliances as well as retreatment file systems had been fabricated and employed for the management of class 3 malocclusion as well as endodontic failure, respectively.

REFERENCES

[1] Tweed CH. Clinical Orthodontics. St Louis: Mosby; 1966. pp. 715–726.

[2] De Clerck HJ, Proffit WR. Growth modification of the face: a current perspective with emphasis on Class III treatment. Am J Orthod Dentofacial Orthop. 2015;148(1):37–46.

[3] Ngan P, Hu AM, Fields HW. Treatment of Class III problems begins with differential diagnosis of anterior crossbites. Pediatr Dent. 1997;19(6):386–395.

[4] Litton SF, Ackermann LV, Isaacson RJ, Shapiro BL. A genetic study of class III malocclusion. Am J Orthod. 1970;58(6):565–577.

[5] Marković M. Results of a genetic study of triplets with class III malocclusion. Zahn Mund Kieferheilkd Zentralbl. 1983;71(2):184–190. [PubMed] [Google Scholar]

[6] Mossey PA. The heritability of malocclusion: part 1—genetics, principles and terminology. Br J Orthod. 1999;26(2):103–113.

[7] Torabinejad M, Anderson P, Bader J, Brown LJ, Chen LH, Goodacre CJ, et al. Outcomes of root canal treatment and restoration, implant-supported single crowns, fixed partial dentures, and extraction without replacement: a systematic review. J Prosthet Dent. 2007;98(4):285-311.

[8] Ng YL, Mann V, Rahbaran S, Gulabivala K. Outcome of primary root canal treatment: systematic review of the literature – part 2: influence of clinical factors. Int Endod J. 2008;41(1):6-31.

[9] Ashraf H, Milani AS, Shakeri Asadi S. Evaluation of the success rate of non-surgical single visit retreatment.

Iran Endod J. 2007;2(2):69-72.

[10] Tabassum S, Khan FR. Failure of endodontic treatment: the usual suspects. Eur J Dent. 2016;10(1):144-7.

[11] Rao S, Nilker V, Telikapalli M, Gala K. Incidence of Endodontic Failure Cases in the Department of Conservative Dentistry and Endodontics, DY Patil School of Dentistry, Navi Mumbai. Cureus. 2023 May 10;15(5):e38841.

[12] Alyami D, Alharbi A, Hatan Y, Asiri YM, Alharthy H, Alogaibi YA. Prevalence of malocclusion and orthodontic treatment needs among adolescents in Najran City, Saudi Arabia. J Orthod Sci. 2023 Sep 4;12:60.