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Prevalence of Class II Division 2 Malocclusion and Its Associated Factors - A Retrospective Study at NIMS Dental College and Hospital, Jaipur

Dr. Umang Malviya[1], Dr. Anurag Tiwari[2], Dr. Divyaroop Rai[3], Dr. Shantanu Sharma[4], Dr. Zahid Sana[5], Dr. Priya Varshney[6], Dr. Chitra Agarwal[7]

[1,5,7]*Post graduate, Department of Orthodontics and Dentofacial Orthopedics, Nims Dental College and Hospital, Jaipur*

[2,4]*Associate Professor, Department of Orthodontics and Dentofacial Orthopedics, Nims Dental College and Hospital, Jaipur*

[3]*Head of Department, Department of Orthodontics and Dentofacial Orthopedics., Nims Dental College and Hospital, Jaipur*

[6]*Intern,Nims Dental College and Hospital, Jaipur*

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ABSTRACT

Malocclusion is defined as the improper relationship of maxillary to mandibular teeth. Prevalence of the various types of malocclusion vary among different genders, races, ethnicities. Generally, genetics play a very important role in contributing to the same. Class II division 2 malocclusion is one of the lesser common types of malocclusion found in the population. The aim of our study is to analyse the association of class II division 2 malocclusion with gender, age groups and most commonly associated inter-arch and intra-arch malocclusions in the city of Jaipur. A retrospective analysis was done wherein patients' intraoral photographs were checked for cross reference and Chi-square tests were performed. 41 patients were observed with Class II division 2 malocclusion. A higher prevalence of Class II division 2 malocclusion among males (p value>0.05) was observed and patients of age group 21-30 years were most commonly encountered in the clinic with Class II division 2 malocclusion (p value >0.05). Scissor bite (p value>0.05) was most commonly found as an associated malocclusion trait among these patients.

Keywords: Malocclusion; Angle's Classification; Class II Malocclusion; Class II Division 2.

I. INTRODUCTION

Malocclusion is defined as improper relationship between maxillary and mandibular teeth or as deviations of teeth and jaws from normal alignment [1]. Malocclusion can be due to discrepancies of tooth and jaw size, mal-relationships between dental arches in the sagittal, transverse and vertical positions, or it may also be due to malpositioning of individual teeth. Studies have been done stating that the gonial angle can also predict the growth pattern.[2] Angle's classification is a universally accepted classification used to define the relationship of the maxillary first molar with the mandibular first molar due to its simplicity and the ease of communication between dental professionals. Orthodontic treatment is based on the principle that if prolonged pressure is applied to a tooth, tooth movement will occur as the bone around the tooth remodels[3][4][5]..

Class II malocclusion are described as a distal relationship of the mandibular first molar to the maxillary first molar. Class II malocclusion has two divisions and one subdivision The class II division 2 malocclusion, which is of current importance, is defined as the class II malocclusion with lingual inclination of the maxillary central incisors, a deep cite and minimal overjet.[6][7][8][9] The Class II malocclusions occurring unilaterally are depicted or classified as a Class II subdivision of the affected side. It is also seen in some congenital syndromes such as Treacher Collin syndrome, Mobius syndrome, Brodie syndrome, Pierre Robin syndrome,.

Class II division 2 malocclusion is usually frequently occurring more in males than females as reported by Srdharan et al., [10][11] The difficulty in studying the prevalence lies in identifying and interpreting the class II division 2 malocclusions due to different methods and techniques used in other studies dealing with different ethnicities or races.

Research on the frequency of class II malocclusions has shown that white persons are more likely than black people to experience them Anteroposterior skeletal discrepancies between the maxilla and mandible, manifested as either a protruding maxilla or a retruded mandible, have been noted to be associated with class II malocclusions. [12][13][14]These correlations are either large variations in the vertical face pattern, ranging from lower facial heights to raised, normal, or decreased

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total heights . Examining the prevalence will direct our evaluation of orthodontic treatment and aid in our understanding of the variety of characteristics and variations that occur.[15]

II. MATERIALS AND METHODS

A retrospective study was carried out in a university setting among patients visiting the dental hospital. A total of 347 records of patients who visited a private dental hospital for treatment of malocclusion were analysed and checked for class II division 2 malocclusion.

Selection of Subjects

The case sheets of patients of 18 to 40 years who reported to the clinic and were observed to have Class II division 2 malocclusion were collected.

Data collection

Records of the patients were obtained from the outpatient department of a Nims Denal College and Hospital. Cross verification was done by reviewing the intraoral photographs and checking for retruded maxillary incisors and decreased overjet.

Inclusion criteria:

- Patients of age 18 to 40 years
- Permanent dentition (no retained deciduous teeth)
-

Exclusion criteria:

- Patients with congenital syndromes causing facial asymmetry
- Patients with systemic diseases
- Patients with history of orthodontic treatment done - Patients who have undergone extractions of teeth other than third molars

Incomplete data was excluded due to the possibility of bias.

Statistical analysis

The data about patients' age, gender and inter-arch relation was collected and tabulated and subjected to statistical analysis. Using SPSS software, descriptive statistics and Chi square tests were performed.

III. RESULTS AND DISCUSSION

The study included 347 patients out of which 41 patients were observed to have Class II division 2 malocclusion. The prevalence of Class II division 2 was calculated at 11.81%. We observed that males were most characterised as having Class II division 2 malocclusion ($p>0.05$) as seen in Figures 1, 3. The most common associated malocclusion observed was scissor bite ($p>0.05$) seen greatly among men as seen in Figures 4, 5. A greater number of patients within the age group of 21-30 years reported to the dental clinic with Class II division 2 malocclusion among which scissor bite was majorly observed among the same age group as seen in Figures 2,6.

The present research was undertaken for exploring the prevalence of Angles Class II division 2 malocclusion, providing information about the occlusal variation among patients visiting Nims Dental College and Hospitals and comparing this analysis with other world populations. The age of the subjects in the sample studied ranged from 18 to 40 years. This age range was a criterion for two reasons being, first; reliable assessment of the occlusion and establishing a classification should be done on permanent dentition. As any variations that are present at the mixed dentition stage, will modify the occlusion and thus the classification, second; the reliable estimation of occlusal status should be done post cessation of craniofacial growth and development.

The Chi-square association among the gender of the patients and the ages of the patients with Angles Class II division 2 malocclusion, ($p>0.05$) - non significant, however the male population was observed to be predominant as shown by Figure 1. The occlusal variations or the prevalence of Angles Class II division 2 malocclusion varied among genders, thus, it can be said that occlusal variation is not independent of gender.

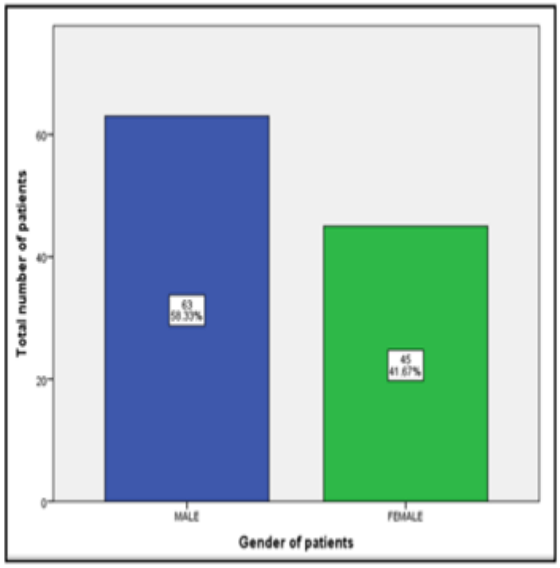

Figure 1. Bar graph representing gender-wise distribution of Class II division 2 malocclusion.

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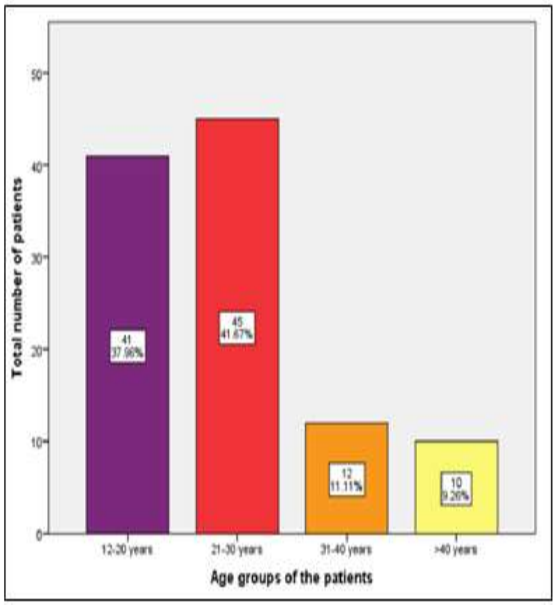

Figure 2. Bar graph representing age-wise distribution of Class II division 2 malocclusion.

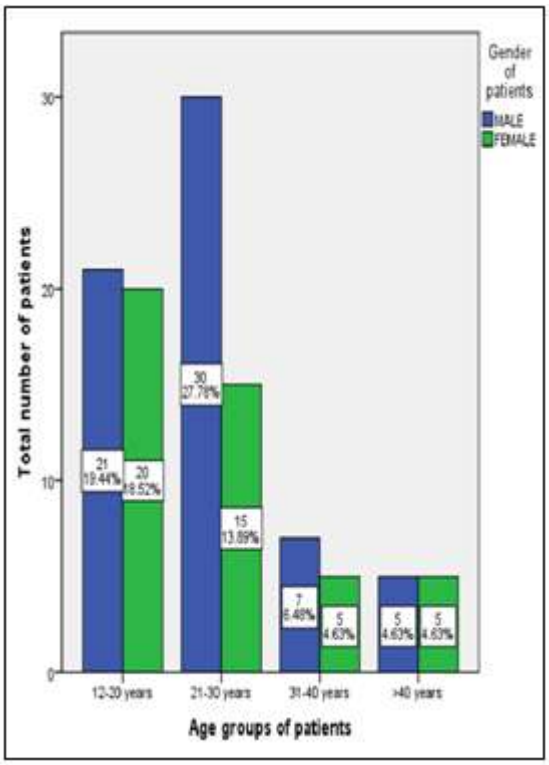

Figure 3. Bar graph representing frequency distribution between age and gender of patients with Class II division 2 malocclusion.

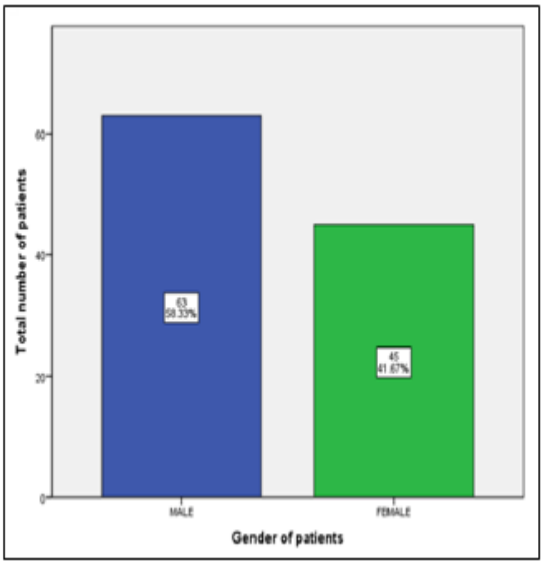

Figure 4. Bar graph representing frequency distribution of the associated malocclusions observed in Class II division 2 malocclusion.

IV. CONCLUSION

From the study done, it can be concluded that, within the limits of our study, higher prevalence of class II division 2 malocclusion among males was observed and scissor bite was reported as the most commonly observed associated malocclusion trait in Class II division 2 patients. Patients of age group 21-30 years were most commonly encountered in the clinic with Class II division 2 malocclusion. Further studies with a larger population can help us estimate the prevalence based on race and therefore incorporate better and paves way for more efficient treatment planning.

REFERENCES

[1]. Mtaya M, Brudvik P, Astrøm AN. Prevalence of malocclusion and its relationship with socio-demographic factors, dental caries, and oral hygiene in 12- to 14-year-old Tanzanian schoolchildren. Eur J Orthod. 2009 Oct;31(5):467-76.Pubmed PMID: 19336630.

[2]. Viswanath A, Ramamurthy J, Dinesh SP, Srinivas A. Obstructive sleep apnea: awakening the hidden truth. Niger J Clin Pract. 2015 Jan-Feb;18(1):1-7. Pubmed PMID: 25511335.

[3]. Rubika J, Felicita AS, Sivambiga V. Gonial angle as an indicator for the prediction of growth pattern. World J Dent. 2015;6(3):161-3.

[4]. Felicita AS, Chandrasekar S, Shanthasundari KK. Determination of craniofacial relation among the subethnic Indian population: a

modified approach - (Sagittal relation). Indian J Dent Res. 2012 May-Jun;23(3):305-12.Pubmed PMID: 23059564.

[5]. Klages U, Bruckner A, Zentner A. Dental aesthetics, self-awareness, and oral health-related quality of life in young adults. Eur J Orthod. 2004 Oct;26(5):507-14.Pubmed PMID: 15536839.

[6]. Shivakumar KM, Chandu GN, Subba Reddy VV, Shafiulla MD. Prevalence of malocclusion and orthodontic treatment needs among middle and high school children of Davangere city, India by using Dental Aesthetic Index. J Indian Soc Pedod Prev Dent. 2009 Oct-Dec;27(4):211-8.Pubmed PMID: 19915271.

[7]. McLain JB, Proffitt WR. Oral health status in the United States: prevalence of malocclusion. J Dent Educ. 1985 Jun;49(6):386-97.Pubmed PMID: 3859517.

[8]. Jonsson T, Arnlaugsson S, Karlsson KO, Ragnarsson B, Arnarson EO, Magnusson TE. Orthodontic treatment experience and prevalence of malocclusion traits in an Icelandic adult population. Am J Orthod Dentofacial Orthop. 2007 Jan;131(1):8.e11-8.Pubmed PMID: 17208100.

[9]. Samantha C, Sundari S, Chandrasekhar S, Sivamurty G, Dinesh S. Comparative Evaluation of Two Bis-GMA Based Orthodontic Bonding Adhesives - A Randomized Clinical Trial. J Clin Diagn Res. 2017 Apr;11(4):ZC40ZC44.Pubmed PMID: 28571259.

[10]. Krishnan S, Pandian S, Kumar S A. Effect of bisphosphonates on orthodontic tooth movement-an update. J Clin Diagn Res. 2015 Apr;9(4):ZE01-5.Pubmed PMID: 26023659.

[11]. Kamisetty SK, Verma JK, Arun, Sundari S, Chandrasekhar S, Kumar A. SBS vs Inhouse Recycling Methods-An Invitro Evaluation. J Clin Diagn Res. 2015 Sep;9(9):ZC04-8.Pubmed PMID: 26501002.

[12]. Heikinheimo K, Nyström M, Heikinheimo T, Pirttiniemi P, Pirinen S. Dental arch width, overbite, and overjet in a Finnish population with normal occlusion between the ages of 7 and 32 years. Eur J Orthod. 2012 Aug;34(4):418-26.Pubmed PMID: 21357654.

[13]. Krooks L, Pirttiniemi P, Kanavakis G, Lähdesmäki R. Prevalence of malocclusion traits and orthodontic treatment in a Finnish adult population. Acta Odontol Scand. 2016 Jul;74(5):362-7.Pubmed PMID: 26940248.

[14]. Staley RN. Etiology and prevalence of malocclusion. Textbook of orthodontics. 2001;83–96.

[15]. Mahesh Kumar P, Joseph T, Varma RB, Jayanthi M. Oral health status of 5 years and 12 years school going children in Chennai city--an epidemiological study. J Indian Soc Pedod Prev Dent. 2005 Mar;23(1):17-22.Pubmed PMID: 15858301.

[16]. Ramesh Kumar KR, Shanta Sundari KK, Venkatesan A, Chandrasekar S. Depth of resin penetration into enamel with 3 types of enamel conditioning methods: a confocal microscopic study. Am J Orthod Dentofacial Orthop. 2011 Oct;140(4):479-85.Pubmed PMID: 21967934.

[17]. Soh J, Sandham A. Orthodontic treatment need in Asian adult males. Angle Orthod. 2004 Dec;74(6):769-73.Pubmed PMID: 15673139.

[18]. Felicita AS. Orthodontic management of a dilacerated central incisor and partially impacted canine with unilateral extraction - A case report. Saudi Dent J. 2017 Oct;29(4):185-193.Pubmed PMID: 29033530.

[19]. Dinesh SP, Arun AV, Sundari KK, Samantha C, Ambika K. An indigenously designed apparatus for measuring orthodontic force. J Clin Diagn Res. 2013 Nov;7(11):2623-6. doi: 10.7860/JCDR/2013/7143.3631.Pubmed PMID: 24392423.

[20]. Felicita AS. Orthodontic extrusion of Ellis Class VIII fracture of maxillary lateral incisor - The sling shot method. Saudi Dent J. 2018 Jul;30(3):265269.Pubmed PMID: 29942113.