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ORTHODONTIC CORRECTION OF MALOCCLUSION CAUSED BY RARE MESIODENTES ANOMALY-A CASE REPORT.

Dental Science

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ABSTRACT

Mesiodens is a developmental anomaly with supernumerary tooth present in anterior maxilla. Rarely two mesiodens can be found which are called as mesiodentes. They are found in both primary as well as permanent dentition. They are usually responsible for malocclusion in anterior region resulting in impaired esthetics and functions. In present case report shows orthodontic correction of a class I malocclusion with mild maxillary anterior crowding and buccally displaced left canine due to mesiodentes present interincisal and palatal aspect of right central incisor.

KEYWORDS

Introduction –

Transition of dentition from primary to permanent dentition commonly often associated with malocclusion due to multiple contributing factors. Supernumerary tooth is one of the contributing factors in malocclusion where an extra tooth erupted in the normal dentition[1]. Supernumerary tooth is a developmental anomaly of number characterized by the presence of an extra tooth in addition to the normal dentition. The most common type of supernumerary tooth is Mesiodens[1,2].

Mesiodens usually occurs in single tooth anomaly and their occurrence in multiples is referred to as Mesiodentes which is a rarity[3]. It usually occurs in permanent dentition, in the premaxilla region and rarely found affecting primary dentition and it is more frequent in men than in women 2: 1. It erupts palatally in only 25% of cases, while it is usually retained in an interincisal position without symptoms in 75% of cases[2, 3, 4]. Shape of Mesiodens ranges from a simple conical to tuberculous crown shape and its etiology includes positive family history along with predisposing factors, such as genetic or environmental. Occurrence of mesiodens is because of hyperactivity of the dental lamina that leading into an extra tooth bud, hence a supernumerary tooth[5].Presence of mesiodens may lead several complications like Maxillary central incisor impaction, tooth retention or delayed eruption of permanent incisors, axial rotation or inclination of erupted permanent incisors, eruption within the nasal cavity with diastema formation, intraoral infection, pulpitis of mesiodens ,root anomaly, root resorption of adjacent teeth, cyst formation accompanied by bone destruction.[6, 7, 8]. Early correction of malocclusion should be opted because of the fact that it will remove existing pathologies and prevent further complications in malocclusions caused by mesiodens if left untreated [2,9,10].

Here, we report a case of double mesiodentes in a non-syndromic patient, which are in line with the maxillary central incisors and causing malocclusion, and unaesthetic appearance.

Case report –

A 15 year old male patient reported Department of Orthodontics and Dentofacial Orthopedics, School of Dental sciences, KIMSDU,Karad,Maharashtra, with the chief complaint of irregularly arranged teeth in the upper front region of the jaw, causing unaesthetic appearance. There was no relevant medical and family history, and the patient was otherwise healthy with no associated syndrome.

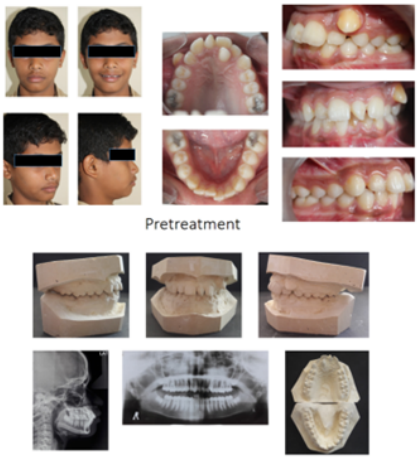

Figure 1-pretreatment records

Clinical examination revealed, a growing male patient with class 1 molar relation bilaterally. It was found that two mesiodentes were present in premaxilla region. One of those mesiodentes were present interincisally which displaced both incisors while other was palatal to 11.Midline diastema of 6 mm was present between 11, 21. Maxillary left canine was buccally placed due to mesiodentes. No other notable occlusal disturbance was seen, and the soft-tissue appeared normal. On Functional examination patient shown difficulty in speech.

To investigate further, routine radiographic investigations like intraoral periapical radiographs, OPG,and lateral cephalogram were taken.

Treatment plan –

In our case esthetics and proper occlusion was main concern so treatment plan was put forward to achieve both esthetics and function. Extraction of mesiodens was advised for alignment of left canine into occlusion, it was followed by fixed mechanotherapy.

Figure 2-upper arch bonding with 0.14 NiTi wire.

Fixed treatment was started with 0.22 slot MBT appliance. At the start of orthodontic therapy, Maxillary left canine were not bonded to maintain initial arch

Figure 3-mesiodentes extraction with midline space closure with elastic force

arch form, both mesiodentes were kept in occlusion to maintain diastema space which would be used during canine alignment and to expand the archform.

Both mesiodentes were then extracted and midline diastema was closed with elastomeric chain on 0.018 Stainless steel wire.

Figure 4-canine bracket bonding for alignment

Figure 5-placement of transpalatal arch

After midline diastema closure, canine was bonded, transpalatal arch was placed for maximum anchorage and to maintain molar relation during canine alignment. Canine was aligned into maxillary arch with continuous wire.

Meanwhile it was possible to bond the brackets in mandibular arch. Lower arch alignment was done to allow a simultaneous coordination of the upper and lower arches. After canine alignment occlusion was finished with 0.19 x 0.25 SS wire.

Figure 5-settling with 2 onz settling elastics

Settling was done with breaded 0.16 x 0.22 NiTi wire with settling elastics. Once Good molar and canine class I relationships were achieved without midline discrepancy, debonding procedure carried out. The panoramic radiograph showed good root parallelism.

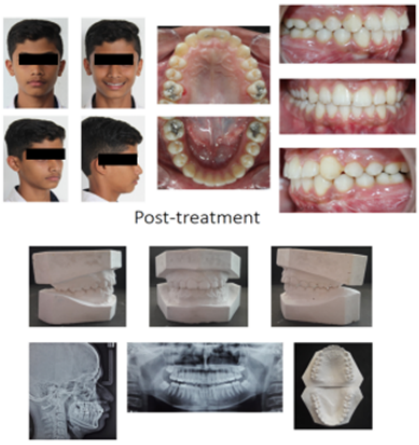

Figure 6-Post treatment records

Discussion –

Mesiodens is one of the commonly seen supernumerary teeth. Dentofacial anomalies like supernumerary teeth causes arch length discrepancy leading to malocclusions like crowding, midline diastema. . Mesiodens are said to affect eruption pattern of incisors or physically move incisors laterally which was visible in our case[11]. General examination of patient did not show any association with developmental disorders like syndromes associated with supernumerary teeth[12, 13]. Accurate diagnosis is very important in such case. Most supernumerary teeth in primary erupts asymptomatically and having good arch alignment. It is likely that many such teeth exfoliate without being recognized as supernumerary. But, the presence of supernumerary teeth in permanent often results in a variety of malocclusions and complications[7,14].

Early diagnosis and good treatment plan is always necessary for prevention of deleterious effects. However, the time of intervention is the most crucial factor. Evaluation of factors like Patient's age, Dental status of adjacent teeth, and Dental status of the Mesiodens before treatment planning is very important[15]. Literature suggests that, early removal is best treatment plan unless there is a good reason for their retention[16].In case of unerupted mesiodens, even if the unerupted mesiodens is not causing any abnormality to the permanent dentition, still early surgical intervention is preferred. This is done to take advantage of the spontaneous eruptive potential of permanent incisors and to prevent anterior space closure and midline deviation[8, 9, 16]. However, some of the possible disadvantages of early intervention may include damage to adjacent teeth resulting in loss of vitality and root malformation and inability of a young child to psychologically tolerate the surgical procedure[16, 18]. The optimum time for surgical removal is controversial. Some authors advocates that the best time for removal is at nearly 8 to 10 years of age, When the root development of central and lateral incisors is complete[5, 16, 17, 18, 19]. When the behavior of child is much easier to manage, Type of anesthesia can be less invasive, thereby reducing the trauma and anxiety associated with the surgery, and Risk of displacing tooth buds of permanent teeth is minimal[19, 20]. Diagnostic information about mesiodens, adjacent structures, and knowledge about growth of associated dentofacial structures is important for decision making in early or delayed intervention[16,18].

In case of erupted teeth, early diagnosis of supernumerary teeth is important for an interceptive orthodontic treatment and allow correction of malocclusion in mixed or permanent dentition[17, 21]. After extraction of mesiodens the diastema will often close spontaneously because of the vertical eruption of the incisors[9, 22].Early correction of malocclusion is of great importance because it will prevent further complications in malocclusions and also correct the malocclusions that involves the use of minor orthodontic treatment[17,22].

In our case presence of two supplemental teeth was cause of malocclusion in anterior region, mesiodens which was present interincisally was pushing incisors especially left incisor laterally, which created diastema as well as less eruption space for canine leading to its buccal eruption. Improving the esthetics and function was the prime concern for patient opting orthodontic treatment, so extractions were carefully planned. The patient is in the alignment phase of the orthodontic treatment, with a 0.022 MBT full appliance in the upper arch for closing the extraction space using Conventional Sliding mechanics. Space present between central incisors occupied by mesiodens was preserved in early alignment phase by delaying extraction of mesiodens. This was done to prevent unwanted space closure during canine alignment. Midline diastema space was measured 7 mm. This space was closed using elastic forces on 0.018 Stainless steel wire. By closing midline diastema, space for canine alignment was achieved. Canine alignment was done by using 0.0175 co-axial, 0.14, and 0.16 NiTi wires. Transpalatal arch was used for anchorage reinforcement during this stage. Occlusion was finished with stainless steel rectangular archwires by maintaining archforms. Multibraided NiTi wires used with 2 ounce settling elastics for maximum intercuspation. Permanent retention was given on maxillary central incisors for avoid relapse of midline diastema.

Malocclusion in the anterior region can be successfully treated by fixed-orthodontic appliance which produces stable results. The fixed appliance reduces the need for patient cooperation and allows for three-dimensional control of tooth movement and have greater action power than removable appliances[10, 23]. In these case, malocclusions were corrected in 14 months.

Proper diagnosis and accurate treatment plan minimizes complications caused by supernumerary tooth. The practitioner should recognize the signs suggesting the presence of malocclusion due to supernumerary tooth. Some authors suggested use of decision support system for management of the supernumerary tooth, which helps clinician to make a correct decision regarding the treatment of supernumerary tooth[24]. Proper timing of orthodontic intervention is immensely beneficial to patients from esthetic and functional point of view.

Conclusion –

Mesiodentes is a rare developmental disorder which is characterized by presence of two mesiodense in anterior maxilla. This paper reports case of mesiodentes in the maxillary arch which apart from causing the usual malocclusion also caused speech difficulty in the patient. Detailed examination of the patient is important identify esthetic or functional problems that may be associated with mesiodens. Comprehensive orthodontic treatment can be done by fixed-orthodontic appliances to treat malocclusion in anterior region.

References-

1. Asha ML, Laboni G, Rajarathnam BN, Kumar HM, Lekshmy J, Priyanka LB. Twin mesiodens: A case report. Int J Adv Health Sci. 2015;2(6):18-21.
2. Ghislanzoni LH, Berardinelli F, Tagliatesta C, Lucchese A. Management of Complicated Crowding and Upper Midline Shift Associated With an Impacted Mesiodens: A Case Report with 2 years Follow-Up. Iranian Journal of Orthodontics. 2017;12(2).
3. Gulati RK, Bhatnagar P, Gupta P, Nilotpal K. Interceptive orthodontics: a headway towards normal occlusion–report of two cases. Indian Journal of Orthodontics and Dentofacial Research. 2016 Jul;2(3):126-30.
4. Mittal M, Sultan A. Clinical management of supernumerary teeth: A report of two cases. Journal of Indian society of pedodontics and preventive dentistry. 2010 Jul 1;28(3):219.
5. Primosh RE. Anterior supernumerary teeth − assessment and surgical intervention in children. Pediatr Dent 1981; 3: 204−215.
6. Rajab LD, Hamdan MA. Supernumerary teeth: review of the literature and a survey of 152 cases. International Journal of Paediatric Dentistry. 2002 Jul 1;12(4):244-54.
7. Nam OH, Lee HS, Kim MS, Yun KH, Bang JB, Choi SC. Characteristics of mesiodens and its related complications. Pediatric dentistry. 2015 Dec 15;37(7):105E-9E.
8. Shah A, Gill DS, Tredwin C, Naini FB. Diagnosis and management of supernumerary teeth. Dental update. 2008 Oct 2;35(8):510-20.
9. Kurol J. Early treatment of tooth-eruption disturbances. American journal of orthodontics and dentofacial orthopedics. 2002 Jun 1;121(6):588-91.
10. Kaur G, Singh K, Agarwal N, Kour S. Mesiodens: Orthodontic Management of a Commonly Occurring Supernumerary Tooth. Rama Univ J Dent Sci 2016 Dec;3(4):45-48.
11. Anggraeni HD, Linggriani A, Fauziah E. Orthodontic Management of Anterior Malocclusion Related to Mesiodens: Case Report. Journal of International Dental and Medical Research. 2017;10:838-41.
12. Lubinsky M, Kantaputra PN. 2016. Syndromes with supernumerary teeth. Am J Med Genet Part A 170A:2611–2616.
13. Galluccio G, Castellano M, La Monaca C. Genetic basis of non-syndromic anomalies of human tooth number. Archives of Oral Biology. 2012 Jul 1;57(7):918-30.
14. Mufeed A, Hafiz A, Ashir KR, Ahmed A, Reshma VJ. Clinical consequence of mesiodens–A case series. Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology. 2016 May 1;28(3):259-62.
15. Russell KA, Folwarczna MA. Mesiodens-diagnosis and management of a common supernumerary tooth. Journal-Canadian Dental Association. 2003 Jun;69(6):362-7.
16. Gupta S, Marwah N. Impacted Supernumerary Teeth—Early or Delayed Intervention: Decision Making Dilemma?. Int J Clin Pediatr Dent 2012;5(3):226-230.
17. Nallanchakrava S. Complexity at its simplest by interceptive orthodontics. International Journal of Contemporary Dentistry. 2011 Feb 20;2(1).
18. Nazif MM, Ruffalo RC, Zullo T. Impacted supernumerary teeth: A survey of 50 cases. J Am Dent Assoc 1983 Feb;106(2):201-204.
19. Liu JF. Characteristic of premaxillary supernumerary teeth: A survey of 112 cases. ASDC J Dent Child 1995 Jul-Aug;62(4):262-265.
20. Tiwana PS (Department of Surgical and Hospital Dentistry, School of Dentistry, University of Louisville, 501 South Preston Street, Louisville, KY 40292, USA), Kushner GM. Management of impacted teeth in children. Oral Maxillofac Surg Clin North Am 2005 Nov;17(4):365-373.
21. Jain K, Kallury A, Chaukse A, Shrivastav T. Mesiodens-A Case Report. Journal Of Applied Dental and Medical Sciences. 2016;2:1.
22. Gulati RK, Bhatnagar P, Gupta P, Nilotpal K. Interceptive orthodontics: a headway towards normal occlusion–report of two cases. Indian Journal of Orthodontics and Dentofacial Research. 2016 Jul;2(3):126-30.
23. Kamath MK, Arun AV. Midline diastema. Int J Orthod Rehabil 2016;7:101-4.
24. Amarlal D, Muthu MS. Supernumerary teeth: review of literature and decision support system. Indian Journal of Dental Research. 2013 Jan 1;24(1):117.