Case Report

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Dentistry Section

Multiple Over-retained Deciduous Teeth: A Rare Case Report

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ABSTRACT

Over-retained deciduous teeth, characterised by the persistence of primary teeth beyond their expected exfoliation time, present a unique challenge in dental practice. The present case report documents a unique and intriguing clinical scenario involving a 20-year-old female patient undergoing orthodontic treatment for multiple over-retained deciduous teeth. While such occurrences are relatively uncommon in adult patients, the present case underscores the importance of early orthodontic intervention and vigilant monitoring of dental development. The patient presented with nine retained deciduous teeth in the mandibular arch. These retained primary teeth had persisted beyond the expected age, and their presence was causing malocclusion and aesthetic concerns. Treatment planning involved a multidisciplinary approach. Orthodontic goals focused on aligning the permanent dentition while addressing the retained deciduous teeth. Comprehensive orthodontic therapy was initiated with fixed appliances. The present report highlights the importance of early diagnosis and timely intervention to mitigate potential complications associated with over-retained primary teeth in adult patients. The article discusses and focuses on the aetiology of why this type of occurrence can take place, various factors associated with it, the prevalence, and reports a rare type of case.

Keywords: Dental abnormalities, Primary tooth loss, Tooth extraction

CASE REPORT

A 20-year-old female patient presented to the Department of Orthodontics and Dentofacial Orthopaedics, expressing concerns about the aesthetics of her smile. She had no significant medical history but mentioned that four years ago, she underwent extractions of her upper arch primary teeth at a private clinic due to over-retention. The patient also had a positive family history, as her grandmother had a similar case but did not receive any treatment.

Upon clinical examination, the patient exhibited a symmetrical face, convex profile, and competent lips [Table/Fig-1]. Intraorally, she showed a Class-II molar relationship and constriction in both the maxillary and mandibular arches. The mandibular arch contained over-retained teeth (71, 72, 73, 74, 75, 82, 83, 84, 85) [Table/Fig-2]. An Orthopantomogram (OPG) was taken for radiographic evaluation [Table/Fig-3]. As the teeth were not clearly visible in the OPG, a Cone Beam Computed Tomography (CBCT) scan was subsequently performed. The CBCT scan confirmed the root formation of permanent teeth [Table/Fig-4].

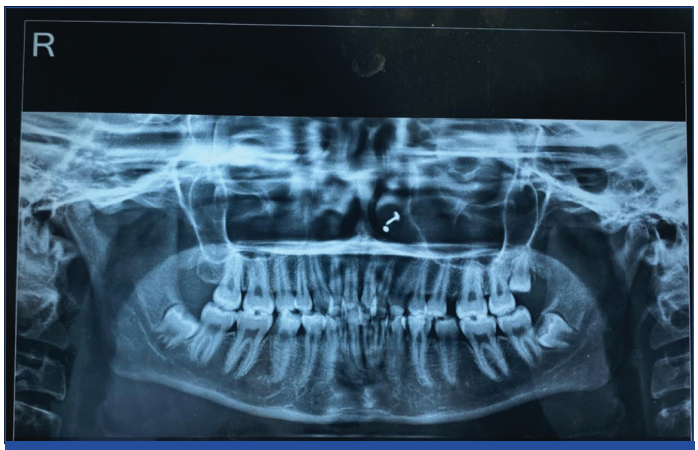
Written and informed consent were obtained from the patient for the present case report.

[Table/Fig-1]: Pretreatment extraoral photographs.

Treatment Plan

After confirming the root formation of the permanent teeth and assessing their condition, a treatment plan was devised, which involved sequential extractions of the over-retained deciduous teeth [Table/Fig-5]. Subsequently, the bonding of the upper and lower arches using a self-ligating metal bracket system was planned. Following the alignment and levelling of both arches, a fixed functional appliance was scheduled for use to correct the class II molar relationship and convex profile. Finishing and detailing procedures will be performed once all the necessary corrections have been achieved.

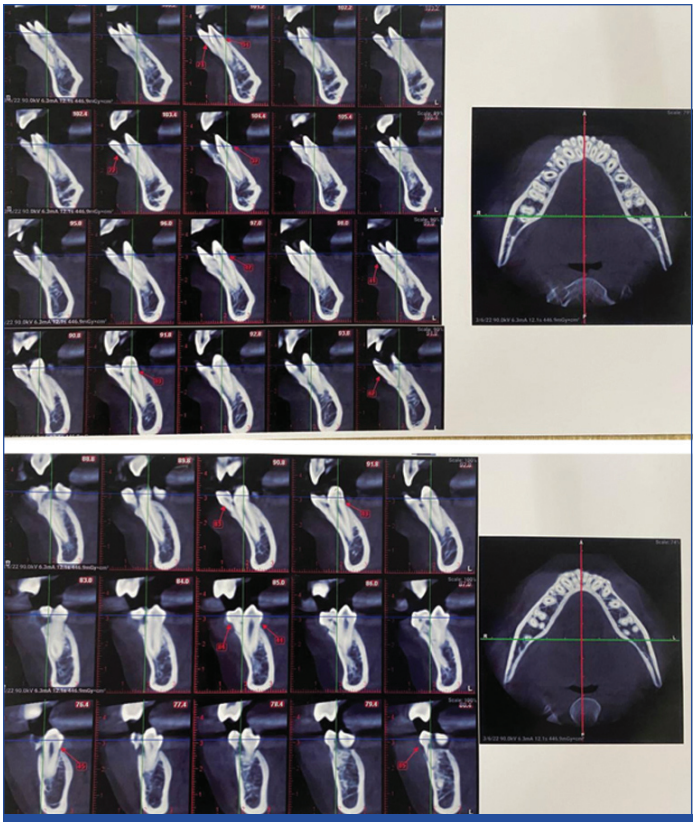
[Table/Fig-2]: Intraoral photographs.



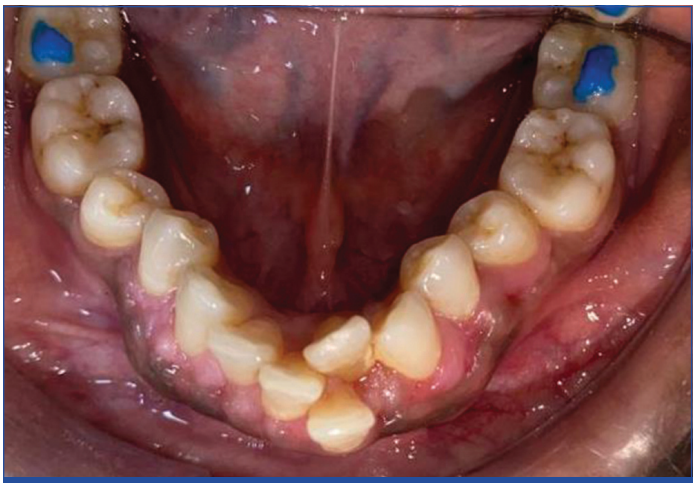
[Table/Fig-3]: Orthopantomogram (OPG).

DISCUSSION

Over-retention of deciduous teeth, commonly referred to as retained primary teeth, is a dental anomaly in which one or more primary teeth persist beyond their expected exfoliation time. This condition hinders the proper eruption of permanent teeth and can alter their eruption path [1]. This phenomenon can result in various dental



[Table/Fig-4]: CBCT images.



[Table/Fig-5]: Post-extraction photograph of mandibular arch.

complications, such as crowding, malocclusions, ankylosis, caries, periodontitis, and delayed eruption of permanent teeth [2]. Although relatively rare, the presence of multiple overretained deciduous teeth presents a unique and intriguing clinical scenario that requires careful evaluation and management.

The aetiology of this condition can be grouped into environmental, genetic, or systemic factors. Regarding environmental factors, several factors contribute to delayed exfoliation of primary teeth, including limited space, arch crowding, and rotation of tooth buds. In cases where the normal number of teeth is observed radiographically, unerupted teeth can be attributed to a lack of eruptive force [3].

The most common cause of retained primary teeth is the absence of the permanent successor during development. Primary tooth agenesis is extremely rare (0.1-0.9%), whereas permanent tooth agenesis is relatively common (2.5-6.9%). There is a higher incidence among females, with a female-to-male ratio of 1.37:1, and variations can also be observed among different racial groups. In some cases, the primary tooth may remain in place even when the permanent tooth is present but fails to erupt. This can occur due to factors such as crowding, primary tooth ankylosis, the presence of supernumerary teeth, or other obstacles. Many of these issues can be resolved through surgical and/or orthodontic intervention [4].

The most common causes of mechanical interferences in tooth eruption are odontogenic tumors, cysts, crowding, and soft tissue impaction. When a tooth becomes ankylosed, it appears to sink in relation to neighbouring teeth that are still erupting. Instances of delayed eruption and inability to erupt can be associated with various hereditary and medical disorders, including hypothyroidism, hypopituitarism, and other conditions that do not necessarily involve ankylosis [5].

Systemic factors, such as syndromes, metabolic disorders, and hormonal disorders, are additional causes of over-retained teeth [6]. Among genetic factors, one example is the 47,XYY syndrome, characterised by an abnormal number of sex chromosomes (aneuploidy). In 47,XYY syndrome, there is a genetic effect that leads to increased tooth size, over-retained deciduous teeth, and unerupted permanent teeth [7]. Furthermore, a single nucleotide polymorphism (rs5275) and a haplotype in the COX2 gene have been associated with delayed eruption of permanent successor teeth and prolonged retention of primary teeth [8].

Deletions in the terminal region of the short arm of chromosome 4 lead to Wolf-Hirschhorn Syndrome (WHS), which is associated with the formation of over-retained deciduous teeth. Heredity plays a role in the development of over-retained teeth, which can be inherited as autosomal recessive or autosomal dominant traits with incomplete penetrance, or they can be linked to the X chromosome [9].

In the current case, the presence of multiple over-retained deciduous teeth presented a challenge. The cause of this over-retention could be hereditary since the patient did not have any medical conditions. In their study, Mason C et al., reported displacements, rotations, ectopic eruption, and malocclusion, some of which were observed in this clinical case [10]. In this instance, there is crowding, and extraction of these retained deciduous teeth is necessary for orthodontic alignment of the arch. It is common practice to remove the remaining primary teeth to facilitate the alignment process, hence the extraction of these over-retained teeth was performed.

A similar case was reported by Shastri D et al., in which impactions of permanent teeth were observed due to over-retention of deciduous teeth [3]. However, this was not observed in the current case.

CONCLUSION(S)

The present case report aims to provide a comprehensive analysis of a patient with multiple over-retained deciduous teeth, emphasising the diagnostic considerations, clinical challenges, and treatment strategies involved. By evaluating the patient's clinical presentation, radiographic findings, and specific patient-related factors, the present report seeks to enhance our understanding of the complexities associated with managing this dental anomaly. Furthermore, the insights gained from the present case will contribute to a deeper comprehension of the delicate equilibrium between primary and permanent dentition, underscoring the importance of timely intervention in preserving optimal oral health during a child's developmental years.

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