A 25-year-old man with 50 teeth: Astonishing but true!!

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INTRODUCTION

A continuous process of teeth eruption and shedding replaces the exfoliated deciduous teeth with succedaneous teeth, i.e., permanent incisors, canine, and premolar. Impaired tooth eruption, where this process is disturbed may manifest either as delayed or complete absence of eruption, resulting in impacted, embedded permanent teeth, or retained deciduous teeth.[1]

Differential gene expressions by dental follicle needed for osteoclastogenesis, osteogenesis, and pressure from underlying succedaneous teeth are responsible for timely shedding and eruption process of succedaneous teeth[2] and several local, systemic causes including syndromes (cleidocranial dysplasia and Gardner’s syndrome) and metabolic or hormonal diseases have been attributed in literature for impacted and embedded teeth.[3-5]

An English language literature search revealed that, it is very uncommon for a patient to have multiple retained deciduous teeth along with multiple impacted permanent teeth specifically in absence of any other known local factor, systemic disease, or syndrome complex.

This case reports a patient with 16 retained deciduous teeth along with multiple impacted permanent teeth out of which some were erupted, some impacted and embedded succedaneous teeth, and some supernumerary teeth. What was most astonishing is the fact that there was no known local or systemic disease as the patient was asymptomatic.

CASE REPORT

A 25-year-old adult reported with a chief complaint of irregularly placed teeth that were small in size and wanted to get them corrected chiefly for esthetic reasons. A family history revealed that no other member in his family was having any similar problem. Past medical history given by patient was non-significant and patient appeared to be well nourished with moderate height and built.

On intra-oral examination, it was found that patient had 16 retained primary teeth, with all permanent first and second molars erupted [Tables 1 and 2]. A few other permanent teeth (14, 15, 21, 31, and 33) were also observed. Tooth number 15 and 33 were observed erupted ectopically [Figure 1]. Tooth number 31 was observed with mamelons on its incisal edges [Figure 2]. All the teeth present in oral cavity had mild attrition with slight discoloration most likely owing to dental fluorosis [Figure 3]. Gingival health of the patient was unremarkable and had a normal palatal arch.

Patient was advised for Orthopentograph (OPG), skull, and chest X-ray, and full mouth intra-oral periapical (IOPA) radiographs. Skull and chest X-ray did not reveal any significant finding. OPG showed multiple impacted and embedded permanent teeth with two supernumerary teeth, located one on each side of the mandible [Figure 4]. No evidence of cysts, odontoma, or other abnormalities was noted on the radiograph. IOPA radiographs further revealed a few impacted teeth with malformed crown and root formation [Figure 5]. Also, teeth number 38 and 48 were observed to have mesio-angular impaction.

To rule out any other associated syndrome complex or metabolic and hormonal disorders, patient was referred to a physician, under whose supervision, multiple tests including thyroid function test, growth hormone (GH) assays, and serum calcium and phosphorus levels were carried out, but all of them were in normal limits.

After the clinical and radiographic evaluations, a treatment plan was made under which it was advised that all the third molars need to be extracted and orthodontic extrusion of succedaneous teeth will be attempted. However, the patient was reluctant for any kind of surgical treatment and did

Table 1: Teeth present in the oral cavity

| Teeth present in the oral cavity |
|---------------------------------|
| 17,16,55,15,14,53,52,51         |
| 21,62,63,64,65,26,27            |
| 47,46,85,84,83,82,81            |
| 31,33,73,74,75,36,37            |

Table 2: Impacted permanent teeth in the jaws of the patient

| Impacted permanent teeth in the jaws of the patient |
|---------------------------------------------------|
| 18,13,12,11                                       |
| 22,23,24,25,28                                     |
| 48,45,44,43,42,41                                 |
| 32,34,35,38                                       |
DISCUSSION

Although impaction of tooth is widespread, multiple impacted succedaneous teeth along with multiple retained primary teeth by itself are rare conditions. A disturbed eruption process creates a clinical situation that is challenging to diagnose and treat. The clinical spectrum of tooth eruption disorders includes both syndromic and non-syndromic problems ranging from delayed eruption to a complete failure of eruption.\(^\text{[3-6]}\)

Tooth eruption is a localized event in which specific genes in the dental follicle that surrounds the unerupted tooth are either upregulated or downregulated at critical times to bring about the osteoclastogenesis and osteogenesis needed for eruption.

Several local factors such as mechanical obstruction from soft tissue overgrowth, supernumerary teeth, gingival fibromatoses, crowding, rotation of tooth buds, retained primary teeth, and pathological lesions are the most common reasons for teeth impaction.\(^\text{[3-7]}\) The clinical and radiographic examinations of our case revealed relatively normal jaws and oral soft tissues.

In this case, all the permanent first and second molars had erupted in patient, while many succedaneous teeth were not report back for further alternative treatments.
impacted, suggesting the retention of deciduous teeth as the primary culprit. Now the question arises whether it is non-shedding primary teeth that led to impaction of succedaneous teeth or is it failure of eruption of succedaneous teeth or lack of eruptive forces that led to retention of primary teeth. IOPA radiograph revealed some impacted teeth to have malformed crown and root formation, most likely related to inadequate space and arrested eruption.

Also, our patient had two supernumerary teeth located one on each side of the mandibular arch. A very few case have been reported in literature for similar conditions. A previous case report suggests that lack of eruptive force and rotation of tooth buds are the main causative factors for multiple impactions in non-syndromic patients.[3] Conditions which cause lacking of eruptive force in such cases could be due to either general, endocrinal, neurogenic, or mucosal and bone disorder.[9]

However, numerous reports are described in literature suggesting various syndromes and metabolic conditions to be associated with multiple impacted permanent or supernumerary teeth. These syndromes include mainly cleidocranial dysostosis, Gardner’s syndrome, Down syndrome, Aarskog syndrome, Zimmermann–Laband syndrome, and Noonan’s syndrome along with hormonal disturbances such as hypothyroidism, hypopituitarism, and hypoparathyroidism.[4,5,7]

Cleidocranial dysplasia is characterized by abnormalities of skull, teeth, jaws, and shoulder girdle. None of the features of skull and shoulder girdle like open fontanelles, Wormian bones in skull, partial to total agenesis of clavicle were reported in skull and chest X-ray of this patient. Multiple osteomas of skull and jaw bones along with multiple epidermoid sebaceous cysts of skin, desmoids tumors, the major characteristics of Gardner’s syndrome were also not associated with this case.[8] None of the clinical features were suggestive for rest of the syndromes, and thus were excluded.

Among hormonal disturbances, both hypothyroidism and hypopituitarism are characterized by delayed eruption rate of permanent teeth along with retention of primary teeth beyond normal shedding time.[10] However, on general examination of the patient, he did not reveal any significant medical findings, which was further substantiated by normal Thyroid Stimulating Hormone (TSH), Triiodothyronine (T3), Thyroxine (T4), and GH levels of the patient. Hypoparathyroidism was also ruled out subsequently by laboratory tests for serum calcium levels and parathyroid hormone values.

Treatment options for the management of impacted teeth are separated into four categories: Observation, intervention, relocation, and extraction. Each strategy has to be judged according to individual case, taking into consideration the position of the impacted teeth and the relationship to each on X-ray images, oral examination, and plaster model.[8,9] In this case, after taking into consideration various factors, it was decided to go for extraction of all the third molars, followed by surgical exposure and orthodontic traction of impacted teeth. However, patient was not willing for any kind of surgical treatment and was lost to follow-up.

This case report adds to rare reported literature on multiple retained primary teeth along with impacted permanent teeth. Early diagnosis with advanced imaging and appropriate management can minimize the potential complications caused by such impacted teeth. Dental practitioners should be aware of their clinical signs and the treatment options. Further research is needed at cellular and genetic levels to exactly localize the reasons for such failure of eruption.

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How to cite this article: Bhatia V, Jain N, Bhatia G, Garg R. A 25-year-old man with 50 teeth: Astonishing but true!. J Nat Sc Biol Med 2013;4:472-5.

Source of Support: Nil. Conflict of Interest: None declared.

Access this article online

Quick Response Code: Website: www.jnsbm.org

DOI: 10.4103/0976-9668.116978