



## BILATERAL MULTIPLE IMPACTED PERMANENT TEETH IN A NON-SYNDROMIC PATIENT: A RARE FINDING

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### ABSTRACT

**Background:** While impaction of tooth is widespread and common, multiple impacted teeth itself is a rare condition and is usually associated with syndromes, metabolic and hormonal disorders. However, in some cases impaction of multiple teeth is not associated with fixed complex of symptoms. **Case report:** We present a case of a 20 yr old male with clinically missing multiple permanent teeth with retained deciduous teeth. Intraorally, thick band of mucosa was present in the posterior alveolar ridge. Panoramic radiograph revealed total of 24 impacted teeth, eleven in mandible and thirteen in maxilla. Generalized enamel hypoplasia was seen in posterior impacted teeth. The mucosa overlying the impacted teeth had thickened soft tissue outline. Detailed history, clinical examination and chest X-Ray did not reveal any syndrome or metabolic disorder, except for subclinical hypothyroidism. **Conclusion:** In the index case, all the impacted teeth were of permanent dentition and were bilaterally symmetrical and occurred in the absence of any syndromes, metabolic and hormonal disorders which is a rare occurrence.

**KEYWORDS:** Bilaterally impacted, Permanent teeth, Panoramic Radiography, Non-syndrome.

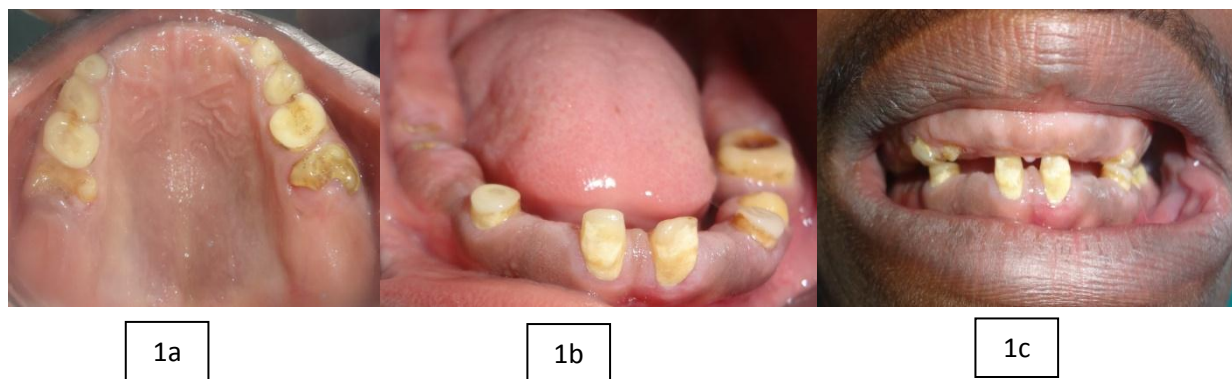
### INTRODUCTION

Tooth eruption has been defined as the movement of a tooth in an axial and occlusal direction from its developmental position within the jaw to its final functional position in the occlusal plane.<sup>[1]</sup> Impaction refers to a failure of a tooth to emerge into the dental arch, usually due to either space deficiencies or the presence of an entity blocking its path of eruption.<sup>[2]</sup> Impaction can result primarily from local biomechanical impediments, and secondarily from a variety of causes. These include childhood maxillofacial or dentoalveolar trauma, reconstructive surgery of the facial skeleton, malpositioning of an adjacent tooth, thickened overlying osseous or mucosal tissues, insufficient maxillofacial skeletal development or a low correlation between maxillofacial skeletal development and tooth maturation, eruption disturbances and direct or indirect effects of cysts or neoplasm. A host of systemic prenatal and postnatal disorders, diseases and syndromes can also

cause tooth impaction.<sup>[3]</sup> The aim of this case report is to document a rare and an unusual case of multiple impacted permanent teeth in an adult patient which is a unique presentation in the absence of any syndrome.<sup>[4]</sup>

### CASE REPORT

A 20-year-old male presented with complain of missing teeth in his upper and lower jaw, he had problem with chewing food. The medical and family history was unremarkable. On examination, general physical and extra-oral examinations were normal. Intraoral examination revealed eight retained deciduous teeth and only seven permanent teeth, rest of the alveolar ridge revealed thick band of alveolar mucosa. The retained deciduous teeth in the oral cavity had yellowish hue with a faint outline of the pulp chamber on the occlusal surface, suggesting loss of enamel structure. [Figure 1a,1b and 1c].



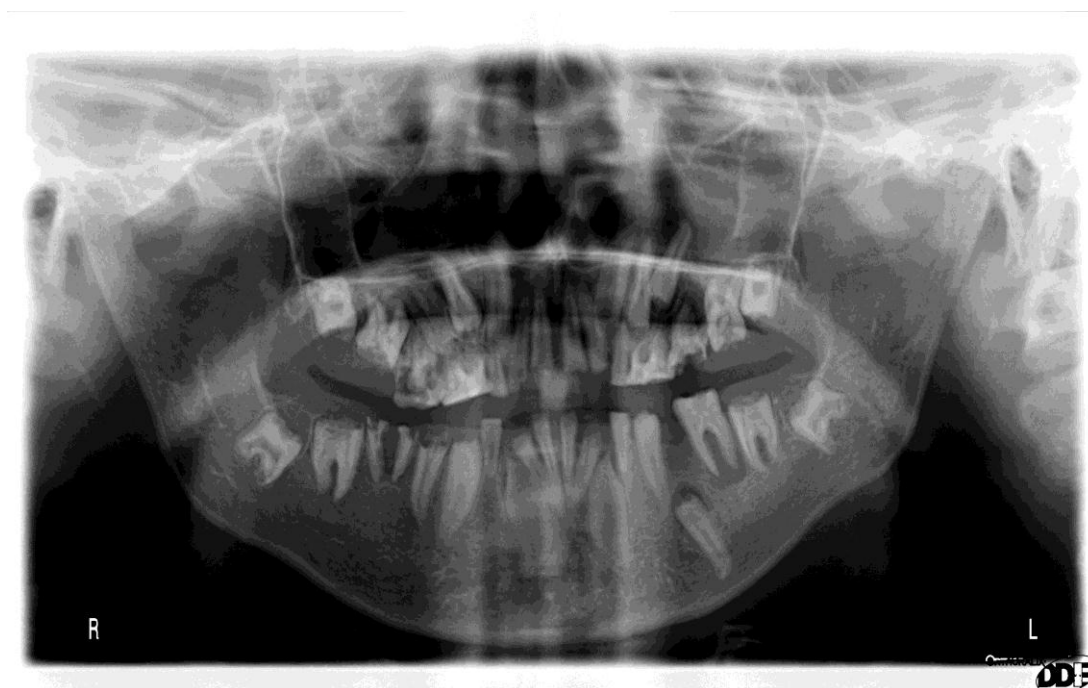
**Figure1: Clinical Images of patient with multiple bilateral impacted teeth. 1a: Maxillary Arch. 1b: Mandibular Arch. 1c: Facial Profile**

The causes of tooth impaction are simple biomechanical impediment, lack of space or crowding of dental arches, the premature loss of the primary teeth with subsequent partial closure of the area, and rotation of tooth buds or complex syndromes. Maxillary and mandibular 3<sup>rd</sup> molars are the most commonly impacted teeth, followed by maxillary lateral incisors, 2<sup>nd</sup> Pre molar and the canine. Since our case had impacted 21 permanent teeth we suspected it to be related to any of the syndromes or metabolic disturbances like Gardner's syndrome, Cleidocranial dysostosis, Down's syndrome.

#### Investigations

An orthopantomogram (OPG) [Figure 2] was advised, which revealed the anatomic structures such as

Temporomandibular Joint complex, paranasal sinuses, the maxillary and mandibular bone were radiographically normal. The dentition status revealed that a total of eight deciduous teeth were retained which were 55, 54, 53, 63, 64, 65, 73 and 83. A total of 24 permanent teeth were impacted which are as follows: 18, 17, 15, 14, 13, 12, 11, 21, 23, 24, 25, 27, 28, 38, 37, 35, 33, 32, 42, 43, 44, 45, 47, and 48. All impacted teeth had completed their development except for 18, 28, 38, and 48 (i.e the 3<sup>rd</sup> molars). There was a thick band of soft tissue overlying the impacted teeth. Few teeth underneath the thick band of gingival tissue have enamel with radiodensity comparable to that of dentin.



**Figure2: Panoramic radiograph of the patient showing multiple bilateral impacted teeth**

Laboratory investigations including complete blood counts, electrolytes, liver and kidney function tests, calcium and phosphorus levels were normal. PA skull and PA chest X-rays revealed no any abnormality of the

skull, clavicle and the vertebral skeleton. His thyroid function tests revealed subclinical hypothyroidism (T3: 2.15, T4: 1.71, TSH: 6.9). Thyroid peroxidase antibody test was negative, hence levothyroxine supplementation

was deferred by the endocrinology team, with a plan of serial monitoring of the Thyroid Function Test.

## DISCUSSION

The timing and sequence of emergence of teeth differ to some extent between populations of various geographic areas and even within the homogenous groups; environmental factors also affect the rate of emergence of dentition. In clinical absence of a number of teeth, if the history indicates that they have not been extracted, partial anodontia and tooth impaction should be considered. Radiographic examination, however, may reveal multiple impacted teeth, after which partial anodontia can be rejected.<sup>[5]</sup>

While impaction of tooth is widespread and common, multiple impacted teeth without any associated systemic conditions or syndromes are not common and have been sparsely reported in literature. Epidemiological studies have reported dental impactions to affect 25% to 50% of the population.<sup>[6]</sup> Impaction of multiple supernumerary teeth including premolars have been reported as 0.39% in Turkish population.<sup>[7]</sup> There are numerous eruption-regulating biomolecules having similar and overlapping functions, which ensures that even the absence of a single factor does not interrupt the event of eruption.<sup>[8]</sup> But defects in some genes like: EGF, EGF-R, CSF-1, CSF-1R, IL-1, IL-1R, c-Fos, NFB, MCP-1, TGF- $\beta$ 1, PTHrP, Cbfa-1(now called Runx2), OPG, and RANK/RANKL may be responsible for this condition.<sup>[9]</sup>

The causes of tooth impaction are broadly divided into two viz. generalized and localized. Cleidocranial dysplasia is the most common syndromal cause of tooth impaction. Local causes of impaction may be a lack of space, prolonged retention or early loss of deciduous tooth, abnormal position of tooth bud, presence of alveolar cleft, ankylosis, cystic or neoplastic formation, alveolar or dental trauma, and dilacerations of teeth, thick gingival tissue above the occlusal surface of the teeth. In the index case, thick band of gingival tissue is found in our case.

Multiple impacted teeth are usually present in syndromes. The differential diagnoses in case of syndromes are Cleidocranial dysostosis<sup>[10,11,12]</sup>, Gardners syndrome<sup>[10,3]</sup>, Down syndrome<sup>[10]</sup> Aarskog syndrome, Zimmerman-Laband syndrome<sup>[10]</sup> and Noonan's syndrome<sup>[10]</sup> and Gorlin-Sedano syndrome<sup>[7]</sup>. In the case of cleidocranial dysplasia the patient usually exhibit high-arched palate with prolonged retention of deciduous teeth.

In clinical practice, the factors used to determine whether an impacted tooth can be successfully aligned in proper position are the position and direction of the impacted tooth, the amount of root formation, and the degree of root dilacerations. Furthermore, an impacted tooth is likely to have a dilacerated root, which becomes worse with time and lack of eruptive force from the dental

follicle combined with idiopathic displacement of secondary tooth germs results in many unerupted permanent teeth.<sup>[1,11]</sup> Management of multiple impacted permanent teeth poses a great challenge to clinicians. Therefore, it is important to initiate appropriate consultation and an interdisciplinary approach for the treatment.<sup>[4]</sup> Various treatment options for correcting impacted teeth includes autotransplantation, extraction and movement of the adjacent teeth in its position, extraction of the impacted canine and use of segmental osteotomy to move the posterior section forward, replacement of the impacted teeth section forward, surgical exposure of the teeth and orthodontic traction to bring the tooth into the line of occlusion.<sup>[13]</sup> The final option is obviously the most desirable approach.

## CONCLUSION

In the index case, all the impacted teeth were of permanent dentition and were bilaterally symmetrical and occurred in the absence of any syndromes and metabolic disorders, which is a rare occurrence. In presence of multiple impacted teeth a thorough history, examination and analysis of patient's records should be done. A multidisciplinary management approach is required to achieve optimum function and aesthetics.

*Tooth numbering in the above text is done according to FDI system of tooth notation.*

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