

Case Report

Multiple impactions in non-syndromic patient: a case report

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Abstract Man is blessed with twenty primary teeth that are replaced by thirty two numbers of permanent teeth for his whole life. Teeth which exceed the normal number are termed as supernumerary teeth. Multiple supernumerary teeth are rarely seen. Retention of teeth or impaction is one of the most common developmental dental defects seen among the eruption disorders. However, impaction of multiple teeth is an uncommon finding unless associated with some syndromes or systemic disorders. The present article reports a case of non-syndromic patient having 15 erupted permanent teeth, 10 retained primary teeth, 13 impacted permanent and 11 impacted supernumerary teeth.

Keywords: impaction, over retention, primary teeth, supernumerary teeth.

Introduction

In normal eruption scenario, permanent teeth will erupt uneventfully and replace their primary predecessors. However, sometimes teeth fail to erupt. Most of these unerupted teeth are deviated or angulated aberrantly and eventually lose their potential to erupt and be referred to as impacted teeth. Impaction involving a single tooth is a commonly observable finding. But impaction of multiple teeth is an uncommon phenomenon.

Sivakumar *et al.* (2007) have summarized the etiopathogenesis for multiple impactions as local, systemic and idiopathic. The local causes include mucosal barrier, supernumerary teeth, injuries to primary teeth, regional odontodysplasia, arch-length deficiency and skeletal pattern, radiation damage and oral clefts. The common systemic

causes include cleidocranial dysplasia, osteopetrosis, osteoglophonic dysplasia, Gardner syndrome, mucopolysaccharidosis, hypothyroidism, hypopituitarism, hypoparathyroidism, nutrition disturbance, vitamin D-resistant rickets and hyper-immunoglobulinemia E syndrome. Idiopathic causes include lack of eruptive force, traumatic displacement of secondary tooth germs, and defect in eruption mechanism. While systemic causes will result in more generalized impactions, local causes tend to affect one or few teeth. In the literature, most of the reported cases of multiple impacted teeth are associated with syndromes (Zuccati and Doldo, 2010; Cooper *et al.*, 2001). The present article highlights a case of multiple impacted permanent and supernumerary teeth with retained multiple primary teeth not associated with any disorder.



Figure 1 Intraoral photograph showing missing lower anterior teeth and retained primary upper centrals.

Case report

A 20-year-old male patient reported to the Department of Oral and Maxillofacial Surgery at College of Dental Sciences, Davangere, Karnataka, India, with complaint of missing lower front teeth. Patient's past dental history revealed shedding of primary lower anterior teeth about 2 years back and after that no permanent teeth erupted. Patient was born to non-consanguineous parents. Delivery and pregnancy history were uneventful. Family history described that he is the second son for his parents and his siblings do not have any physical or systemic disorders and having normal dentition. On general examination, the patient was moderately built and nourished and did not exhibit any physical or skeletal abnormality and showed no signs of mental retardation. Clinical examination of his respiratory system, cardiovascular system, liver and spleen, ophthalmological and neurological examination revealed no pathological symptoms. On extraoral examination, the patient had a straight profile, vertical growth pattern and competent lips. On intraoral examination, many of primary teeth like 51, 53, 54, 55, 61, and 63 in the maxillary arch and 73, 74, 83 and 85 in the mandibular arch (Fig.1) were over retained. Intraoral examination showed retention of teeth

51, 53, 54, 55, 61, and 63 in the maxillary arch, 73, 74, 83, and 85 in the mandibular arch. Permanent teeth like 12, 16, 17, 18, 22, 24, 26, 27 and 28 in the maxillary arch, 35, 36, 37, 42, 46, and 47 in the mandibular arch were present. Based on panoramic (Fig. 2), maxillary (Fig. 3) and mandibular occlusal (Fig. 4) radiographic examinations, multiple impacted teeth belonging to the permanent dentition and supernumerary teeth in both of the jaws were found. Many teeth were horizontally impacted, rotated, and crowded in the mandibular and maxillary anterior region and were not in the eruption path. Some impacted teeth in the mandibular anterior region were very close to the inferior border of the mandible. There were no cystic changes and the jaw bones showed normal trabecular pattern and density. In the view of impactions of supernumerary teeth, complete blood examination, genetic testing (karyotyping) and routine biochemical test including serum alkaline phosphatase assessment was carried out to rule out any syndromes and systemic disorders. The results of these tests were found to be within normal values. Since many teeth were almost horizontally impacted, crowded and were in unfavorable position, extraction of these impacted teeth followed by removable denture fabrication was planned.



Figure 2 Panoramic radiograph showing multiple impacted permanent and supernumerary teeth and retained primary teeth.

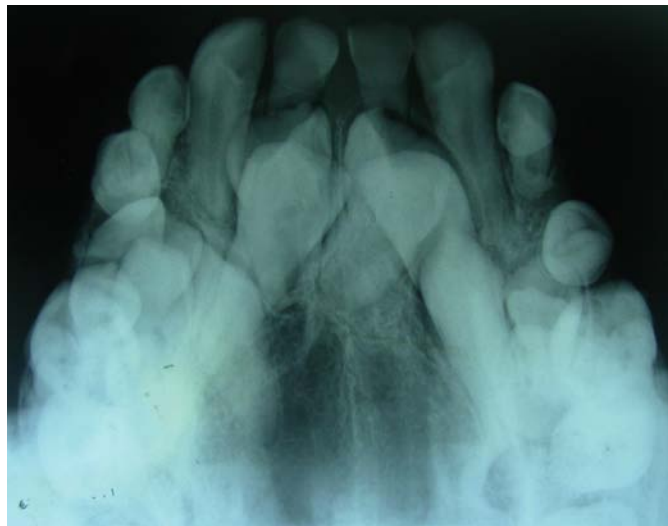


Figure 3 Maxillary occlusal radiograph showing multiple impacted permanent and supernumerary teeth.



Figure 4 Mandibular occlusal view showing multiple impacted permanent and supernumerary teeth.

Discussion

Multiple impacted teeth itself is a rare finding and often found in association with syndromes such as cleidocranial dysplasia (Cooper *et al.*, 2001), Gardner's syndrome (Zuccati and Doldo 2010), Zimmerman-Laband syndrome (Chodirker *et al.*, 1986) and Noonan's syndrome (Yalcin and Gurbuzer, 1993). In the present case, apart from multiple impactions of permanent and supernumerary teeth, no other feature of any disorder was diagnosed exactly. Multiple impacted teeth with no obvious etiology are a rare dental anomaly. In the literature, few reports are related to multiple impacted teeth with no known etiology. Nadine (1935) described ten impacted, vertically positioned teeth in a 21-year-old man, and Quinn (1956) wrote of aberrant impactions of the mandibular left second premolar, second and third molars, with no etiology. Valiathan *et al.* (1999) reported treatment of eight maxillary impacted teeth. More recently, Nagpal *et al.* (2005) reported a patient with nine impacted maxillary teeth, Sivakumar *et al.* (2007) found 14 impacted teeth (six in maxilla and eight in mandible) in one case (28-year-old woman) and six impacted teeth in second case (21-year-old woman).

Delayed or arrested eruption is probably caused by diminished resorption of bone and of primary teeth and to the presence of multiple supernumerary teeth. Lack of space or crowding of teeth in dental arches and rotation of tooth buds are some of the most common causes contributing to impaction (Babu *et al.*, 1998; Conley *et al.*, 2007). In other cases, the normal number of permanent teeth is present and the failure to erupt is caused by loss or lack of the eruptive force (Sivakumar *et al.*, 2007). Conditions which cause lacking of eruptive force in such cases could be due to either general, endocrinal, neurogenic, and mucosal or bone disorder. In the present case, it seems that lack of eruptive force in combination with crowding by impacted

mesiodens and rotation of tooth buds might have resulted in multiple impactions of teeth.

The exact cause and the significance of multiple impacted supernumerary teeth remain an enigma to a clinician. Association of mesiodens with retained primary teeth and unerupted permanent teeth in absence of any systemic conditions or syndromes is an uncommon entity, and seen only in some syndromes (Conley *et al.*, 2007). Review of literature shows only a few reported cases of non-syndromic multiple supernumerary teeth. Sivapathasundharam and Einstein (2005) have reported 12 impacted supernumerary teeth resembling premolars in a 20-year-old male patient. Srivatsan and Aravindha Babu (2007) have reported occurrence of ten supernumerary teeth. Leslie (1984) reported a case of non-syndrome multiple impacted supernumerary teeth that resembled regular mandibular premolar teeth. It has been stated that in non-syndromic cases, mandibular premolar region is the preferred site of occurrence (Açikgöz *et al.*, 2006). But in the case presented here, supernumerary teeth were found in both right and left first premolar region of mandible and in the maxillary anterior region.

The present case report is unique in the following aspect: it reports simultaneous occurrence of hyperdontia (supernumerary teeth) and agenesis of mandibular right and left third molars, maximum number (10 teeth – 6 in maxilla and 4 in mandible) of over retained primary teeth, impaction of permanent teeth and supernumerary teeth and absence of clinical features of syndromes and systemic diseases. Conditions where we find retained primary teeth are: hemifacial atrophy, hypopituitarism, hypothyroidism, cherubism, gingival fibromatosis and cleft palate (Yalcin and Gurbuzer, 1993). In the present case, the results of clinical and radiographic examination,

biochemical and hematological examination, genetic tests were within normal results. Hence the above conditions were excluded.

In previous reports, many non-syndromic cases of multiple impacted teeth were supernumerary or a combination of supernumerary and permanent teeth (Sharma, 2001; Shapira and Kuftinec, 1989; Leslie, 1984). In the present case, multiple impacted permanent teeth and supernumerary teeth along with over retention of primary teeth (10 teeth) were also found, which has not been reported earlier. Yildirim *et al.* (2004) reported a case of multiple impacted permanent teeth along with five impacted primary teeth. By the age of 7 years, primary maxillary central incisors should exfoliate and replaced by permanent incisors. But in the present case they were still present even at the age of 20 years. Likewise retention of many other primary teeth was also found. The presence of over retained primary teeth, as seen in this patient, is considered a consequence rather than a cause for failure of eruption. Since there is no eruptive mechanism, most of the primary teeth root are not resorbed and are retained instead of undergoing exfoliation till the adolescent period of the patient. This may be one of the predictable causes for delayed exfoliation of primary teeth.

Impacted teeth may lead to many problems if not intervened early, such as crowding of dentition, resorption and worsening of the periodontal status of adjacent teeth, development of pathologic conditions, like infections and inflammatory odontogenic cysts (Zuccati and Doldo, 2010). Thus early diagnosis and management of the case is very important to prevent morbidity.

Interdisciplinary management is essential in these cases for optimal outcome to restore function and esthetics. A variety of treatment options are available to the dentist for oral rehabilitation of these patients (Frank, 2000; Kokich and Mathews, 1993; Ohman and Ohman, 1980). These

include observation, surgical removal of hard and soft tissue obstructions, surgical uncovering and orthodontic repositioning (Frank, 2000; Kokich and Mathews, 1993; Ohman and Ohman, 1980). If any unerupted tooth do not erupt even after the surgical opening and orthodontic traction procedures, that tooth needs extraction followed by prosthetic replacement. With the advent of new designs in dental implants and their abutments, it is possible to consider replacing missing teeth with implant borne prosthesis after extraction of the impacted teeth. Intervention by oral surgeons, periodontists, orthodontists and prosthodontists are also warranted, thus placing a significant emotional and financial burden on patients and their families.

In the present case as many teeth were aberrantly impacted and in unfavorable position, it was not possible to move these teeth orthodontically to their normal position. Hence surgical extraction of these teeth followed by fabrication of removable prosthesis was planned.

References

- Açikgöz A, Açikgöz G, Tunga U, Otan F (2006). Characteristics and prevalence of non-syndromic multiple supernumerary teeth: a retrospective study. *Dentomaxillofac Radiol*, **35**(3): 185-190.
- Babu V, Nagesh KS, Diwakar NR (1998). A rare case of hereditary multiple impacted normal and supernumerary teeth. *J Clin Pediatr Dent*, **23**(1): 59-61.
- Chodirker BN, Chudley AE, Toffler MA, Reed MH (1986). Zimmerman-Laband syndrome and profound mental retardation. *Am J Med Genet*, **25**(3): 543-547.
- Conley RS, Boyd SB, Legan HL, Jernigan CC, Starling C, Potts C (2007). Treatment of a patient with multiple impacted teeth. *Angle Orthod*, **77**(4): 735-741.
- Cooper SC, Flaitz CM, Johnston DA, Lee B, Hecht JT (2001). A natural history of cleidocranial dysostosis. *Am J Med Genet*, **104**(1): 1-6.
- Frank CA (2000). Treatment options for impacted teeth. *J Am Dent Assoc*, **131**(5): 623-632.
- Kokich VG, Mathews DP (1993). Surgical and orthodontic management of impacted teeth. *Dent Clin North Am*, **37**(2): 181-204.
- Leslie JC (1984). Multiple supernumerary teeth. *Oral Surg Oral Med Oral Pathol*, **57**(4): 463.

- Nadine AM (1935). Case of new unerupted and impacted teeth in a man 21 years of age. *Dent Cosmos*, **77**: 304-306.
- Nagpal A, Sharma G, Sarkar A, Pai KM (2005). Eruption disturbances: an aetiological-cum-management perspective. *Dentomaxillofac Radiol*, **34**(1): 59-63.
- Ohman I, Ohman A (1980). The eruption tendency and changes of direction of impacted teeth following surgical exposure. *Oral Surg Oral Med Oral Pathol*, **49**(5): 383-389.
- Quinn JH (1956). Aberrant, unilateral, triple mandibular impactions. *Oral Surg Oral Med Oral Pathol*, **9**(9): 932-934.
- Shapira Y, Kuftinec MM (1989). Multiple supernumerary teeth. Report of two cases. *Am J Dent*, **2**(1): 28-30.
- Sharma A (2001). A rare non-syndrome case of concomitant multiple supernumerary teeth and partial anodontia. *J Clin Pediatr Dent*, **25**(2): 167-169.
- Sivakumar A, Valiathan A, Gandhi S, Mohandas AA (2007). Idiopathic failure of eruption of multiple permanent teeth: report of 2 adults with a highlight on molecular biology. *Am J Orthod Dentofacial Orthop*, **132**(5): 687-692.
- Sivapathasundharam B, Einstein A (2005). Non-syndromic multiple supernumerary teeth: report of a case with 14 supplemental teeth. *Indian J Dent Res*, **18**(3): 144.
- Srivatsan P, Aravindha Babu N (2007). Mesiodens with an unusual morphology and multiple impacted supernumerary teeth in a non-syndromic patient. *Indian J Dent Res*, **18**(3): 138-140.
- Valiathan M, Valiathan A, Iyer M (1999). Impactions in orthodontics. *J Philipp Dent Assoc*, **51**(1): 22-28.
- Yalcin S, Gurbuzer B (1993). Multiple impacted teeth in the maxilla. *Oral Surg Oral Med Oral Pathol*, **76**(1): 130.
- Yildirim D, Yilmaz HH, Aydin U (2004). Multiple impacted permanent and deciduous teeth. *Dentomaxillofac Radiol*, **33**(2): 133-135.
- Zuccati GC, Doldo T (2010). Multiple bilateral impactions in an adolescent girl. *Am J Orthod Dentofacial Orthop*, **137**(4 Suppl): S163-S172.