



Migration of mandibular supernumerary premolar in association with multiple anomalies –A rarest case report with literature review

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Abstract

Dental transmigration is an unusual dental anomaly involving tooth eruption phenomenon characterised by migrating of an unerupted tooth crossing the dental midline and transmigrating to the opposite side of the dental arch. This anomaly most commonly involves mandibular permanent canine. Supernumerary premolars are more commonly seen anomalies pertaining to tooth number and most of the time they remain impacted. Mandibular premolar migrating towards distal side of the arch is a rare finding and infrequent number of cases has been reported in the literature. However, migration of a supernumerary premolar distally is not reported till date. Therefore, the purpose of the present article is to report such a rarest case of mandibular supernumerary premolar which exhibited ‘paramolar wanderung’ phenomenon in association with occurrence of multiple anomalous supernumerary premolars both in the maxilla and mandibular arch along with severe root dilaceration which all were found in Indian male patient.

Keywords: Dental anomaly; Mandibular premolar; Multiple anomalies; Migration of tooth; Tooth eruption phenomenon.

INTRODUCTION

Supernumerary teeth are the dental anomaly pertaining to the number of teeth and most commonly seen anomaly compared to other dental anomalies or abnormalities in the intra-oral region. Supernumerary premolars are the extra premolars seen apart from the normal number of original premolars which may occur either in the maxilla or mandibular arch [1,2]. However, the prevalence is more frequent in the maxilla. Among the different shapes of supernumerary classification, supplemental type is the more common share reported in the mandibular arch whereas in the maxilla, it is more of conical or smaller than the normal. They usually seen located between two premolars or beside the premolar or in the premolar region. When they see beside the premolars they are termed as ‘parapremolars’ or ‘peridens.’ These supernumerary premolars occur either singly or in multiples, may be erupted or remain impacted and asymptomatic [3,4].

The ‘dental migration’ is the movement of an unerupted tooth to an area far from its regular place of tooth development. Peck in 1998 [5] referred it as ‘horizontal movement of an unerupted teeth and occurs only in the mandible’. The displacement of a totally or partially erupted tooth to an abnormal position in the dental arch will not come under this condition. The teeth most commonly migrate are the permanent mandibular canines, premolars and lateral incisors [6-12]. However, transmigration involving maxillary central incisor which is a rarest finding is also reported by the present author of this paper [9]. This condition is reported more in females as evident from the published data [6-12]. As teeth tend to show mesial movement under masticatory force, the phenomenon of distal migration is still not completely understood [6-15].

Literature shows few case reports and retrospective studies on distal migration of mandibular second premolars from its normal position to unusual sites in the mandible. This has been explained in detail in Table 1 [13-27]. The migration of

second premolars is usually encountered following early loss of the permanent first molars and before the eruption of second premolar. The possibility of second premolar migration towards distal side after the loss of permanent first molar varies from 5 to 10% based on literature evidence [13-27]. There is a different phenomenon pertaining to premolar eruption and it is named in the literature as 'paramolar-wanderung' which refers to a condition when mandibular second premolars show severe migration from their usual site to the region mesial to the permanent mandibular second molar, where it then erupts normally [5]. Although literature shows occurrence of supernumerary premolars which erupts normally into the oral cavity [28-31], but intra-osseous distal migration of impacted supernumerary premolar is not reported anywhere in the literature till date. Therefore, the purpose of this research paper is to report an unusual combination of multiple impacted supernumerary premolars both in the maxilla and mandible, severe root dilaceration in association with distal migration of mandibular supplemental premolar which were accidentally diagnosed on radiographic examination in a 33-year-old Indian male patient.

Table 1: Reported Cases of Migrated Premolars in the Literature

Sl. No.	Author/Year	Migrated site	Migrated Tooth	Associated Anomalies
1.	Sutton PRN/1968 [13]	Coronoid process	Mandibular second premolar	-
2.	Loh HS/1986 [14]	Mandibular angle	Mandibular second premolar	-
3.	Orton & McDonald/1986 [15]	Coronoid notch	Mandibular second premolar	-
4.	Infante-Cossio et al/2000 [16]	Mandibular angle	Mandibular second premolar	-
6.	Okada et al 2002 [17]	Coronoid process Mandibular condyle	Mandibular second premolar Mandibular second premolar	-
7.	Alves et al/2008 [18]	Mandibular notch	Mandibular left second premolar	Cleft lip and palate
8.	Shahoon & Esmaeili/2010 [19]	Mandibular angle (at the inferior and buccal side of the mandibular canal) (Bilateral)	Bilateral Mandibular second premolar	Nine congenitally missing teeth
9.	Fuziy et al/2014 [20]	From angle to condyle	Mandibular second premolar	-
10.	Mortazavi et al/2017 [21]	Below the inferior alveolar nerve canal.	Mandibular right second premolar	-
11.	Mortazavi et al/ 2018 [22]	Mandibular angle below the inferior alveolar nerve canal	Mandibular second premolar	-
12.	Ackuaku N & Sharma G/2018 [23]	Distal migration Distal migration	Mandibular second premolars	-
13.	Farias et al /2021 [24]	Ramus of the mandible	Mandibular left second premolar	Multiple missing teeth
14.	Kaya et al/2021 A retrospective study [25]	Nine cases out of 27722 radiographs evaluation	All unilateral Mandibular second premolars	Missing first permanent molars
15.	Bogdanowicz et al/2023 [26]	Ramus of the mandible	Mandibular right second premolar	Hyperdontia
16.	Present case	Angle of the mandible	Mandibular right supernumerary premolar	Multiple supernumerary premolars in the maxilla and mandible + severe root dilacerations (90-degree bend) involving mandibular left third molar

Case report

A 33-year-old male patient reported to a private dental clinic complaining of trauma to the face following a motor bike accident. After taking detailed history regarding trauma and clinical examination an orthopantomograph radiograph was advised. On intra oral examination complete set of permanent dentitions including third molars was observed. Following orthopantomograph radiographic examination presence of condylar fracture was confirmed. On further examination of the radiograph, unusual dental findings were observed. They are presence of multiple impacted supernumerary premolars both in the maxillary and mandibular arch. In the maxillary arch, on right side, one small rudimentary type premolar was observed between second premolar and first maxillary molar which was vertically placed (Figure 1). On the left side, another premolar was noticed which was placed between first and second premolars at apical one third of their roots and was angularly impacted with crown facing distally and root facing mesially. In the mandibular arch, two well-developed impacted premolars were observed on the right side (Figure 1). One was placed in vertical position between the roots of second right premolar and first permanent molar. Another premolar was of supplemental type as its shape resembled exactly to the second premolar on the radiograph. This impacted premolar was placed between roots of the permanent second molar and first molar and showed some migration towards angle of the mandible (Figure 1). On careful observation for other anomalies, presence of severe root dilaceration (90-degree curvature) was observed in the mesial root of mandibular left third molar. Mild root dilaceration (20-degree bend) was also observed in relation to the root of mandibular permanent left lateral incisor and left canine (Figure 1). Finally based on literature search these anomalies were diagnosed as 'dental migration of supernumerary premolar along with impacted multiple supernumerary premolars and root dilaceration'. The detailed description of the patient is described in Table 2. As patient chief complaint was trauma, he was scheduled for surgery and with the intention of documenting rare unusual dental anomalies these findings were recorded and hereby reported in this article.

Table 2: Demographic Factors of the Present Case

Age (in years)	Gender	Clinical Features	Radiographic Features	Associated Anomalies (Figure 1)
33	Male	Complete set of permanent teeth including third molars	Migrated mandibular supplemental premolar towards angle of the mandible located between roots of first and second permanent mandibular molars (Paramolar-wanderung) (Figure 1)	<p>Presence of supplemental premolar located between roots of mandibular right second premolar and first molar (vertical impaction).</p> <p>Presence of small, rudimentary shaped premolar located between roots of maxillary right second premolar and first molar (vertical impaction).</p> <p>Presence of small, conical shaped supernumerary premolar located at the root tips of maxillary left first and second premolars. (Disto-angular impaction).</p> <p>Severe root dilaceration (90-degree bend) in mesial root of mandibular left third molar.</p>

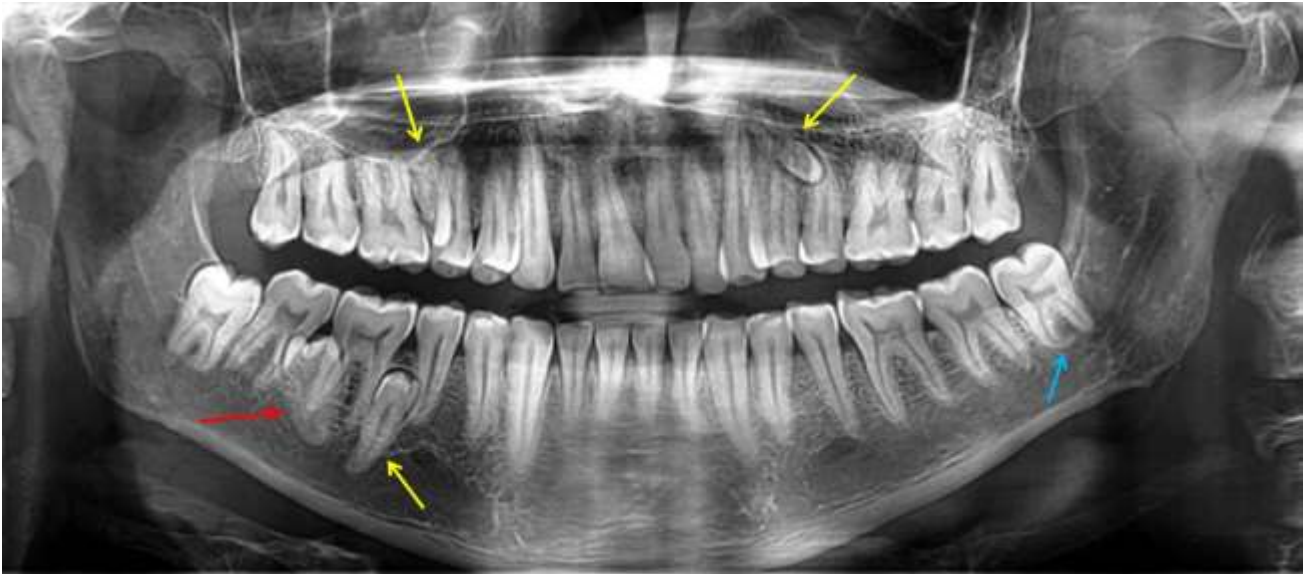


Figure 1: Orthopantomograph showing ‘paramolar-wanderung’ with mandibular right supernumerary premolar (red arrow), multiple supernumerary premolars in the maxillary and mandibular arch (yellow arrows) and severe root dilaceration (90-degree curvature) in the mandibular left third molar involving mesial root (blue arrow).

DISCUSSION

Supernumerary teeth developing in the region of premolar region exhibit peculiar features compared to other supernumerary teeth occurring in other areas of the oral cavity pertaining to epidemiology, etiology, diagnosis, characteristics and clinical implications [1-5, 19-27]. The prevalence of supernumerary premolars varies in different population ranging from 0.01 to 1% [1-4]. It is reported high in people living in East and in African countries. Still found 1% of the population in Southern Nigeria has one or more supernumerary premolars. Stafne et al and Nazif et al reported 8.4% of supernumerary premolars, whereas Grahnén and Lindahl reported about 9.1% of prevalence [1-4]. According to Oehlers [30], supernumerary teeth occurring in the mandible are most of the time supplemental type resembling normal anatomy of the premolars. However, there are reports showing conical type especially in the maxillary premolar region [1-4]. To rule out from the normal counterpart of premolars, Oehlers suggested that supernumerary premolars can be distinguished from those of the normal series as being either conical, diminutive or if they are well formed, they appear smaller than normal premolars [30].

According to Turner [31], 75% of supernumerary premolars were diagnosed to be unerupted, and the majority of them were remained asymptomatic. Therefore, he suggested touse follow-up radiographs in orthodontic patients to detect any unerupted supernumerary premolars that might have an effect during the treatment. It is also noted that mandibular premolar region was found to have the highest frequency of supernumerary teeth in the condition called “non-syndrome multiple supernumerary teeth” [1-5, 20-30].

In one epidemiological study six patients (0.15%) were found with supernumerary mandibular premolars in a sample population of 4000 patients evaluated [1,31]. The gender distribution found in this study was five to one male-to-female ratio. Among seven supernumerary premolars found in six patients, five appeared on the left side, and six were impacted or erupted ectopically. Out of six patients, four were of Hispanic descent, one was black and one was white. This finding again supports the theory that supernumerary premolars are more common in races other than white [26-31]. In the case described here, all four supernumerary premolars were impacted which occurred both in the maxilla and mandible, bilaterally, and both conical and supplemental type were observed.

When supernumerary premolars are present, one should consider the consequences or sequel of their presence. Mandibular supernumerary premolars showed an increased tendency towards the formation of cysts and pathological changes. Some supernumerary premolars showed transposition with other teeth [1-5]. As a result, early detection of supernumerary premolars is important in their management and this should begin with detailed case history involving medical and dental history and carrying out a radiological assessment following a meticulous clinical examination. In the present case, none of the supernumerary premolars were associated with any pathologic changes and were asymptomatic.

Migration of teeth especially second premolars in the mandible is reported in the literature. Table 1 shows reported case reports and retrospective studies of migrated premolars in the mandible [13-27]. Shagoon et al in 2010 [19] reported bilateral intra-osseous migration of mandibular second premolars in an 18-year-old patient to the mandibular angle at the

inferior and buccal side of the mandibular canal along with nine congenitally missing teeth without any systemic complication or abnormality in the body. Authors performed surgical extraction of these migrated premolars.

‘Paramolar-wanderung’ is an unusual dental eruption phenomenon mentioned in the dental literature pertaining to eruption of mandibular premolars particularly second premolars. This different process is mentioned for that condition in which mandibular second premolars exhibit severe migration from their normal site to the place mesial to the permanent mandibular second molar from there it erupts normally into the oral cavity. In the case described here, mandibular supernumerary premolar showed such a different eruption phenomenon, ‘paramolar-wanderung’ as it was impacted and seen mesial to permanent second molar [5]. However, there were no signs of eruption of this migrated tooth as it was angulated with crown portion facing distally and root portion facing mesially. One more point to be considered for non-eruption of this tooth is because already normal counterpart of premolars was erupted in the oral cavity resulting no space and moreover this was a supernumerary/extra tooth for the normal counterpart. Therefore, it was assumed that migration of impacted supernumerary premolar towards angle of the mandible and later to the ramus of the mandible or any other site is expected and this can be ruled out with further observation following serial radiographs. However, there are case reports showing migration of normal premolars especially second premolars to different places in the mandible like ramus, angle, condyle, coronoid process, inferior border of the mandible and mandibular canal [13-27]. Along with this rare phenomenon in the present case, occurrence of multiple supernumerary premolars and severe root dilaceration involving the mandibular third molar was also evident which is not reported till date according to author’s best knowledge. As these impacted supernumerary premolars were asymptomatic further observation with serial radiographic examination is required in this patient.

Root dilaceration is another radicular anomaly noticed in the present case involving mesial root of mandibular third molar. This root anomaly refers to any deviation or bends in the linear relationship of the tooth root. It is an extraordinary curving or angulation involving root part of the tooth. The exact aetiology is not mentioned and it may be attributed to the trauma during root development. Movement of the root or part of the root or even the crown from the remaining developing root may lead to sharp angulation in the root after the tooth completes development [32-33]. This condition occurs anywhere in dentition with reported prevalence of 0.42-92% and most commonly affecting the permanent maxillary premolar teeth. The curvature or bend usually occurs in apical half of the root length and mostly affecting either eruption or normal tooth function. Clinically this condition cannot be detected and is best diagnosed on radiographic examination. When roots dilacerate mesially or distally, the condition is clearly visible on a periapical image. However, when the roots are dilacerated buccally (labially) or lingually, the central x-ray passes approximately parallel with the deflected portion of the root, and the apical end of the root may have the appearance of a circular or oval radiopaque area with a central radiolucency in the area of the apical foramen and root canal giving rise to the appearance of a ‘bull’s eye’ [32,33]. The periodontal ligament space around this dilacerated portion may be seen as a radiolucent halo encircling the radiopaque area. Root with dilaceration have clinical implications such as complications during orthodontic treatment, extraction, endodontic treatment and sometimes preclude use as abutment. Sometimes dilacerated roots may be difficult to differentiate from fused roots, sclerosing osteitis or a dens bone island. However, using better angulated images taken at different angles, these conditions can be easily differentiated from root dilaceration. Regarding management, a dilacerated root may not require treatment because it provides adequate support [32-33]. If the tooth is to be extracted for some other reason, the removal can be complicated, especially if the surgeon is not having a preoperative image. In the present case, root dilaceration was observed in the apical one third part of the mesial root pertaining to mandibular left third molar. The curvature was measured almost 90-degree bend. Moderate root dilaceration was also noticed in the mandibular left lateral incisor and left canine.

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