

Favorable Outcome of a Maxillary Supplemental Premolar

Abstract

Hyperdontia/additional teeth are the commonly used synonyms for supernumerary tooth/teeth (ST). They occur due to the disturbances during the initiation stage of tooth development. They can be noticed in any region of oral cavity and may be single, double, or multiple; unilateral or bilateral; erupted or unerupted. This report presents a case of impacted single ST in the maxillary premolar region in a 14-year-old boy. Usually, ST are extracted, but there are some conditions where ST could be used beneficially. The present case is an example where ST played a beneficial role.

Keywords: Orthodontic extrusion, supernumerary teeth, supplemental premolar

Introduction

Supernumerary tooth/teeth (ST) may be defined as any tooth or teeth substance in excess of the usual complement of 20 primary and 32 permanent teeth or the existence of an excessive number of teeth in relation to the normal dental formula.^[1] They are also known as additional teeth or hyperdontia. They occur due to the disturbances during the initiation stage of tooth development. ST are one of the frequently encountered developmental disturbances in clinical practice, more often in the permanent dentition.^[1,2] ST may be seen in any tooth bearing area of both the arches, including rare occurrence in extra oral sites like nasal cavity.

A number of possible reasons for the development of ST have been proposed including hyperactivity of dental lamina and division of tooth bud.^[3] Heredity also plays a role in the development of ST; although, the exact mode of inheritance has not been clearly established. ST may cause various complications that include midline diastema, delayed eruption, displacement of teeth, impaction, rotation of adjacent teeth, crowding, and cystic formation.^[4] Identification and diagnosis of ST at an early stage may avoid these complications.^[5]

Based on the shape,^[6] they can be of four types: (1) Conical: peg-shaped teeth, (2)

Tuberculate: made of more than one cusp or tubercle; barrel-shaped, usually invaginated (3) Supplemental: resemble normal teeth, may be an incisor, premolar or a molar, and (4) Odontome: does not resemble any tooth but is only a mass of dental tissue. Supplemental teeth are commonly seen in posterior region than the anterior region of the both jaws.

Based on the existing literature, prevalence of supplemental premolar/premolars (SPM) in maxilla is less compared to other types of ST. It has been noticed that the prevalence of SPM reported to be between 0.075% and 0.26% and most of them occur in the mandible.^[7,8] Esenlik *et al.* reported that the prevalence of maxillary supernumerary premolars to be 0.2% and mandibular supernumerary premolars to be 0.5%.^[9] Kaya *et al.* recorded the prevalence of nonsyndromic maxillary and mandibular SPM to be 0.01% and 0.2%, respectively, and all SPM were either partially erupted or impacted.^[10] The prevalence of ST has been reported differently in various studies due to the differences in patient age groups, ethnicity, sample size, and radiographic techniques used.^[3] Most of the clinicians recommended surgical extraction of SPM by retaining the premolar. However, there is scarce literature regarding the beneficial utilization of the SPM. Therefore, the purpose of this article was to report a case of favorable outcome of SPM in a 14-year-old boy.

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Case Report

A 14-year-old boy reported to the Department of Pedodontics and Preventive dentistry with a chief complaint of malalignment of teeth. His medical and family histories were not significant. Clinical examination revealed the presence of all the permanent teeth for his age, fractured tooth 11 (Ellis class II) and a distobuccally rotated tooth 15 [Figure 1].

There was evidence of buccally placed impacted extra tooth (orthopantomogram [OPG] and Intra-oral periapical film) with completely formed root in between teeth 15 and 16 on radiographic examination. It was diagnosed as supplemental type of premolar due to its identical morphology to the premolar. Tooth 15 was rotated and tooth 16 was with slight mesial tilt which might be due to the presence of the impacted SPM and the developing third molars were in their respective positions [Figure 2a and b].

As the impacted SPM was in favorable position with normal orientation and the erupted tooth 15 was rotated distobuccally, after discussing with the orthodontist, it was planned to extract the tooth 15 and surgically expose the SPM followed by its orthodontic extrusion.

Before surgical exposure of the premolar, orthodontic brackets were bonded to the bi-maxillary teeth present anterior to second premolars in order to facilitate attachment of ligature wire to brackets. Under local anesthesia (LIGNOX 2% A, INDOCO REMEDIES Ltd., Mumbai, India), buccal mucoperiosteal flap was raised and the malaligned second premolar was extracted. Adequate amount of bone covering the SPM was removed using slow-speed handpiece with surgical bur as well as copious saline irrigation.

Orthodontic bracket (3M Unitek Gemini Metal Brackets, Rajasthan, India) was attached to the buccal surface of surgically exposed SPM and a ligature wire was tied to that bracket [Figure 3]. Mucoperiosteal flap was repositioned, followed by suturing with 3-0 black silk (UNISIL,



Figure 1: Rotated right maxillary second premolar

Bangalore, and India). Later, the orthodontic treatment was completed using fixed appliance therapy. Tooth 11 was restored with composite (3M ESPE, Bengaluru, India). Sutures were removed after 7 days, and the healing was uneventful. Periodically, the appliance was activated and the SPM erupted into the occlusion in 3 months [Figures 4 and 5].

Discussion

ST are considered to be one of the significant dental anomalies affecting the permanent dentition. Most of the complications associated with ST are due to their ability to displace, delay or prevent the eruption of permanent teeth.^[11] Hence, it is important to diagnose ST at the earliest, to avoid or minimize complications.

Radiographs are the most reliable and definitive method for the diagnosis of ST.^[5] Commonly used radiographs are OPG, anterior occlusal, and periapical radiographs. SPM is usually asymptomatic, and most cases are diagnosed by chance during radiographic inspection before initiating orthodontic treatment. In the present case too, ST was discovered by chance as a radiographic finding.

SPMs are commonly seen in mandibular arch with the bilateral occurrence. However, in the present case report the SPM was evident in the maxillary arch, and it was unilateral.^[12]

The impacted SPM was in a favorable position, however, resulted in malposition of teeth 15 and 16 in the present case. In such cases, two treatment options can be suggested. One option is to surgically extract the impacted ST and derotation of the premolar. However, derotated teeth are difficult to retain in their new position. They have very high risk of relapse due to rebound of overstretched elastic fibers in the supracrestal tissues. Long-term stability can be achieved by pericision or circumferential supracrestal fiberotomy where gingival fibers are incised to prevent relapse.^[13]

Another treatment option was to extract permanent premolar and orthodontic extrusion of impacted SPM. In the present case, surgical removal of SPM might damage the adjacent teeth, since the impacted ST was in close proximity to the second premolar and first molar. In addition, the derotation of premolar is time-consuming and chances of relapse



Figure 2: (a and b) Orthopantomograph and intraoral periapical radiography showing supplemental premolar

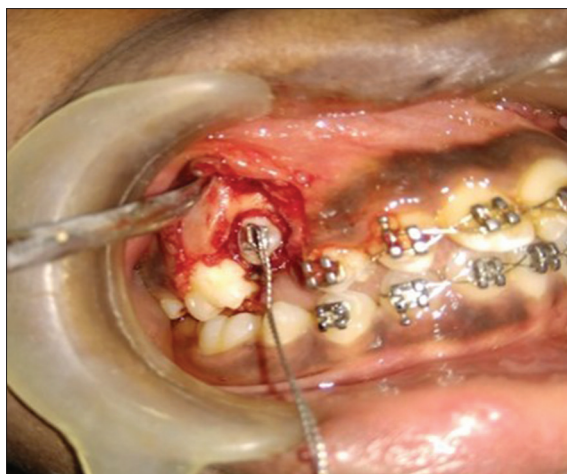


Figure 3: Surgical exposure of supplemental premolar with bracket and ligature in place



Figure 4: Supplemental premolar guided into occlusion (buccal view)



Figure 5: Supplemental premolar guided into occlusion (occlusal view)

coexist. Hence, the second treatment modality was chosen as it is better suitable to the present case.

Procedures used for surgical exposure and traction are important if the impacted tooth has to be aligned in correct

occlusion. Full-thickness flap surgery is required to expose the crown. After an appropriate attachment is placed for traction, the flap is closed to its original position and sutures are placed. This approach promotes good tissue healing without gingival and periodontal problems.^[14]

There is no literature regarding spontaneous eruption of the ST with completed root after clearing the obstacle. Usually, it is believed that the tooth will lose its active eruption potential after root completion and in the present case, the root of SPM was almost completed. Therefore, orthodontic extrusion of SPM was carried out after the surgical exposure instead of “wait and watch” for its spontaneous eruption. ST is usually extracted as they do not serve any purpose most of the times. However, there are some conditions where ST could be used beneficially.^[15] The present case is an example where ST played a beneficial role by replacing the rotated tooth. Brezniak described a case in which impacted ST was repositioned orthodontically to replace a periodontally compromised mandibular first premolar.^[16]

Hence, each case should be assessed individually. The clinician must weigh the benefits and risks in the management of supernumeraries and explain them to the parent or guardian in detail, before execution of the treatment plan.

Conclusion

SPM could be treated either by nonextraction or extraction depending on the clinical situation. The frequency with which SPM are observed, and their harmful effects on occlusal development justify radiographic evaluation. A multi-disciplinary approach with both clinical and radiographical evaluations is very important for the management of SPM.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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