Case Report

Report of a case with 19 supernumerary teeth in a non-syndromic patient

Lei Yan, Long Wang Yu*, Kishor Bhandari*, Chang Li Shan

Department of Oral and Maxillofacial Surgery, 2nd Affiliated Hospital of Stomatology, Jiamusi University, Heilongjiang, China

Abstract

Supernumerary teeth occur frequently in human dentition, but presence of multiple supernumerary teeth in patients without any associated syndrome or systemic disorder is a rare phenomenon. Presence of supernumerary teeth in itself is not a problem and may not require removal in all cases but in certain conditions, they may be associated with several clinical complications and require removal. Here, we present a 14 year old female who complained of non emergence of permanent teeth. Orthopantomogram initially showed presence of fifteen impacted supernumerary teeth distributed in all quadrants, but later, cone-beam computed tomography further revealed four additional teeth, totaling to nineteen supernumerary teeth. Consultation with concerned specialists ruled out any syndromes or systemic disorders which led us to the diagnosis of ''non-syndromic multiple supernumerary teeth'' and this probably is the highest number of supernumerary teeth reported in a single non-syndromic patient till date.

Key words: Cone-beam computed tomography, impacted, supernumerary, syndrome, tooth

INTRODUCTION

A supernumerary tooth is the one that is additional to the normal series and can be found in almost any region of the dental arch.[1] Their reported prevalence ranges between 0.3-0.8% in the primary dentition and 0.1-3.8% in the permanent dentition.[2-4] Supernumerary teeth can present as one or many, unilaterally or bilaterally and in either of the jaws.[1] Cases involving one or two supernumerary teeth most commonly affect the anterior maxilla. In contrast, cases involving multiple supernumerary teeth tend to involve the mandibular premolar region.[5] In study of non-syndrome multiple supernumerary teeth, Yusof[3] found 60.9% of the total sample to occur in the mandible and 44.8% in the mandibular premolar region. The etiology of supernumerary teethis not completely understood but both genetic and environmental factors have been implicated in the phenomenon.[6] Several theories have been suggested to explain their occurrence such as Atavism,[7] Dichotomy theory, Dental lamina hyperactivity theory.[2]

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Supernumerary teeth can be classified based upon morphology (conical, tuberculate, supplemental, odontomes) or location (mesiodens, paramolar, distomolar, parapremolar).[8] Supernumerary teeth may have several fates like normal eruption, remain impacted, appear inverted or erupt in an abnormal path.[9] Literature shows that only (13-34)% of all permanent supernumerary teeth are erupted, compared with 73% of primary supernumerary teeth. A supernumerary tooth does not always necessarily produce complications and can be accidentally diagnosed in routine radiographic examinations. But if symptomatic, can present with various clinical manifestations such as displacement, rotation or obstruction to eruption of associated tooth, crowding, root resorption of adjacent teeth, incomplete space closure during orthodontic treatment and pathologies associated with the supernumerary tooth itself. Several developmental disorders frequently show association with multiple supernumerary teeth. These include Cleft lip and palate, Cleidocranialdysostosis, Gardner's syndrome and less frequently Fabry Anderson's syndrome, Ehlers-Danlos syndrome, Incontinentia pigmenti and Trico-Rhino-Phalangeal

Address for correspondence:
Dr. Chang Li Shan,
Department of Oral and Maxillofacial Surgery, 2nd Affiliated Hospital of Stomatology, Jiamusi University, Heilongjiang, China.
E-mail:1514953950@qq.com

*Lei Yan, Long Wang Yu and Kishor Bhandari contributed equally to the present study

syndrome.[2,3,10] Alarming signs that should alert a clinician to the possible presence of supernumerary teeth include unilateral persistence of a deciduous tooth, failure of eruption or ectopic eruption of a permanent tooth, a wide midline diastema or interdental spacing, or rotation of erupted permanent tooth.[11] The most useful radiographic investigation in diagnosis of supernumerary teeth is the orthopantomogram (OPG), with additional views of the anterior maxilla and mandible in the form of occlusal or periapical radiographs. Presently, conebeam computed tomography (CBCT) is being effectively used to evaluate supernumerary teeth.[12] This technique yields detailed three dimensional images of local structures and may prove useful in pre-treatment evaluation of supernumerary teeth and surrounding structures. Decision on how to manage supernumeraries depends on the type and position of the supernumerary tooth and on its effect or potential effect on adjacent teeth.

CASE REPORT

A 14 year old girl reported to the department of oral and maxillofacial surgery of School of Stomatology, Jiamusi University (China) with a chief complaint of delayed eruption of upper and lower front permanent teeth and unaesthetic appearance. Medical/family history was non-contributory. Extra-oral clinical examination did not detect any abnormalities. On intra-oral examination, deciduous teeth in various stages of exfoliation and permanent teeth in various stages of eruption were seen, but both the processes not occurring in a normal chronological order. 51 and 61 were still retained and appeared larger than usual with V-shaped notching of the incisal edge. The absence of 52 and 62, and negative history of extraction or exfoliation of the same raised a suspicion towards fusion of 51, 52 and 61, 62; but that could still be a structural abnormality of the central incisors with absence of laterals. 53, 54, 55, 63, 64, 65, 72, 73, 74, 83, 84 and 85 were also still retained. The only permanent teeth clinically visible were 16, 26, 31 and only the incisal edge of 41. This bizarre state of teeth eruption and exfoliation warranted a radiographic examination and an orthopantomogram (OPG) was advised to see the status of underlying dentition [Figure 1].

The OPG showed various impacted permanent teeth of normal series and many supernumerary teeth in all quadrants. As per the OPG, fifteen supplemental teeth could be rule out in total; eight in maxilla and seven in mandible. A CBCT of mandibular and maxillary dentition was again advised to rule out any missing supernumerary teeth in the OPG. Consequently, the CBCT revealed four additional supernumerary teeth in the patients (one in mandible and three in maxilla) that were missed in the OPG due to overlapping of the osseous and dental structures [Figures 2-4]. This accounted to a total of nineteen supernumerary teeth in the patient. The presence of multiple retained deciduous, unerupted permanent and supernumerary teeth raised suspicion of any associated syndromic disorders but a detailed consultation with pediatrician, pedodontist and general physician ruled out the presence of any craniofacial syndromes or systemic disorders in the patient. Thus, a diagnosis of ''Non-Syndromic multiple supernumerary teeth'' was made. It was not very easy to differentiate some permanent teeth of normal series from the supernumeraries, and thus an assumption that these extra teeth should be supplemental was made. On the other hand, some supernumeraries were in early stages of development or poorly developed, so proper anatomy could not be studied.

The association of various permanent teeth with the supernumerary teeth is demonstrated through a schematic diagram [Figure 5]. After consultation with orthodontist and pedodontist, a treatment plan was made to extract all the supernumeraries and retained deciduous teeth carefully with as much minimal trauma as possible to the permanent teeth of normal series. This would be followed by comprehensive orthodontic treatment that includes careful monitoring of the eruption status, space maintenance, surgical exposure and orthodontic traction of teeth as required.

DISCUSSION

Presence of supernumerary tooth in normal dentition is not an unusual phenomenon but the presence of multiple supernumerary teeth in individuals without any syndromic disorder is not common. Literature

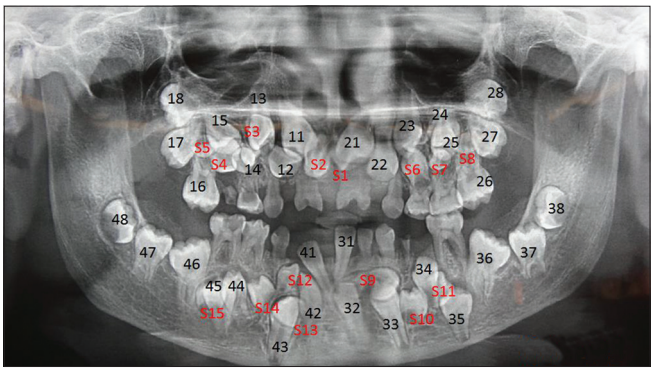

Figure 1: Preoperative orthopantomogram of the patient with markings of supernumerary teeth (in red) and permanent teeth of normal series (in black)

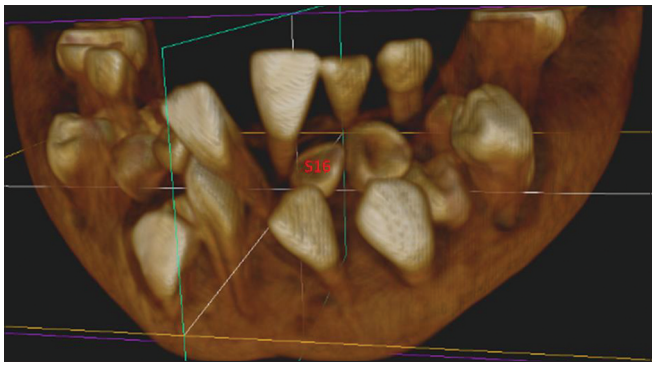

Figure 2: Cone-beam computed tomography revealing additional supernumerary tooth in left mandibular quadrant

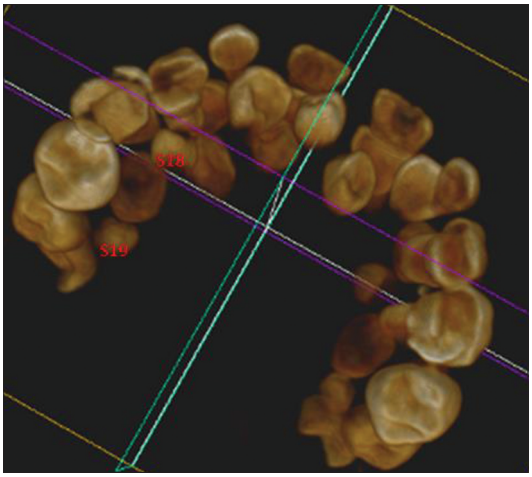

Figure 4: Cone-beam computed tomography revealing additional two supernumerary teeth in right maxillary quadrant

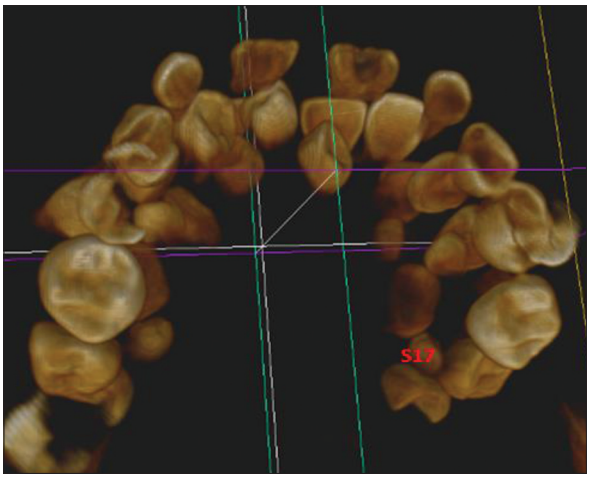

Figure 3: Cone-beam computed tomography revealing additional supernumerary tooth in left maxillary quadrant

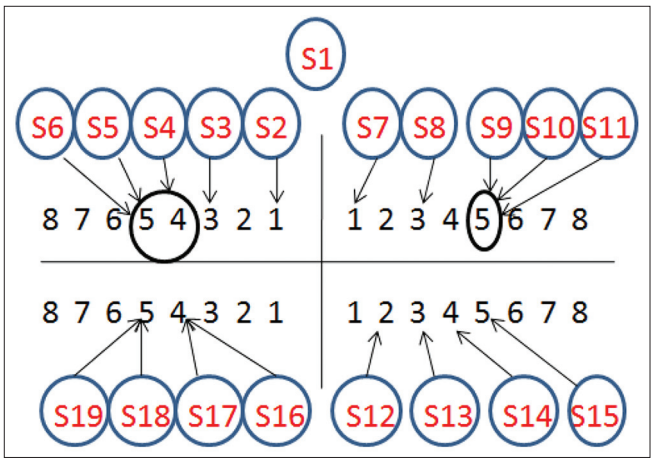

Figure 5: Schematic illustration of association of permanent teeth with supernumerary teeth

shows that single supernumerary tooth is the most common.[2] The most common location for a single supernumerary has been cited as anterior maxilla, specifically the midline. In contrast, multiple supernumerary teeth has been found to occur more frequently in the premolar region.[3] Ansari *et al.* in 2013 reported a case of thirteen supplemental teeth in non-syndromic patient and before this case was presented, that was probably the highest number of supernumerary teeth reported in a single non-syndromic patient. All of the supernumerary teeth in that patient occurred in the premolar region[13] In contrast, in the present case, among the nineteen supernumerary teeth, one was present in maxillary midline region (mesiodens), one each was associated with 11, 13, 21, 23, 32, 33, 34, 35. Three supernumeraries were associated with 14 and 15, three with 25, two with 44 and two with 45. This accounts to 58% of the total supernumerary teeth in maxilla and 42% in the mandible among which 37% were present in anterior region and 63% in premolars region. This is in contrast to data in a landmark review on the subject matter by Yusof[3] who reported an incidence of 60.09% in mandible and 44.8% in mandibular premolars.

Cortes-Breton Brinkmann *et al*. in 2013[14] published an extensive review of non-syndromic multiple supernumerary teeth in which they reviewed 13 patients with total of 55 supernumerary teeth. They defined multiple as the presence of three or more supernumerary teeth in a single patient, taking in consideration the fact that cases of three or more non-syndromic supernumerary teeth constituted less than 1% of published literature and that a number of authors have followed the same criteria. This is in contrast to Yusof, who considered five or more than five teeth as the criteria. In the review by Cortes-Breton Brinkmann and workers, they presented the incidence to be 50.9% in mandible and 49.1% in maxilla, which is again in contrast to data of our case. They showed that 69.1% of the supernumerary

teeth had a supplemental morphology and 30.9% were heteromorphic. In our case, 16 teeth (84.2%) had a supplemental morphology and 3 teeth (15.8%) were heteromorphic. Furthermore, they mentioned in their review that 94.5% of the supernumerary teeth were impacted, whereas in our patient, all the supernumerary teeth were impacted. They also reported that 43.6% of the teeth had an associated disease but we did not find such findings in our case.

Orthopantomogram has been the modality of choice for investigating the status of supernumerary teeth, but the introduction of Cone Beam Computed Tomography (CBCT) to radiographic technology has proved as the most effective three dimensional means of examining dental and associated osseous structures. In our case too, four additional supernumerary teeth could be located in CBCT only which was easily missed in the OPG due to overlapping of dental and osseous structures. Such shortcomings could affect the management of the case as a whole. Thus, CBCT can be regarded as the best choice for investigating multiple supernumerary teeth.

Regarding management issues of supernumerary teeth, established guidelines do not exist but few things need to be considered. If the teeth are asymptomatic with no radiographic evidences of any pathologies and not likely to interfere with orthodontic tooth movement, (location beyond teeth apices) they can be monitored with periodic radiographic examination. But if the patient does not want to risk any complications, considerations can be given to extraction. If associated with roots of permanent teeth, waiting till the completion of root development should be considered to minimize the chances of root damage. But if the supernumerary teeth are associated with any sort of complications like cysts or tumors, obstruction to normal teeth eruption, hindrance to orthodontic tooth movement and unaesthetic appearance, extraction is a logical management in those cases.[8] In the case reported, the sole reason for extraction was obstruction to normal teeth eruption and thus retention of deciduous dentition. Though the post-extraction phases are not presented in the report, the patient was referred to orthodontics department for monitoring of eruption, space management and necessary orthodontic procedures to guide the teeth into normal occlusion.

Mere presence of a supernumerary tooth is not an indication for extraction. The clinician should be familiar with the early clinical manifestations of the presence of supernumerary tooth/teeth in the dentition so that necessary early intervention could be taken to prevent any possible complications. Moreover, presence of multiple supernumerary teeth should always raise suspicion to presence of any craniofacial syndromes or systemic disorders. After diagnosis and treatment, a periodic long term observation of the dentition is paramount to favorable results.

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