

Clinical management of palatal supernumerary teeth in pediatric patients

Penanganan klinis gigi supernumerary palatal pada pasien anak

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ABSTRACT

Hyperdontia, or supernumerary teeth, is a dental malformation characterised by an increased number of teeth. The aetiology of this condition is not yet fully understood, but there are various theories, including dental bud dichotomy, localised hyperactivity of the dental lamina, tooth division during the bud stage, and hereditary factors that may be associated with syndromes. Case 1 involved a 12-year-old girl presenting with a complaint of teeth on the her palate. Case 2 involved a 7-year-old boy who presented with his mother complaining of supernumerary teeth in the upper front region. Both patients attended Maranatha Dental Hospital, where non-surgical extraction of the supernumerary teeth was performed. Mesiodens is one of the most commonly found types of supernumerary teeth; however, cases of multiple supernumerary teeth remain clinically rare. This case demonstrates various types of supernumerary teeth occurring in children; follow-up care after extraction consists of observation without orthodontic treatment. It is concluded that supernumerary teeth frequently occur in the maxilla, and their management must be carried out accurately, taking complications into account to ensure that the development of other teeth is not disrupted.

Keywords: supernumerary teeth, extraction, primary teeth

ABSTRAK

Hiperdontia atau *supernumerary teeth* merupakan suatu anomali malformasi gigi yang ditandai dengan peningkatan jumlah gigi. Etiologi dari anomali ini masih belum diketahui sepenuhnya, namun ada berbagai teori yang berkaitan yaitu dikotomi tunas gigi, hiperaktif dental lamina secara lokal, gigi mengalami pembelahan pada tahap *bud stage*, dan faktor turunan yang dapat berkaitan dengan sindroma. Kasus 1 pada perempuan berusia 12 tahun dengan keluhan gigi pada langit mulutnya. Kasus 2 pada laki-laki berusia 7 tahun datang bersama dengan ibunya dengan keluhan terdapat gigi berlebih pada gigi depan atas. Keduanya datang ke RSGM Maranatha, dilakukan ekstraksi tanpa bedah pada gigi-gigi berlebih. Mesiodens merupakan salah satu tipe *supernumerary teeth* yang paling sering ditemukan, namun untuk kasus *multiple supernumerary teeth* masih jarang secara klinis. Kasus ini memperlihatkan berbagai macam tipe *supernumerary teeth* yang terjadi pada usia anak, perawatan lanjutan setelah ekstraksi berupa observasi tanpa perawatan ortodontik. Disimpulkan bahwa *supernumerary teeth* sering terjadi pada maksila yang perawatannya harus dilakukan dengan akurat dengan mempertimbangkan komplikasinya agar perkembangan gigi lainnya tidak terganggu.

Kata kunci: hiperdontia, ekstraksi, gigi sulung

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INTRODUCTION

Hyperdontia or supernumerary teeth is a dental malformation anomaly characterized by an increase in the number of teeth, can occur in single or multiple forms, unilateral or bilateral, and affects one or both jaws.¹ Supernumerary teeth usually appear without causing symptoms, but in some cases, this situation can cause malocclusion, aesthetic, functional and psychological problems. The incidence of this anomaly fluctuates between 0.3 and 0.8% in primary teeth and between 1.5 and 3.9% in permanent teeth. In the Chinese population, the incidence of hyperdontia can reach 7.8%. Single supernumerary teeth were seen in 79% of patients, 20% in cases with two and 1% with three or more teeth or called multiple supernumerary teeth.^{1,2}

The etiology of this anomaly was still not completely known, but there are various theories related to the occurrence of supernumerary teeth. One theory states that supernumerary teeth were created as a result of the tooth bud dichotomy. Another theory, states the hyperactivity theory, which shows that supernumerary teeth are formed due to local hyperactivity of the dental lamina, the teeth undergo division at the bud stage, hereditary factors may also play a role in this tooth growth anomaly.³ Supernumerary teeth occur more often in the upper jaw and can be categorized based on chronology, topography and morphology. In terms of chronology, supernumerary teeth can develop during the primary dentition period, the permanent dentition period, or during the mixed dentition period. Based on their morphology, supernumerary teeth are defined as supplemental or rudimentary (cone-shaped, tuberculate, odontome). Mesiodens, paramolar, distomolar and parapremolars are topographic features of supernumerary teeth.³⁻⁵

Supernumerary teeth therapy depends on the area and number of supernumerary teeth (eruption of teeth in their proper position in the maxillary arch, out of the arch or impaction), also depends on the presence of a pathological process affecting the supernumerary teeth and/or a series of normal teeth that are growing, retained, or impacted. In general, treatment for supernumerary teeth consists of tooth extrac-

tion, orthodontic treatment and surgery for impacted teeth.⁶

CASE

Case 1

A 12-years-old girl came with a complaint that there were teeth on the roof of her mouth. There was no similar history in the family and the patient is not associated with any particular syndrome. No systemic abnormalities were found in patients related to this problem. The patient wants the tooth examined and treated.

An intraoral examination was carried out and several teeth erupted in the palatal area 13. On the panoramic view, an additional tooth superimposed with tooth 13 was found (Fig. 1). Based on the results of the clinical and radiographic examination, this patient was diagnosed as having multiple supernumerary teeth *ad regio palatal 13*. The operator recommended multiple extractions of the supernumerary teeth. The patient and the patient's parents agreed to the recommendation to remove supernumerary teeth.



Figure 1a Clinical and **b** radiographic features of supernumerary teeth on palatal 13

Case 2

A 7-years-old boy came to RSGM Maranatha with his mother with the complaint that he had an extra tooth on his upper left front tooth, it didn't affect his appearance, it just felt uncomfortable. No systemic abnormalities were found in patients related to this problem.

A thorough examination of the patient's oral cavity was carried out. On intraoral examination, an erupted tooth was found in palatal

area 61. Based on the results of clinical and radiographic examination, the patient's diagnosis was supernumerary tooth ad regio palatal 61 (Fig.2).

The operator recommended extraction of supernumerary teeth. The patient and the patient's parents agreed to the recommendation to remove supernumerary teeth.



Figure 2a Clinical and **b** radiographic picture of supernumerary teeth on the palatal 61

MANAGEMENT

Management of the two supernumerary teeth cases begins with filling out an informed consent signed by the patient's parents. The operator prepares equipment (personal protective equipment, slabber, basic tools, elevator, forceps, 3 mL syringe, citoject, sterile tampon/gauze, cotton pellets, cotton roll) and materials (NaCl 0.9%, povidone iodine, topical anesthetic gel).

Anesthesia uses topical anesthetic gel, dry the palatal surface using cotton pellets, apply anesthetic gel and leave for 3 minutes to reduce pain during treatment, and when infiltration anesthesia was performed using a disposable syringe. After the area has been anesthetized properly, the supernumerary teeth are loosened from their sockets using a straight elevator and removed using forceps. The extraction was done one by one until all the supernumerary teeth are removed. There were 3 teeth removed with a size of approximately 4-6 mm. Case 2 shows the results of the extraction of a mesiodens tooth with a larger tooth shape and the shape resembles an adult tooth but has a cone shape (Fig.3).



Figure 3 Supernumerary teeth extraction

The supernumeraries that have been extracted are then shown to the patient and the patient's parents, and the patient was instructed to bite on a sterile tampon/gauze that has been treated with povidone iodine for 30 minutes. The patient was also explained post-extraction instructions, as well as medication in the form of analgesics, medication to be taken 3 times a day, if the patient feels pain or has a fever after tooth extraction. Apart from that, patients are given instructions to maintain good oral hygiene, consume lots of water, fruit and vegetables, and get enough rest.

The patient came back for control after 1 week, the results of the examination found that the patient's wound had healed and the patient had no complaints. Patients are given instructions to maintain oral hygiene, implement a healthy lifestyle and visit the dentist regularly every six months.

DISCUSSION

Supernumerary teeth are classified based on location, morphology, eruption and orientation. Based on location, they consist of mesio-

dens, paramolar, distomolar and parapremolar. Based on the shape: conical/concave: teeth are peg-shaped and cone-like, tuberculate: formed from more than one cusp or tubercles, shaped like a barrel. Supplemental: normally shaped teeth, usually incisors, premolars or molars. Odontoma: does not have the shape of a tooth, usually just a mass of tooth tissue.^{4,5} In this case the supernumerary tooth is classified as a parapremolar with a conical tooth shape.⁴

Several complications that can occur due to the presence of supernumerary teeth, namely; midline diastema, mesiodens can cause midline diastema. Retrospective analysis shows that 10% of cases of supernumerary teeth show a midline diastema; Delay/failure to erupt, supernumerary teeth are a common cause of delay/failure to erupt in the maxillary region. Tuberculate type supernumerary teeth may result in failure to erupt the permanent maxillary incisors. Supernumerary teeth in other regions can also cause failure of eruption of adjacent teeth; displacement, the shift of adjacent tooth crowns is a common condition in cases related to supernumerary teeth; crowding, any form of supernumerary teeth can cause this complication; root resorption, resorption of the roots of adjacent teeth sometimes leads to loss of tooth vitality; alveolar bone grafting, secondary alveolar bone grafting may be proposed in patients with cleft lip and palate; and so on.⁷

The cause of this anomaly is not yet fully known, there are several theories regarding its etiology, namely the theory of dental lamina hyperactivity, genetic factors and dichotomy. There is a theory that additional teeth will develop from the lingual extension of the tooth bud. This rudimentary tooth shape will be formed from the remaining dental lamina epithelium. This theory is still only a hypothesis because we are unable to show an embryological picture of the material. The epithelial hypergenesis theory states that supernumerary teeth can occur due to epithelial hypergenesis where the remaining dental lamina or palatal branches of the dental lamina are actively stimulated (hyperactive) to develop into additional tooth germs so that supernumerary teeth are formed.⁶

Genetic factors are also considered as a cause of supernumerary teeth. Various cases have been reported of recurrence of supernumerary teeth in one family, this shows that this disorder is inherited and carried by genetics. This theory is supported by the increasing number of cases of supernumerary teeth in patients with dentofacial anomalies such as cleft lip or palate and cleidocranial dysplasia. Growth anomalies/abnormalities such as cleft palate, are often associated with syndromes or growth disorders associated with an increase in the prevalence of supernumerary teeth such as cleft lip and palate, cleidocranial dysplasia and Gardner syndrome, Ehler Danlos syndrome, Down syndrome, etc.^{8,9}

The final theory is dichotomy, namely that the tooth germ is divided into two during its development. One part will develop into a normal tooth while the other will develop into a supernumerary tooth such as a mesiodens.⁶ In this case, something that is rarely observed in patients is having supernumerary teeth without syndrome. Management of supernumerary teeth is carried out by determining the location and identifying complications resulting from the presence of supernumerary teeth.¹⁰

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Management of supernumerary teeth is carried out by determining the location and identifying complications that occur due to the

presence of supernumerary teeth. The position of the teeth can be determined using panoramic or periapical radiographs. The clearer the location of the tooth is, the easier it is to assess whether the tooth is endangering neighboring teeth, interfering with tooth shifting during orthodontic treatment or not, so that we can determine the most appropriate action for the supernumerary tooth. If the tooth does not cause complications and does not interfere with tooth movement, the tooth can only be monitored annually with radiographs, but this can at times be annoying if the patient wants to have an ortho plate or denture installed. Patients should be informed of complications including tooth migration with damage to the roots of neighboring teeth. If the patient does not expect the risk of complications, surgery can be considered on the supernumerary tooth. The usual treatment is extraction of supernumerary teeth, although repositioning of these teeth in the arch may be an alternative option. Another therapeutic option is to keep supernumerary teeth under observation as long as they do not cause complications and do not interfere with function or aesthetics.^{7,11}

It is concluded that early diagnosis of supernumerary teeth is very important to determine appropriate treatment so as to minimize

complications. Treatment of supernumerary teeth depends on the type, position and potential effects on adjacent teeth and requires a comprehensive treatment plan. Extraction is an action that is often performed in the treatment of supernumerary teeth.

Ethical clearance

The management of this case was approved by the patient's guardian and was marked by signing informed consent before the action was carried out.

Conflict of interest

There is no conflict of interest in the above case.

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