Surgical Treatment of Supernumerary Elements for Orthodontic Purposes: Clinical Case Report

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ABSTRACT

Introduction: Hyperdontia is a type of dental development disorder linked to various factors, characterized by an excessive number of teeth in relation to the normal dental formula. This anomaly can affect both jaws and dentitions, but the anterior maxillary region and the permanent dentition are the most affected, and it is more prevalent in male patients. Early diagnosis and immediate treatment are of the utmost importance to avoid complications.

Objective: To describe a surgical procedure involving the removal of bilateral mandibular supernumerary teeth in a 17-year-old patient for orthodontic purposes.

Materials and Methods: This is a descriptive study of a clinical case, carried out by a student and a team of professors from the postgraduate course in minor oral surgery, at the Dentistry school clinic of the Integrated College of Patos (UNIFIP). The procedure was carried out in two surgical procedures, with a 30-day interval between the surgeries.

Conclusion: There are several consequences that supernumerary elements can cause and this case report raises awareness and provides evidence for the clinical characterization and optimal treatment of supernumerary teeth.

Keywords: Child, Oral Surgical Procedure, Pathology, Supernumerary Tooth.

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1. Introduction

The condition of Hyperdontia, or popularly known as supernumerary teeth, is a condition in which extra teeth develop in relation to the normal number, 20 for the deciduous dentition and 32 for the permanent dentition [1]. The actual etiology leading to the development of supernumerary teeth is still unclear and is due to multiple factors [2]. However, studies associate them mainly with hyperactivity of the dentin lamina and genetic predisposition, associated with non-syndromic mutations in autosomal genes [3].

The prevalence of supernumerary teeth (SG) in the permanent dentition is higher than in the deciduous dentition, representing a frequency of 0.1% and 3.8%, with the anterior maxillary region being the most affected. However, although hyperdontia with two teeth accounts for only 12% to 23%, it most commonly affects the posterior mandibular region, between the premolars [4]. This disorder occurs more frequently in men than in women, in a ratio between 2:1–6:1 [5].

Supernumerary teeth are often discovered occasionally, for example in routine radiographs, in these cases, being asymptomatic and representing a total of 75% of these [6], [7]. Early diagnosis and immediate treatment, while still in the mixed dentition, are recommended, as only 7% to 20% of supernumerary teeth do not present clinical complications [4].

Consequences of late treatment can include delayed eruption, areas of crowding, dilaceration, malocclusion, diastema formation or ectopic eruption in the nasal cavity [8]. Supernumerary elements also predispose the area to pericoronitis, gingivitis, abscess formation and the development of odontogenic cysts and tumors [9]. In his study, Park et al. observed that the incidence of cysts, the most...
Fig. 1. Panoramic reconstruction obtained from CBCT.

Fig. 2. Mandibular position of left and right supernumerary elements.

common being dentigerous cysts, as a complication resulting from supernumeraries, increased more than 5 times over a 10-year period of difference between patients [10].

2. Case Report

E.L.S, a 17-year-old male patient, accompanied by his mother and guardian, came to the Postgraduate Program in Minor Oral Surgery at the School of Dentistry Clinic of the Faculdade Integrada de Patos (UNIFIP), with an orthodontic indication for the removal of supernumerary elements.

During the anamnesis, the patient reported having no morbidity, no chronic use of any medication and no allergies, with a blood pressure of 110 × 80, thus classifying him as an ASA I patient. On physical examination, the patient clinically presented with dental crowding in the lower elements. After evaluation of the Cone-Beam Computed Tomography images, two supernumerary elements with up to 1/3 root formation were found in the bilateral posterior region of the mandible, in the premolar region (Fig. 1).

A transaxial section of the CBCT showed that the elements were in a lingual position, thus guiding us to the most feasible surgical approach (Figs. 2a and 2b).

Perioperative drug therapy was carried out, advising the oral use of (1) Dexamethasone 4 mg (2 tablets); 500 mg Amoxicillin (2 capsules); (3) Dipyrone 1 g (1 tablet), all this 1 hour before the procedure. The surgical procedure was carried out in an outpatient setting, under local anesthesia, using a total of three tubes of 4% articaine anesthetic salt with epinephrine, at a concentration of 1,100:00. The anesthetic technique used was an inferior alveolar and lingual nerve block, along with a field block in the region of the dental papilla, from the mesial part of element 41/31 to the distal part of element 45/35. An intrasulcular incision was made in the lingual region from the mesial side of element 41/31 to the distal side of element 45/35, using a number 3 scalpel handle and a 15c blade. Next, the mucoperiosteal detachment was carried out using 2/4 molt curettes, until the crown of the dental elements was visualized, and then a compensatory osteotomy was performed using a 702 drill in high rotation and copious irrigation using 0.9% sodium chloride saline solution, around the crown of the supernumerary element (Figs. 3a and 3b).

The element was luxated and excised using a curved Seldin lever. Finally, copious irrigation of the surgical site was carried out in order to remove the bone debris, followed by 8-point suturing of the dental papillae using 4.0 Nylon thread (Figs. 4a and 4b).

In addition, the patient was instructed on post-operative care and the continuity of the prescribed medications, only changing their dosage: (1) Dexamethasone 4 mg (1 tablet/per two days); 500 mg Amoxicillin (1 capsule/per 5 days); (3) Dipyrone 500 mg (1 tablet/per 3 days).
3. DISCUSSION

Supernumerary teeth are odontostomatological anomalies characterized by the development of an excessive number of teeth [11]. Literature shows that the prevalence is between 0.2% and 3% and male patients are more affected, with a genetic pattern of inheritance linked to sex. There is still no consensus on its etiology, but most cases are idiopathic [12], [13]. However, the literature associates this pathology mainly with two factors: hyperactivity of the dentin lamina and genetic predisposition, associated with non-syndromic mutations in autosomal genes [3].

Supernumerary teeth can be classified according to their location (mesiodens, paramolar and distomolar), by eruption (erupted or impacted) and also by their morphology (conical, tuberculated) [14]. Park et al. [10], observed that the most common forms of supernumerary teeth were conical (68.2%) and tuberculated (16%) [5]. In addition, they noted that complications were more associated with teeth with tuberculated morphology, which increased the rotation of adjacent elements twice as much when associated with them, compared to conical teeth. They also found that delayed eruption increased by 6 to 8 times in the deciduous and mixed dentition periods [10].

Demiriz et al. [15], showed in their studies that of the 156 supernumeraries found in a population of 123 individuals, 63.5% (99) were found as a single tooth and 24.4% (38) as two teeth, with the maxilla being the most affected bone. These data corroborate Rajab and Hamdan’s research which showed in a population of 152 children aged between 5 and 15 that 77% of cases were single supernumerary teeth, 18.4% were double supernumeraries and 4.6% were cases of three or more supernumeraries. In addition, 90% of supernumerary cases occurred in the premaxilla, which is the region most affected by supernumerary teeth [16].

Cone-Beam Computed Tomography (CBCT) is essential for the correct diagnosis and management of the case. Katheria et al. [17], compared CBCT and traditional panoramic radiography in cases of patients with supernumerary teeth and showed that both can be useful in the initial diagnosis of the pathology present. However, it was concluded that CBCT provides a more detailed three-dimensional view of the location of the pathology, the presence of root resorption and the development of a more effective treatment plan [17].

The management of supernumerary teeth will vary according to the eruption classification of the element and whether or not it causes complications. According to Parolia et al. [14], surgical removal of the element should occur in certain scenarios, such as associated pathology, need for orthodontic treatment, aesthetic and/or functional impairment, and delayed eruption due to the presence of supernumerary teeth. The author also emphasizes the importance of performing the procedure carefully, so as not to damage the roots of adjacent teeth and noble areas such as the maxillary sinus and mandibular canal [14].

4. CONCLUSION

It has been proven that this anomaly can cause aesthetic deformities and generate pathologies, mostly odontogenic cysts. Therefore, early diagnosis and treatment are of fundamental importance to minimize the consequences for affected patients.

CONSENT

The patient’s legal guardian signed an informed consent form to allow information and images to be published in this article.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

REFERENCES


