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NON – SYNDROME ASSOCIATED MULTIPLE SUPERNUMERARY TEETH – AN OVERVIEW IN RADIOLOGY

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ABSTRACT

Multiple supernumerary teeth (hyperdontia) is the condition of having multiple teeth in maxilla and/or mandible which appear in addition to the regular number of teeth. The overall prevalence rate for supernumerary teeth is 0.1-6.9%. In most of the cases supernumerary teeth is associated with syndromes. The prevalence rate for non -syndrome associated supernumerary teeth is less than 1%. Supernumerary teeth are common in males than females.(ratio:2:1). Several hypotheses have been proposed to explain the etiology of Supernumerary teeth. However, combination of environmental and genetic factors has been proposed recently. Supernumerary teeth cause wide range of complications like crowding, displacement, dilacerations, cyst formation, impaction, root resorptionetz. Early detection and appropriate treatment plan should rectify the potential complications caused by supernumerary teeth.

KEYWORDS: Hyperdontia, Supernumerary Teeth, Non -Syndrome, Impacted, Erupted, Radiology

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Original Article

INTRODUCTION

Supernumerary tooth are found in almost any region of dental arch. Occurrence of supernumerary teeth is single, multiple, unilateral/bilateral, erupted/impacted.

Supernumerary teeth are found either in maxilla or mandible sometimes both. Various theories have been put forward for etiology. One theory suggests that the supernumerary teeth is created as result of dichotomy (1) of tooth bud. Atavism theory, which suggests that supernumerary teeth are a result of phylogenetic reversion to extinct primates with three pairs of incisors.[2]

Another theory called hyperactive theory (3,4) suggests supernumerary teeth are formed as a result of independent local condition hyperactivity of dental lamina. According to this theory, a supplemental form would develop from the lingual extension of an accessory tooth bud, whereas a rudimentary form would develop from the proliferation of epithelial remnants of the dental lamina (1). This is the most accepted theory. Hereditary and environmental factors (5) are also involved in the etiology (ellys).Reports suggests that supernumerary teeth mostly appear in upper jaw (10 times)than lower jaw. Supernumerary teeth cause complications varying from crowding to cyst formation. However, the position of supernumerary is buccal or lingual or within the jaw. Localization of Supernumerary plays a major role in diagnosis and management, especially if surgical intervention is needed. Though, it is clear that early management can possibly avoid further complications, some authors

anecdotally suggested that this approach is hazardous due to possible risk of damage to the developing tooth germs. Location of Supernumerary must be established by different ways of imaging modalities. Although, combinations of intraoral radiographs with panoramic radiographs are usually able to provide the required information, these procedures do not always provide sufficient information concerning the 3-dimensional (3D) relationship of supernumerary teeth.

PREVALANCE: (In Percentage %)

Table 1

Syndromevs Non-syndrome	Males Vs Females	Permanent Vsdeciduos	Maxilla Vs Mandible	Maxillary Anterior Vs posteriors	Mandibular Anteriors Vs Posteriors
1-6 :<1	2:1	0.1-6.9; 0.4-0.8	10:1	1.3: 0.2-10.9	10.3 : 27.6

Classification

Supernumerary are classified according to their morphology (6) and location.

According to morphology,

Primary/decidous

Normal,

Conical

Permanent

Conical,

Tuberculate,

Supplemental,

Odontome.

Depending on location(7), a supernumerary tooth can be named as (a) Mesiodens - Located between central incisors, (b) distomolar - A fourth molar erupts distal to third molar, (c) paramolar - Found buccal or lingual to maxillary molars, and preferably in relation to first molar.

PATHOLOGY AND COMPLICATIONS

Dentigerous cyst formation (8) is commonly associated with supernumerary teeth.Reports suggested enlarged follicular sac due to supernumerary teeth (primosch).In rare cases resorption of adjacent roots also occurs.

Supernumerary teeth do not cause any complication. However, these may lead to delay or failure of eruption of permanent teeth, displacement, crowding, root resorption, dilaceration, loss of vitality of adjacent teeth, subacutepericoronitis, gingival inflammation, periodontal abscesses, dental caries due to plaque retention in inaccessible areas, incomplete space closure during orthodontic treatment, and pathological problems such as ameloblastomas, odontomas(9) and fistulae. They may also interfere in alveolar bone grafting and implant placement (10).

Supernumerary Associated with Syndromes

Supernumerary teeth have been reported in patients with syndromes such as Cleidocranial dysplasia [11], Ehlers-Danlos syndrome Type III [12], Ellis-Van Creveld syndrome [13], Gardner's syndrome [14], Goldenhar syndrome [15], Hallermann-Streiff syndrome [16] Orofaciodigital syndrome type I [17], In continentiapigmenti [18], Marfan syndrome [19], Nance Horan syndrome [20], and Trichorhinophalangeal syndrome 1 [21] and also have been reported in conditions like cleft lip and/or palate.

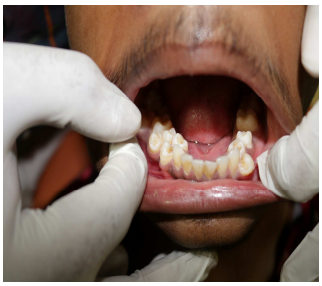

Figure 1

Figure 2

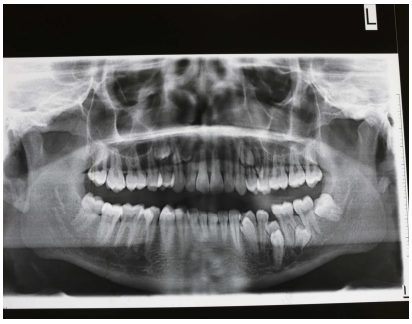

Figure 3

Discussions-Radiological Aspect

Based on the criteria "as low as reasonably achievable" (ALARA) and regular campaigns to "Image Gently" in children and "Image Wisely" in adults, multidetector CT (with its relatively high radiation dose) is generally not the first-line modality used to evaluate anomalous development. Still, abnormal development, such as hyperdontia (more than 32 teeth) and hypodontia (fewer than 32 teeth), may be incidentally detected (21–24). Patients with supernumerary teeth may be asymptomatic and left unnoticed. Supernumerary teeth damage or cause crowding of normal teeth or cause normal teeth to abnormally erupt or not erupt at all. Hyperdontia may be sporadic or associated with conditions such as Cleidocranial dysplasia [11], Ehlers-Danlos syndrome Type III [12], Ellis-Van Creveld syndrome [13], Gardner's syndrome [14],

Goldenhar syndrome [15], Hallermann-Streiff syndrome [16] Orofaciodigital syndrome type I [17], Incontinentiapigmenti [18], Marfan syndrome [19], Nance Horan syndrome [20], and Trichorhinophalangeal syndrome 1 [21] and also have been reported in conditions like cleft lip and/or palate. At imaging, hyperdontia may be recognized by the presence of more than 32 teeth or extra teeth outside the normal row. The frequency of hyperdontia varies among populations, with a recent study from the United States reporting that 44% of supernumerary teeth occur in the molar region, 33% in the premolar region, and 23% in the incisor region (22,23,24). A supernumerary tooth in the maxillary midline, adjacent to the incisors, is called a mesiodens, and a supernumerary molar posterior to the third molar is called a distodens (23) . In many cases, the distodens may be impacted and cause dental infection and inflammation (25). Supernumerary teeth may be differentiated from odontomas, hamartomas of odontogenic origin that contain dentin, enamel, and cementum and the most common odontogenic tumor. Odontomas demonstrate varying degrees of disorganization, with a compound odontoma appearing more teeth like or as multiple small teeth and a complex odontoma appearing as a disorganized mass of tissue (26).

A radiographic examination is indicated if abnormal clinical signs are found. An anterior occlusal or periapical radiograph is useful to show the incisor region in detail. The bucco-lingual position of unerupted supernumeraries can be determined using the parallax radiographic radiographs taken with different horizontal tube positions, whereas an occlusal film to gether with a panorex view are routinely used for vertical parallax. If the supernumerary moves in the same direction as the tube shift it lies in a palatal position, but if it moves in the opposite direction then it lies buccally. Intraoral views may give a misleading impression of the depth of the tooth. A true lateral radiograph of the incisor region assists in locating the supernumeraries that are lying deeply in the palate .It has been reported that panoramic radiographs alone are not useful for the identification of Supernumerary teeth. It has also been reported that combination of radiographs is necessary in localization of Supernumerary teeth. Vertical tube shift and horizontal tube shift techniques are commonly used techniques for localization of Supernumerary teeth..Patient with Non syndromic supernumerary teeth need to have periodical radiographic observation if he/she is asymptomatic. Then, it is advisable to remove these supernumerary teeth immediately if it starts to show any pathologic change.

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