




Supernumerary Teeth: Cases Series

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Abstract

Aim of the study: Supernumerary teeth can appear anywhere in the oral cavity and are found in addition to standard primary and permanent teeth, both clinical and radiographic examinations usually lead to the diagnosis. Their definite etiology has not yet been completely understood. These teeth either erupt normally or remain impacted which may lead to many clinical complications. This study aimed to present clinical cases with supernumerary teeth including their management strategies.

Material and method: Three clinical cases were considered in this study: **Case 1:** 20 years aged healthy female complained of a hard mass in the nose with a rough texture clinical examination and radio-graphical examination showed a hard mass resembling a tooth was detected on the floor of the nose. The treatment was endoscopic removal of the ectopic tooth which was completely developed, under trans-oral general anaesthesia. **Case 2:** A male child with 9 years old complaining of missing multiple permanent teeth. The specialist observed that the patient had impacted upper laterals on both sides otherwise they weren't visible in the oral cavity. Cone beam computed tomography (CBCT) image showed un-erupted upper lateral incisors, The treatment consisted of surgical removal of supernumeraries under local anaesthesia. **Case 3:** A healthy 9-year-old male child with a new tooth erupted in the roof of his mouth. A computerized tomography CT scan with clinical examination showed a mesiodens between upper centrals. Extraction of mesiodens with nearly 2 cm in length was done under local anaesthesia.

Conclusion: Supernumerary teeth may present as single or multiple teeth on one side or both sides of the maxilla and mandible; the favorite site is the premaxilla. When they are identified and diagnosed, they should be managed to prevent future complications, either aesthetic and/or functional problems.

Keywords: hyperdontia, Dental lamina, supernumerary teeth, **mesiodens**, and radiographic examination.

Introduction

An odontomatological anomaly presents as an extra number of teeth, any additional tooth/teeth or odontogenic construction that is formed upon normal dentition can be referred to as hyperdontia. The definitive etiologies of this anomaly are incompletely perceived. Several hypotheses have been postulated to explain the occurrence of this anomaly (Belmehti et al., 2018). These

include 1. the atavism theory: which suggests that supernumerary teeth (ST) develop due, to a process known as reversion, where humans may have evolved from primates, with 3 pairs of incisors. However, the embryologists have rejected this.

2. dichotomy theory: hypothesized that the tooth bud divided during development into normal or abnormally shaped teeth (Mallineni, 2014).



3. Dental lamina (DL) hyperactivity theory: epithelial remnants are big enough to excite and control dental papilla development. In the jaw, remnants of Serres rest are dental lamina remnants that appear as epithelial pearls/islands. Their presence is considered an induction factor on the remains of this epithelium resulting in an additional tooth bud leading to the formation of extra odontogenic structure; which is a widely confirmed reason for hyperdontia development. Based on this theory, the lingual extension of an additional tooth bud leads to a eumorphic tooth, while the rudimentary form arises from the proliferation of epithelial remnants of the DL induced by the pressure of the complete dentition (Lu et al., 2017).

Trauma, infections, radiation, drugs, and hormonal influences are among the environmental factors. identified as potential offenses against tooth formation in the embryo during dental development (Jain et al., 2024).

In most cases, supernumeraries are accompanied by some genetic syndromes (Lubinsky and Kantaputra, 2016).

Classification of supernumerary teeth:

-Extra teeth can be categorized based on factors such, as the timing of their growth, where they are located in the mouth, their shape, and how they are positioned.

1- Based on location:

I- Mesiodens Located at palatal midline between maxillary central incisors, account for nearly 80% of all hyperdontia (Hemnani et al., 2024). Based on the shape, they can be classified into: conical, supplemental, and tuberculate type (Qamar et al., 2013).

A. Mesiodens either erupt normally

or are impacted, found in an inverted or a horizontal position. Unerupted symptom-free mesiodens may be identified during a routine radiological examination of the pre-maxillary region (Mukhopadhyay and Mesiodens, 2011).

B. Most often these mesiodentes comprise 75% of cases and are cone-shaped and appear when the roots of central incisors. A supplemental mesiodens mirror tooth of the normal series seldom remains unerupted and is more frequent in primary dentition, A variety of clinical complications related to mesiodens: 1-delayed or ectopic eruption of adjacent teeth, 2-crowding,3- diastema,4-axial rotation,5-radicular resorption, 6-dentigerous cyst, and others (Kazanci et al., 2011).

C. Tuberculate / multicusped mesiodens" is more familiar in permanent dentition and frequently stands unerupted. In comparison with that of the adjacent teeth, their root formation is postponed. Impacted incisors are usually related to tuberculate mesiodens.

II- Paramolars: are fairly infrequent anomalies that arise in the molars series they report (0.09–0.29%) prevalence (Sulabha and Sameer, 2015). A tiny and rudimentary paramolar is almost located between the 2nd and 3rd molars on the buccal aspect/ lingual aspect and it is infrequently observed between 1st & 2nd molars (Nayak et al., 2012).

III- Distomolar: known as “fourth molars,” is a supernumerary tooth with prevalence varies from 0.03% to 2.1% with a male predilection that is positioned distal to third molars following the line of dental arch or with a slight palatal or lingual torsion. The fourth molars are considered as the second or third more common group of supernumerary teeth. It may have a regular morphology or may vary from its standard morphology. Distomolars can be found completely erupted in the dental arch, or in many instances could be partially or entirely. It has been noted that the maxilla has a higher incidence of supernumerary teeth than the mandible (12.

Cassetta et al., 2014; Arandi and Distomolars, 2017).

2 Based on shape: They can be conical, tuberculate, and supplemental (normal) or odontome.

3 Based on orientation: They can position either vertically or transversely.

Diagnosis of supernumerary teeth:

Clinical features

-Supernumerary teeth are easy to find if they erupt in the oral cavity; all the teeth in the mouth must be counted and identified, males showed double the prevalence than females.

-Sometimes supernumerary teeth don't show any symptoms. The anterior maxilla is where single supernumerary teeth mostly occur as mesiodens as well as the maxillary molar region. Several supernumeraries are most commonly observed in premolar areas, usually located on the lingual side of the mandibular alveolar (Kasat et al., 2012).

-Clinically can be detected by their abnormal shape, or in the presence of dental

asymmetry, mesiodens must be imagined (Meighani and Pakdaman, 2010).

Radiographical features

An anterior occlusal or periapical x-ray PA using paralleling technique and panoramic view is the most advantageous radiographic analysis to diagnose supernumeraries. Nowadays, A computed tomography CT scan is extensively used to disclose the presence of hyperdontia (Shah, Bansal and Logani, 2014).

The imaging characters of "supernumerary teeth" are inconstant. They may appear either quite normal in size and shape, or they may be smaller than adjacent normal dentition or may have a conical shape display canine features. In intense cases, they may seem misshapen (Lam, 2014).

The ratio of impacted to erupted ST ranges from 3: 1, making a complete radiographic survey of the oral cavity imperative in determining their presence. Nonetheless, radiographs are not sufficient for diagnosis purposes. Therefore, they must always be interpreted along with clinical findings (Syriac et al., 2017).

Clinical consideration

1) Failure of Eruption

Supernumerary teeth are a usual cause of maxillary central incisors' failure to erupt. Also, this may make the primary incisor to be retained thereby. Most often this problem occurs when the maxillary lateral incisors are erupting, while one or both central incisors fail to do so (Jain et al., 2021).

2) Displacement or rotation

The existence of a supernumerary tooth has the potential to displace a permanent tooth, with the extent of displacement ranging from subtle rotation to complete displacement. Notably, the crowns of incisor teeth commonly experience displacement in the majority of cases linked to delayed eruption

3) Crowding

Crowding is frequently attributed to erupted supplemental teeth, especially when a supplemental lateral incisor affects the upper anterior region. Addressing this issue often involves extracting the most displaced or deformed tooth to resolve the problem (Ata-Ali et al., 2014).

4) Pathology

supernumerary teeth can result in the formation of a Dentigerous cyst (Jiang et al., 2011). A follicular sac that is enlarged represents 30% of cases, but histologically only 4 to 9% of cases had cyst formation. Root resorption of the teeth adjacent to supernumerary teeth can occur but is rare. Most often the complications associated with the tooth itself are a nasal eruption and cystic degeneration. Supernumerary teeth rarely erupt into the nasal cavity, but several case reports are available which indicate the inverted conical type is the most common offender.

Management of supernumerary teeth

The type and position of them determine how these teeth should be managed. At times extra teeth can cause issues, like decay to the adjacent teeth, which will later require treatment. Dealing with teeth can involve either extracting or treating them with root canal therapy or simply keeping them in place and monitoring them regularly. It's advisable

to remove supernumerary teeth in cases where (Parolia et al., 2011):

- 1) There is associated pathology.
- 2) Delayed eruption of permanent teeth because of the presence of ST; Un-erupted tooth may take up to 3 years to erupt after removal of anomaly (Omer et al., 2011).
- 3) Increase caries index due to the presence of ST
- 4) Altered eruption or displacement of the adjacent tooth.
- 5) If orthodontic treatment is needed.
- 6) If it affects esthetic and function.

Clinical Cases

All the included patients were already consented to take their data for research purposes.

Case 1

A 20-year-old female was attended to by an Ear, Nose, and Throat (ENT) specialist who complained of a hard mass in the nose with a rough texture, no past medical history as her general condition was good with normal vital signs after completion of clinical examination and radio-graphical examination with CT scan; a hard mass resembles a tooth was detected in the floor of the nose. Then the patient was referred to Al Kindy Teaching Hospital/ Department of Oral and Cranio-maxillofacial Surgery, Baghdad, Iraq in March 2023. The patient was informed that Nasal endoscopy revealed a whitish pearly, hard mass (ectopic tooth) protruding from the nasal floor (left side) (Fig 1 A, B&C) this confirmed the necessity of an operation to remove it, and consent was obtained. Before the surgery was done Otrivin drops were prescribed to the patient to reduce the nasal secretions; The patient underwent endoscopic

removal of the ectopic tooth, under trans-oral general anesthesia. The elevator was used to carefully remove the tooth from soft tissue attachment then a Curettage of the extraction

site was carried out. The removed supernumerary tooth was completely developed and nearly 12 mm in length Fig1, D.

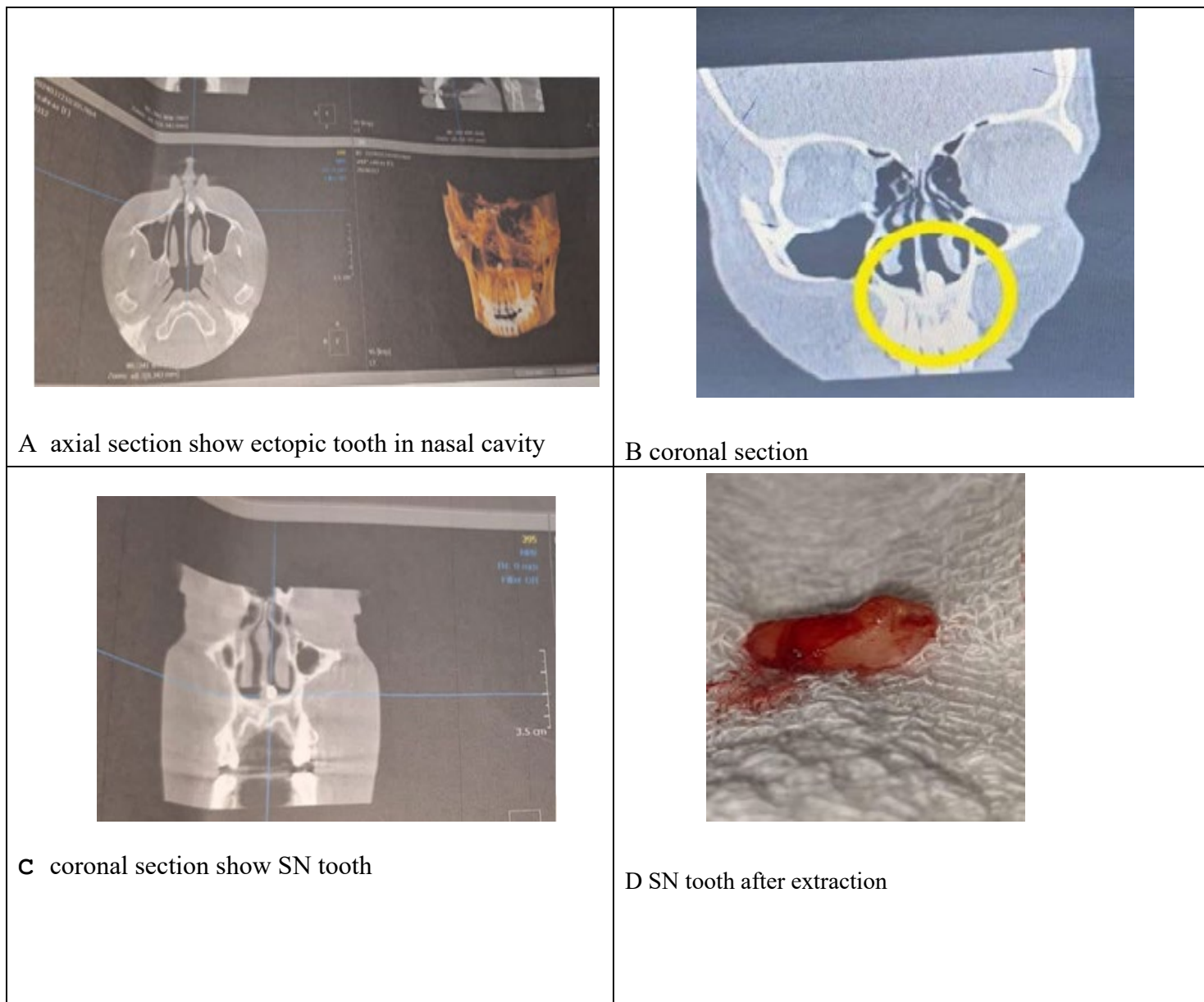
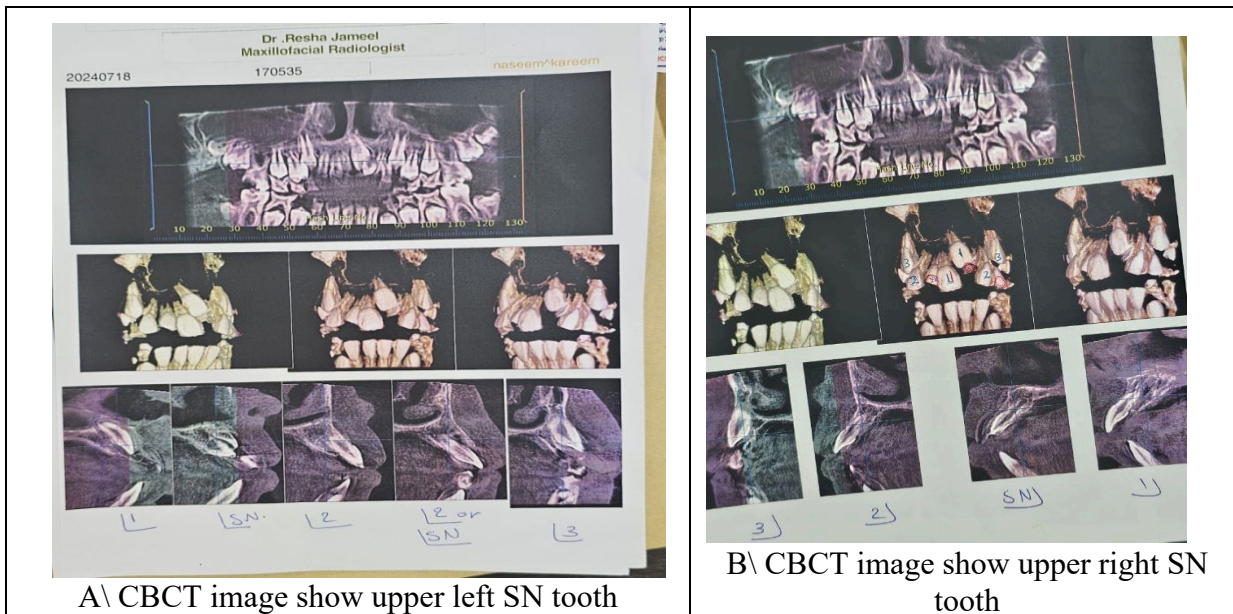


Fig 1 case 1 (SN = supernumerary)

Case 2

A male patient who is 9 years of age came with private dental clinic with his family, he complained of missing multiple permanent teeth. No previous medical history & his parents assured that there was no prior familial history of dental abnormalities associated to the total number of. In the initial clinical examination, the specialist observed that the patient had impacted upper laterals on both sides, he did need multiple dental treatment (scaling, restorations and oral hygiene instruction as he had inflamed gum), otherwise the supernumeraries were not visible in the oral cavity. On radiographic

examination (CBCT), it showed un-erupted upper lateral incisors (right & left), one of the upper lateral's incisors placed palately the other placed labially no dilacerations; both neighborhood by toothlike structure (supernumerary tooth) characterized by in completely formed roots with no resorption. The informed consent was taken. The proposed treatment plan consisted of surgical extraction followed by orthodontic treatment if needed. The removal of the un-erupted supernumeraries is performed under local anesthesia to allow the eruption of permanent teeth & prevent further crowding and displacement of them.



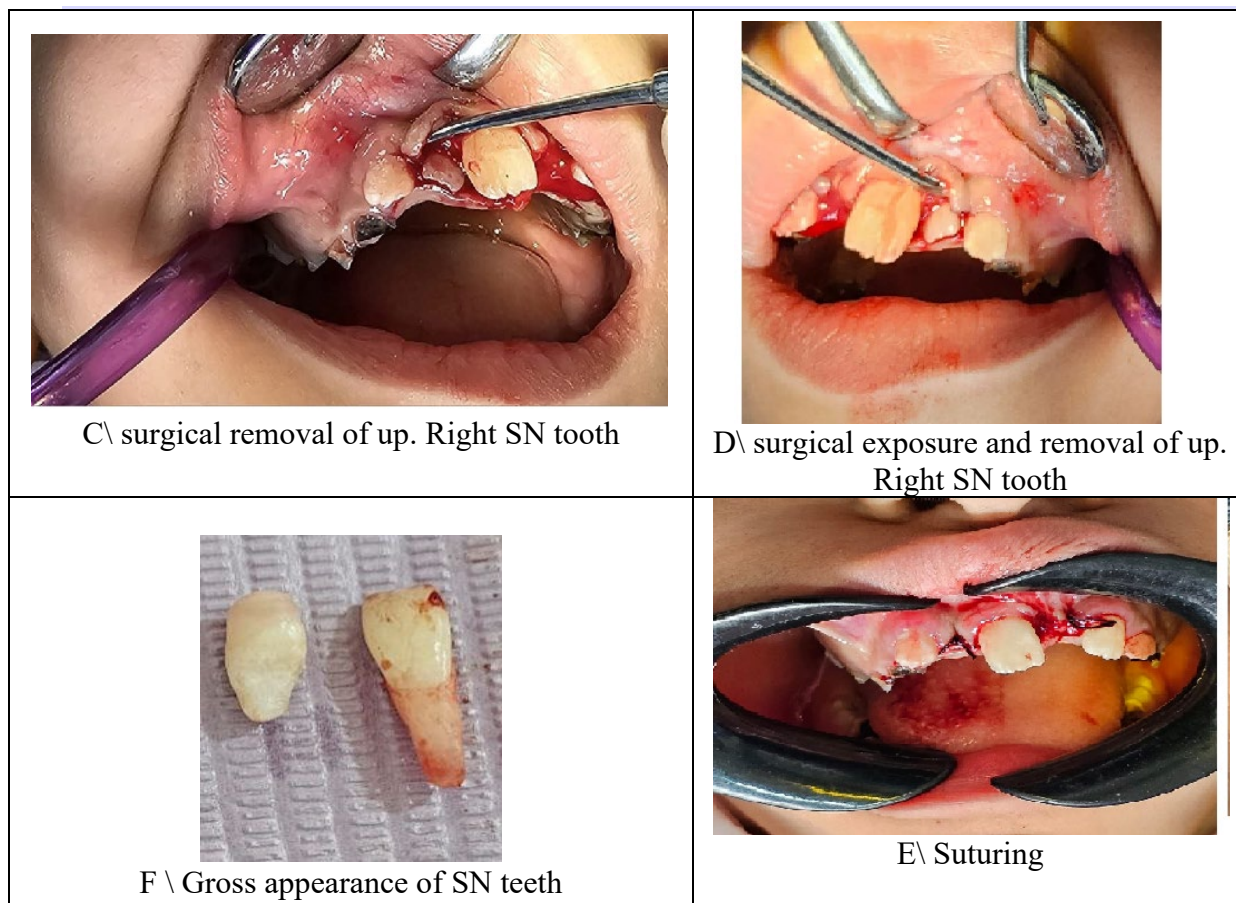


Fig 2 case 2

Cases 3

A healthy 9 -years old male child told his mother about a new tooth that erupted in the roof of his mouth; his parents with high awareness brought him to a private clinic for a checkup; the surgeon sent the patient for cone CT Fig 3 B after clinical examination

Fig 3 A which replayed a mesioden between upper centrals. Then informed consent was taken and extraction was done under local anesthesia Fig 3 C; grossly the length of the supernumerary tooth was nearly 2 cm Fig 3 D.

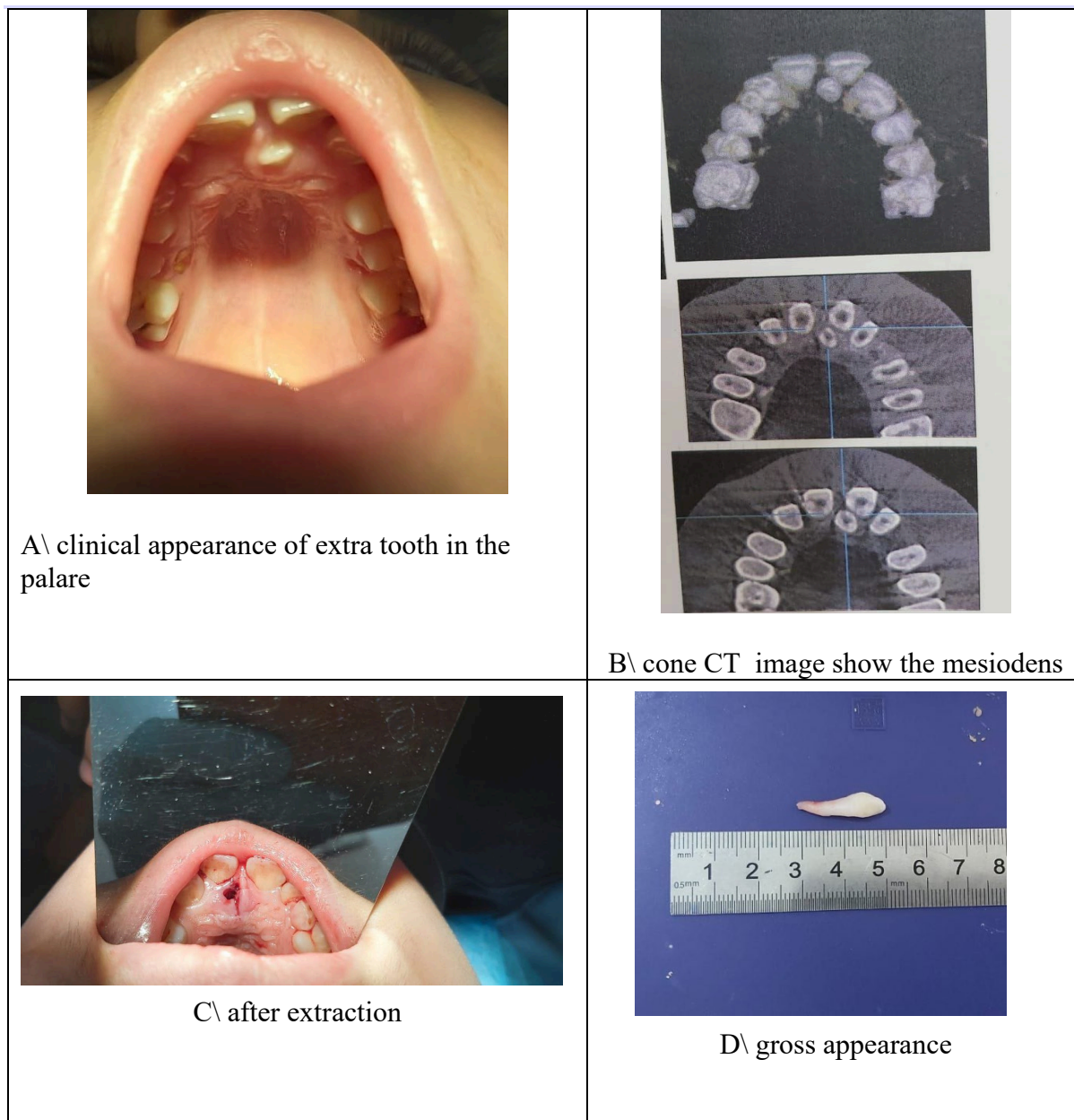


Fig 3 case 3

Discussion

One of the most important investigations is dental radiography (Jiboon et al., 2022), its dentist's responsibility for dental radiographic imaging, interpretation, and clinical imaging (Talib et al., 2023). The supernumerary teeth were seen among 1% of

subjects and these results among Iraqi patients (Mohammed, 2017) in contrast to other reported prevalence of hyperdontia range from 0.2% to 3% (Leco et al., 2007). Interestingly, supernumerary primary teeth appear to be less common than their permanent counterparts, Patients with

primary supernumerary teeth face a unique phenomenon as they have a (30–50%) opportunity of being followed by supernumerary permanent teeth (Khan et al., 2022). ST can be found in other locations outside the mouth such as the palate or the maxillary sinus). The mandibular condyle, coronoid process, orbits, facial skin, and nasal cavity are less commonly impacted areas of the maxillofacial region that have been documented in the reports (HFd et al., 2009).

Eruption of a tooth into the nasal cavity is a rare clinical entity. However, the identification of such teeth can be important since they have the potential to cause considerable morbidity; Although the cause of intranasal eruption of teeth is unclear, trauma, infection, and abnormal development probably play a significant role (Kim et al., 2003).

Recent management frequently involves the removal of an ectopic tooth using a trans-nasal endoscopically assisted approach, but there is a lack of evidence regarding the best choice of treatment due to the relative rarity of ectopic teeth developing within the nasal cavity. Also, this technique guides the extraction because it provides excellent lighting, shortens the time of surgery, provides a better view makes the surgery more precise, and requires a less amount of postoperative analgesia (Kumar et al., 2020).

A conventional surgical approach is more invasive and requires more caution to prevent the formation of an oro-nasal fistula which requires a complicated multilayered closure (Gormley et al., 2019).

Conclusion

Uncertainty surrounds the exact cause of hyperdontia; even if the genetic factors and the growth of the dental lamina might be involved. For clinicians, making a diagnosis as early as possible is crucial to allow minimal optimal treatment and eliminate complications. Treatment options may include surgical extraction of it or leave it with monitoring.

Supplementary Material

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Data Availability Statement

Data are available from the authors upon reasonable request.

Conflict of interest

The authors reported that they have no conflicts of interest.

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