Evidence Based Dentistry Rounds Pediatrics

Group 7B-1

11/28/2020

Rounds Team

- Group Leader: Dr. Rossi
- Specialty Leader: Dr. Hodgson
- Project Team Leader: Jesus Echezarreta
- Project Team Participants: Alex Orzepowski; Omar Karim; Gabriella Andrie

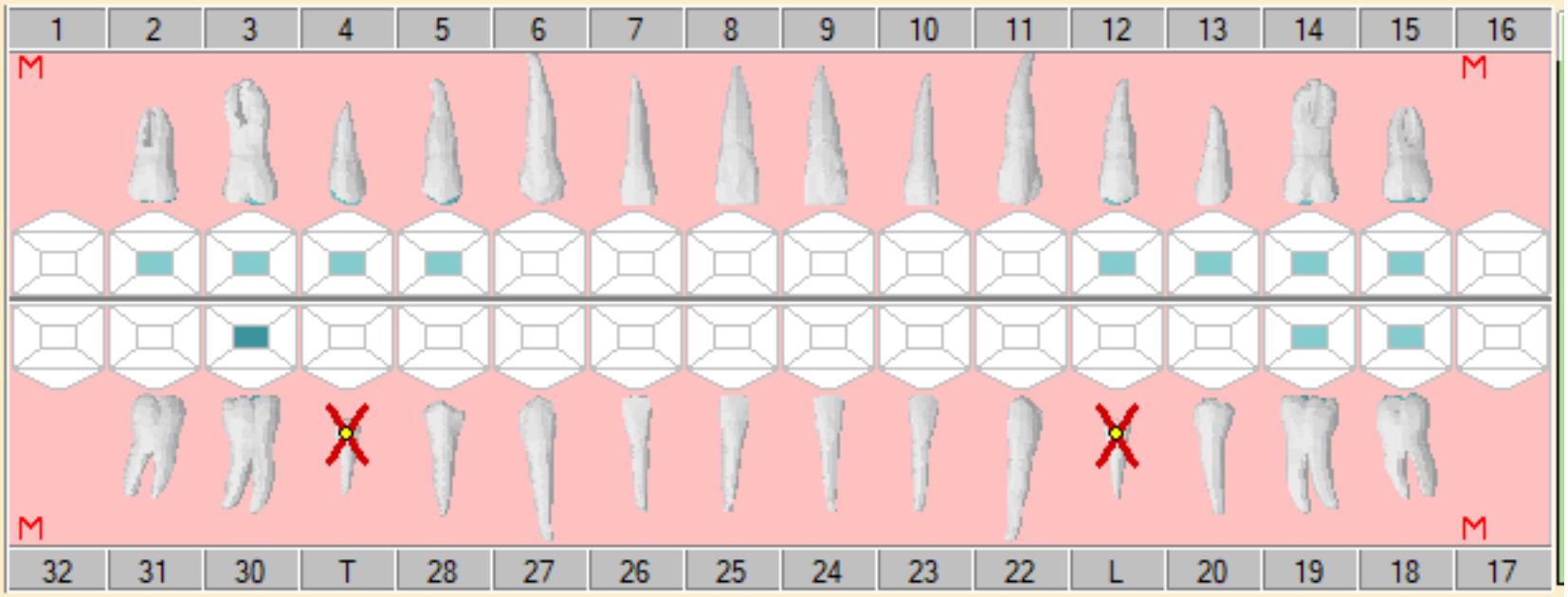
Patient

- Age 12
- Gender- Male
- Ethnicity- AA
- Chief Complaint- none given by pt, here for cleaning
- Presents for comp exam

Medical History

- Current & past:
  - Conditions- Asthma
  - Medications- Albuterol PRN

Dental History



Radiographs

- Panoramic image not yet taken but is necessary for comprehensive evaluation

Radiographs

BWX

Radiographic Findings

- Retained primary molars L and T
- Impacted #21 and #29
- Supernumerary #71 and #79?

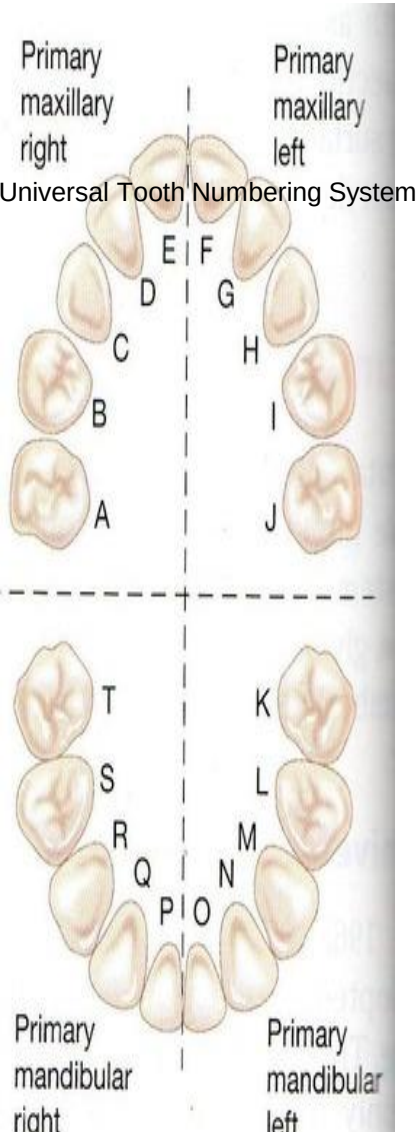
Clinical Findings

- Same as radiographic findings
- Need for occlusal sealants

Diagnosis

- Impacted premolars likely being blocked from eruption due to supernumerary teeth

How are Teeth Numbered?

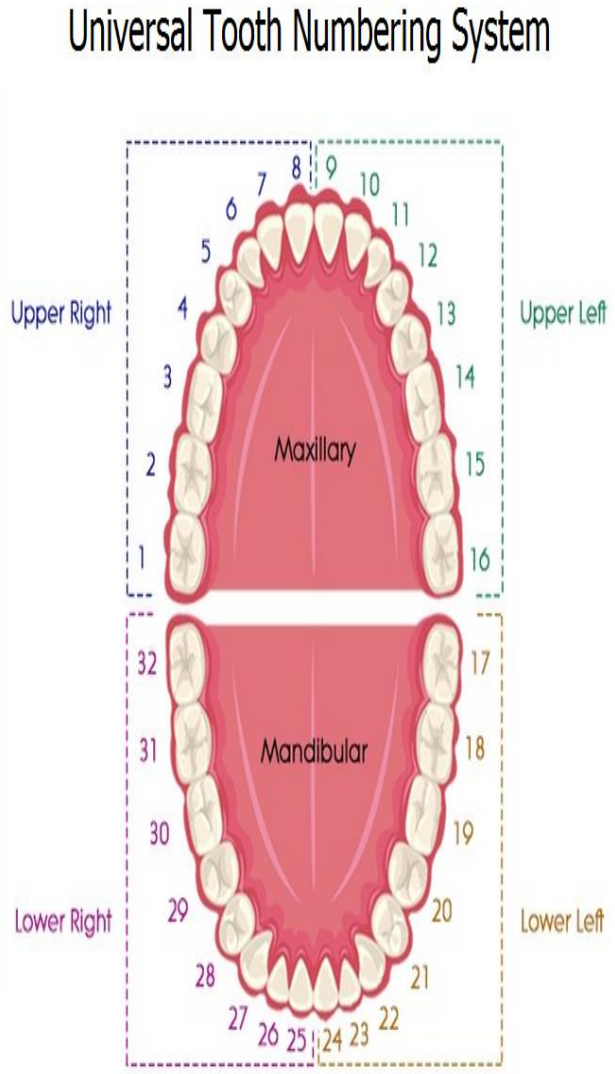


Primary Dentition:
Teeth are labeled using letters starting in the upper right quadrant, ending in the lower right quadrant (A to T)

Supernumerary Teeth
An S is added after the the letter of the tooth that is adjacent to the extra tooth.
Ex: DS

Permanent Dentition:
Teeth are labeled using numbers starting in the upper right quadrant, ending in the lower right quadrant (1-32)

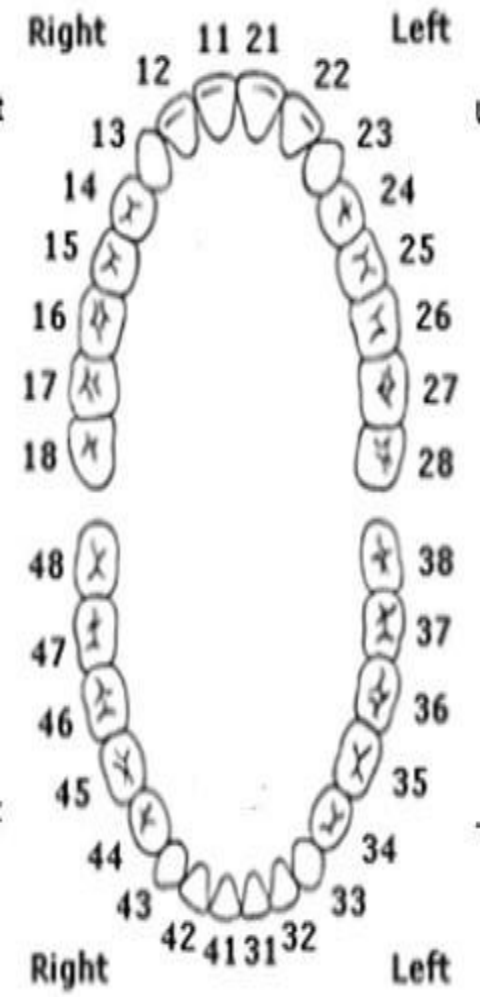
Supernumerary Teeth
A value of 50 is added to the number of the tooth that is adjacent to the extra tooth.
Ex: 68
(Tooth 18+50)



"Identifying Supernumerary Teeth." *Identifying Supernumerary Teeth | AmeriDenti Billing*, AmeriDentiLLC, www.ameridenti.com/resource-identifying-supernumerary-teeth.html.

Different Numbering Systems

FDI Notation



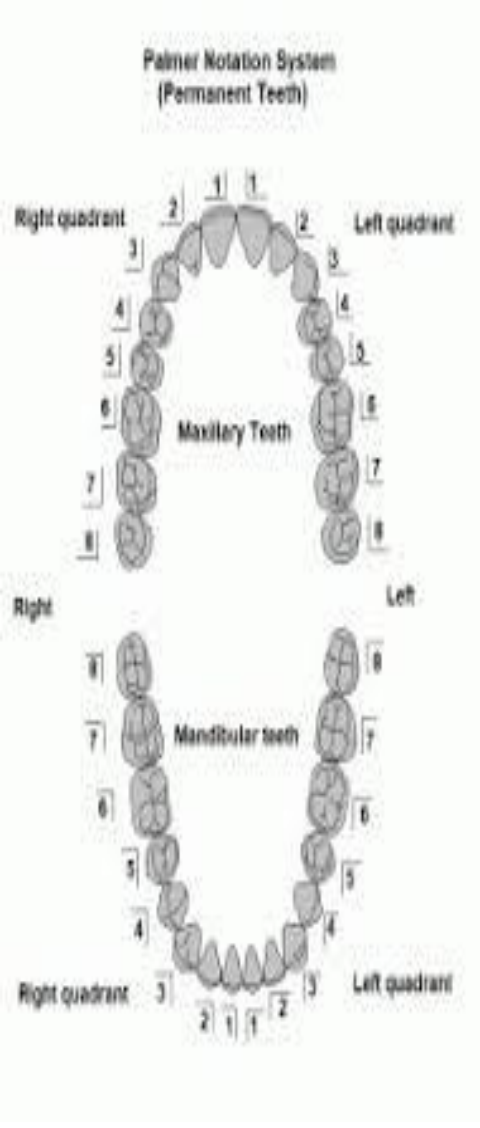
Permanent Dentition
Associates specific teeth by two digits. The first digit relates to the quadrant (1-4). The second digit relates to tooth position in relation to the midline. 1 being closest to midline - 8 being farthest from midline (third molars).

Primary Dentition
Uses the same method, only the digit related to quadrants changes from 1-4 to 5-8. The second digit also only goes up to 5, not 8.

Permanent Dentition
Distinguishes teeth by labeling the quadrant, then teeth are numbered (1-8) going from the midline to posterior teeth (third molars).

Primary Dentition
Uses the same method, only instead of numbers, letters A-E are used.

Palmer Notation



WHAT ARE SUPERNUMERARY TEETH?

- **DEFINITION**-SUPERNUMERARY TEETH ARE DEFINED AS ANY ODONTOGENIC STRUCTURE FORMED FROM THE TOOTH GERM THAT IS IN EXCESS OF USUAL IN ANY REGION OF THE DENTAL ARCH.

- -MAY BE SINGLE OR MULTIPLE
- -UNILATERAL OR BILATERAL
- -MORE COMMON IN MALES (2:1)
- -1-4% OF THE POPULATION
- STRONG LINK TO GENETIC SYNDROMES
- -MORE COMMON IN PERMANENT DENTITION
- -PERMANENT MAXILLARY CENTRAL INCISORS (MESIODENS) ARE THE MOST COMMON FOLLOWED BY FOURTH MOLARS IN BOTH ARCHES (REFERRED TO AS DISTODENS)

- -CAUSE COMPLICATIONS SUCH AS CROWDING OR CYST FORMATION, DELAYED ERUPTION, DISCOMFORT, DIFFICULTY CHEWING, AS WELL AS IMPACTED TEETH.

Other times there are…

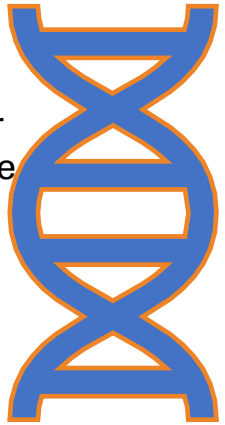
Missing teeth

-referred to as hypodontia, tooth agenesis, or congenitally missing teeth.
-developmental failure of 6 or fewer teeth
-most common dentofacial malformation in humans

- Most common are upper lateral incisors, wisdom teeth, and second premolars.
- More serious consequences than supernumerary teeth because disrupts function of the dentition to a greater extent than supernumerary teeth do.
- Treatment and restoration of dentition is more complicated

  -malocclusion
  -shifting
  -esthetics
  -jaw support

CAUSES & TREATMENT



The cause of supernumerary teeth isn't entirely clear but has been strongly linked to genetic factors. These factors include several autosomal dominant conditions such as cleidocranial dysplasia, Ehler-Danlos syndrome, Cleft lip and palate, and Gardner syndrome.

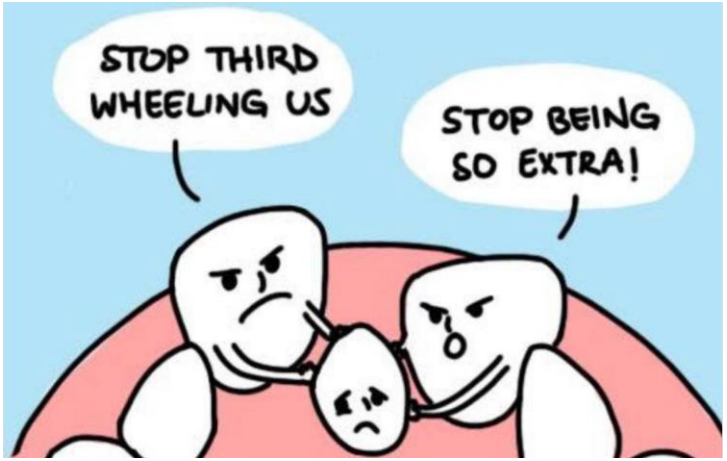
-Other causes that are hypothesized deal with environmental factors such as hyperactivity of the dental lamina during tooth development.

Treatment:

-early detection is the most important
-extraction for cosmetic and functional problems

D3 PICO

Clinical Question: In patients with permanent teeth blocked from eruption by supernumerary teeth, does extraction and normal eruption lead to better outcomes than extraction and immediate orthodontic extrusion?



http://www.murphyoms.com/oral-surgery/extra-teeth/

PICO Format

P: Unerupted permanent teeth due to presence of supernumerary teeth

I: Extraction with natural eruption

C: Extraction with orthodontic extrusion

O: Reestablishment of complete occlusion

PICO Formatted Question

In patients who have unerupted permanent teeth due to supernumerary teeth, does extraction with natural eruption as compared to extraction with orthodontic extrusion result in a more efficient reestablishment of complete occlusion?

Clinical Bottom Line

In the process of treatment planning, do we need to get orthodontics involved right away or allow the natural process of eruption to occur and then get orthodontics involved if needed?

Search Background

Date(s) of Search: 10/20, 10/21, 11/02, 11/03

Database(s) Used: PubMed.gov

Search Strategy/Keywords: Studies containing information about the prevalence/incidence, clinical characteristics and management of supernumerary teeth.

Search Background

MESH Terms Used:

Adolescent

Child

Orthodontic Extrusion

Tooth Extraction*

Tooth, Supernumerary / surgery

Tooth, Unerupted / etiology

Article I

Citation: Gupta S, Marwah N. Impacted Supernumerary Teeth- Early or Delayed Intervention: Decision Making Dilemma?. Int J Clin Pediatr Dent 2012; 5(3):226-230.

Study Design: **Case Report**

Study Need/Purpose: To gather and share information regarding the management of impacted supernumerary teeth cases in order to guide other clinicians with decision-making

Article I Synopsis

Method: Evaluated 4 cases of impacted supernumerary teeth reported to the Department of Pedodontics and Preventive Dentistry. Population age ranged from 5-11 years old. Intraoral and radiographic examinations were performed. Surgical intervention was performed for 2 of the cases: the palatally erupted supernumerary was extracted first followed by the impacted supernumerary and nonresorbable black silk sutures were used. The other 2 cases delayed surgical intervention and were kept on follow-up until root formation of neighboring permanent dentition was complete. Once complete, extraction of supernumerary teeth was completed.

Results: All 4 cases had successful outcomes following management of the supernumerary teeth.

Article I Synopsis

Fig. 1: Intraoral photograph showing palatally erupted supernumerary tooth (case I)

Fig. 3: Intraoral view after removal of palatally erupted supernumerary tooth (case I)

Fig. 10: Intraoral periapical radiograph revealing inverted impacted supernumerary tooth (case III)

Article I Synopsis

Conclusions: The first phase of managing supernumerary teeth is localizing and identifying complications associated with them. This can be done with a series of PAs using paralleling techniques and various horizontal/vertical angles. Early intervention may result in spontaneous correction of an existing malalignment due to the eruptive potential of the permanent teeth (no need for ortho). Early intervention may also prevent anterior space closure and midline shifts. The major disadvantages of early intervention is potential damage to the adjacent permanent teeth and a young child not being able to tolerate such surgery. Delayed intervention is suggested in order to allow root development of neighboring permanent dentition to complete. The behavior of the child will also be easier to manage thus reducing trauma and anxiety. The main disadvantage of delayed intervention is less eruptive forces will be present, creating loss of anterior arch space and potential midline deviations.

Limitations: Low-level evidence as a case report.

Article I Selection

Reason for selection: Discusses when early or delayed intervention is justified for impacted supernumerary teeth, management phases, and prevalence/incidence of this anomaly

Acceptability to your patient: Will help guide clinician with decision-making in treatment planning and timing of intervention

Implications: It is important to diagnose supernumerary teeth early, establish its position and the dental status of the adjacent permanent dentition in order to decide if early or late intervention is necessary. Early intervention is indicated if our patient's permanent roots adjacent to the supernumerary teeth are ⅓ to ½ developmentally complete.

Article II

Citation: Mínguez-Martinez, I., Ata-Ali, J., Bonet-Coloma, C., Peñarrocha-Oltra, D., Peñarrocha-Diago, M. A., & Minguez-Sanz, J. M. Management and outcome following extraction of 303 supernumerary teeth in pediatric patients. *Pediatric Dentistry* (2012), *34*(5), 136–139.

Study Design: **Case Series**

Study Need/Purpose: To describe the management (including extraction) of permanent teeth impacted by the presence of supernumerary teeth and the outcome of treatment

Article II Synopsis

Method: Prospective clinical study of a population of 200 children (age range 2-14 years old) seen at the Department of OMS reference of University Children's Hospital in Valencia, Spain. Operated/controlled by same surgeon. Follow-up period had to be at least 18 months long. Data was collected: sex, age, location, type of dentition, # of supernumerary teeth and surgical approach. Measurements and photographs of extracted supernumerary were taken. Treatment included extraction, orthodontic traction, and relocation. SPSS 15.0 stat software used to analyze results.

Results: Male/female ratio was 2.3:1. 88% of the supernumerary were located in the maxilla and 86% were found in the permanent dentition. 135 cases had a single supernumerary. 118 teeth were conoid shaped followed by 92 supplementary, 66 tuberculate, and 27 varied. 54% of the teeth displayed complete root formation. In 61% of the permanent teeth, the supernumerary caused impaction of the former BUT there were no cases of impaction recorded in the primary dentition. Treatment outcome was 100% favorable in orthodontic tractions, 80% of relocations, and 65% of conductive alveolectomies

Article II Synopsis

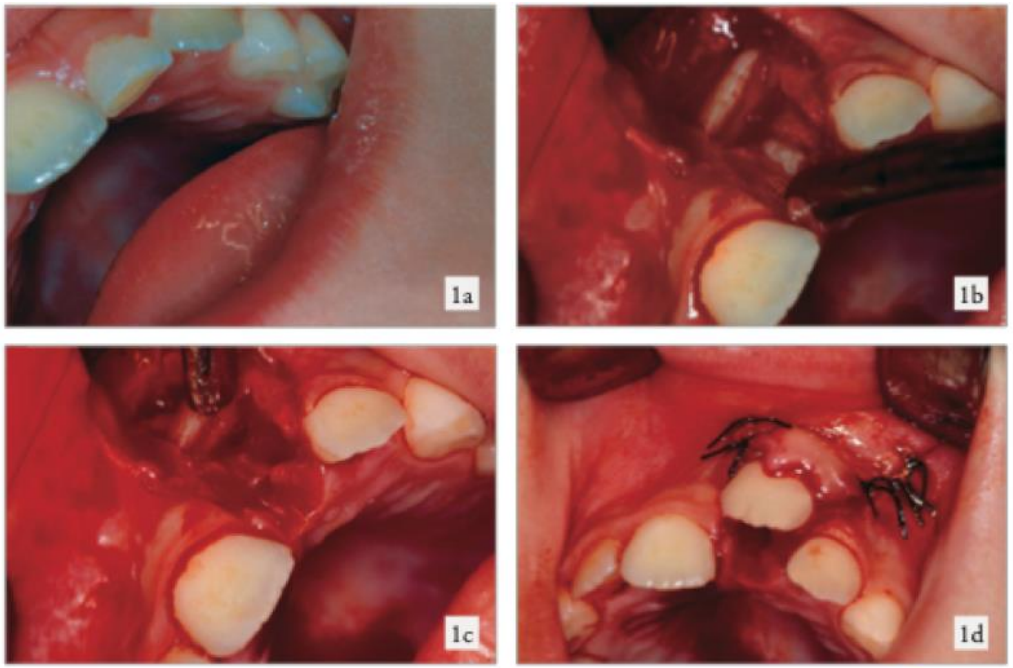


Figure 1. (a) Preoperative intraoral view of the persistence of the primary maxillary left central incisor. (b) After raising the mucoperiosteal flap, the supernumerary tooth can be observed located palatally, with the permanent maxillary left central incisor located on the labial. (c) View following removal of the supernumerary tooth. (d) Relocation of the permanent maxillary left central incisor in the socket and suturing.

Article II Synopsis

Conclusions: Treatment should be individualized and consider the height of the impacted tooth, position, and remaining arch space. Despite high treatment outcome/favorable evolving of permanent teeth reported in this case series, it can be misleading and treatment should be decided case by case. However, it is promising that this study found no cases of root resorption pre/post treatment just as other studies have found. It's important to note that extraction is not always the right choice of treatment. A supernumerary can be monitored if there is satisfactory eruption of the related teeth, no active orthodontic treatment indicated, no pathology and if removal would adversely affect neighboring teeth.

Limitations: Unable to determine # of supernumerary teeth that were left in place/monitored (only included those that had surgery)

Article II Selection

Reason for selection: Discusses various treatments of permanent teeth impacted due to supernumerary teeth and the success of these treatments. This article also discusses various trends of supernumerary teeth that can guide clinicians diagnostically.

Acceptability to your patient: This article directly relates to our case.

Implications: We need to individualize our treatment approach and consider that these supernumerary teeth may be left in place and simply monitored if the previously mentioned requirements are met.

Article III

Citation: Yassin OM, Hamori E. Characteristics, clinical features and treatment of supernumerary teeth. J Clin Pediatr Dent. 2009 Spring;33(3):247-50.

Study Design: **Case Series**

Study Need/Purpose: To describe the epidemiological characteristics, clinical features, and management of supernumerary teeth

Article III Synopsis

Method: Retrospective study at a military hospital in North of Jordan. Population was 139 patients diagnosed with supernumerary teeth and referred to pediatric dental clinic from April 1993- June 2007. Data was recorded: age, gender, supernumerary type, location, stage of development, eruption status, #, method of treatment, effect on adjacent permanent teeth, associated systemic syndromes and need for orthodontic after extraction. Follow-up period was an average of 9.3 months.

Results: The population age ranged from 2-16 years old. The male to female ratio was 2.2:1. 65% of the supernumerary teeth were conical shaped followed by 23.7% supplementary, 10.8% tuberculate and 0.5% odontoma. Over two-thirds of the teeth were erupted. Only 21.6% of the patients had multiple supernumerary teeth present. The most common location was the premaxilla and the most common effect on adjacent permanent dentition was delayed eruption followed by crowding. Cleft lip was the most common associated anomaly. 81.7% of indicated treatment was simple or surgical extraction of the supernumerary teeth. Ortho was needed after extraction in 74.1% of the patients.

Article III Synopsis

Conclusions: Most patients will present with a single supernumerary teeth in the premaxilla region. It is extremely rare to have multiple in the absence of any associated syndromes. The supernumerary teeth are usually found radiographically and tend to be asymptomatic. Early diagnosis can prevent or reduce the risk of complications. This article concluded that early diagnosis and early surgical intervention presents a better prognosis.

Limitations: Majority of the patients were managed with surgical intervention. The article had a higher mean age (9.43 years old) than other regional studies, which may have led to increased root development and eruption displayed. ¾ of the patients needed orthodontic treatment, further indicating the need for surgical intervention.

Article III Selection

Reason for selection: This article describes the clinical features and management of supernumerary teeth.

Acceptability to your patient: Will help the clinicians diagnose and identify various forms of supernumerary teeth and guide the clinician to the ideal management

Implications: Management will depend on the supernumerary teeth type, location, and the presence of any pathology. Early diagnosis is prudent but early surgical intervention may not be indicated. It is important to individualize our treatment plan. IF early intervention is indicated, this article has concluded it will have a better prognosis than delayed management.

Levels of Evidence

- ☐ **1a** – Clinical Practice Guideline, Meta-Analysis, Systematic Review of Randomized Control Trials (RCTs)
- ☐ **1b** – Individual RCT
- ☐ **2a** – Systematic Review of Cohort Studies
- ☐ **2b** – Individual Cohort Study
- ☐ **3** – Cross-sectional Studies, Ecologic Studies, "Outcomes" Research
- ☐ **4a** – Systematic Review of Case Control Studies
- ☐ **4b** – Individual Case Control Study
- ■ **5** – Case Series, Case Reports
- ☐ **6** – Expert Opinion without explicit critical appraisal, Narrative Review
- ☐ **7** – Animal Research
- ☐ **8** – In Vitro Research

Strength of Recommendation Taxonomy (SORT)

☐	**A**–Consistent, good quality patient oriented evidence
☐	**B**–Inconsistent or limited quality patient oriented evidence
■	**C**–Consensus, disease oriented evidence, usual practice, expert opinion, or case series for studies of diagnosis, treatment, prevention, or screening

Conclusions: D3

How does the evidence apply to this patient?

The presented articles can help us gather more clinical characteristics and diagnostic information of the supernumerary teeth. Though the evidence is limited, it can guide us with the management of the impacted permanent teeth due to supernumerary presence.

Based on the above considerations, how will you advise your D4?

I would suggest gathering as much information about the supernumerary teeth type, location, developmental status, and neighboring permanent dentition before deciding which management option is best. Early diagnosis is the key and usually identified radiographically. If our patient's neighboring permanent dentition roots are at least ⅔ developmentally complete and the patient's behavior will be manageable, we may consider early surgical intervention. It is also important to advise the patient's parents that orthodontic treatment following extraction is often indicated.

Conclusions: D4

Next steps- Taking a Pan is incredibly important

Further diagnostics needed to determine

- Which tooth is the supernumerary
- Crown anatomy and root development
- Tooth placement in the mandible, A-P, M-L, apically

Whats likely to happen

- EXT primary teeth
- Allow #21 to erupt
- Unlikely that #29 root development and positioning allow for ortho traction- #29 may also be extracted
- If so- ortho consult

THANK YOU