



## Treatment Planning

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### Suzie

- 7 1/2 yrs old female, unremarkable medical history
- CC: delayed eruption of #9
- Dental history: trauma, #F intruded at 23 mos- re erupted 3 mos later
- #F exfoliated @ age 6.5- same time as #E
- IOE: poor OH, #8 erupted, #9 unerupted, #10 rotated and closing space
- Occlusal radiograph: intruded, impacted, displaced #9 with open apex



### INTRUSION



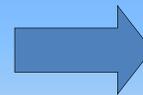
- FINDINGS: Axial displacement of teeth post trauma are known as **intrusions**
- TREATMENT OBJECTIVE: Presents as the greatest risk to tooth bud
- Most are forced facially to permanent tooth bud- evident by a facial bulge

### Dr. Mitsumoto

- What percentage of intruded primary teeth re-erupt?



### INTRUSION: PRIMARY



- **90% of intruded primary incisors re-erupt within 2-6 months!\***

\*McTigue, D. J., "Introduction to Dental Trauma: Managing Traumatic Injuries in the Primary Dentition." Pediatric Dentistry: Infancy through Adolescence, 2nd Ed. J. Pinkham et al., Ed. Philadelphia: Saunders, 1994; IADT Guidelines 2010

### Treatment options

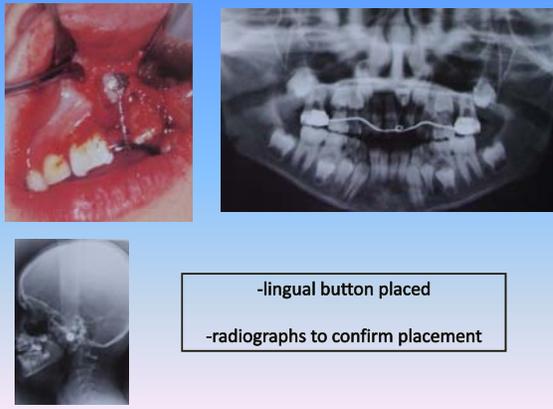
- ✗ Extract #9, then prosthesis, implant at end of growth period
- ✗ Extract #9, tooth transplant (of bicuspid)
-  Surgical exposure & orthodontic repositioning
- ✗ No treatment



CT: root development & position of #9  
3d reconstruction shows angulation



-TPA cemented on 1<sup>st</sup> permanent molars – for anchorage for extrusion-  
-Surgical exposure under IV sedation



-lingual button placed  
-radiographs to confirm placement



-Panoramic radiograph  
-orthodontic treatment  
Issues?

Dr. Mensah:  
What is the incidence of impacted canines?





**Canine Impaction (CI) Incidence:**  
1/100  
Orthodontists report higher prevalence

Because CIs have longer tx time-early id is crucial

**Sector VS Angulation**

Canines that become impacted will overlap LI in 82% of cases

**Regression analysis:** Once a canine overlaps the midline of a LI there is a greater than 0.87 chance of impaction

Warford JH Jr, Grandhi BK, Tira DE. Prediction of maxillary canine impaction using sectors and angular measurement. Am J Orthod Dentofacial Orthop. 2003 Dec;124(6):651-5.

**ANGULATION**



-horizontal reference line drawn, bicondylar line  
-mesial angle formed by using the constructed horizontal line and the long axis of the unerupted canine is measured.  
-higher the angle the less tendency to ectopic eruption and therefore the less tendency to impaction  
-non-impacted teeth, mean of 75.12° compared with 63.20° for impacted teeth

**SECTOR ANALYSIS**



-if canines are in sector I, they are not ectopically erupting. Therefore, there is no risk of impaction.  
-the risk of impaction becomes higher in sector II, III, and IV.

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**Suspect ectopic eruption if the following clinical signs are present**

- 1- Prolonged retention of the deciduous canine.
- 2- Absence of a normal labial canine bulge.
- 3- Difference in palpation between right and left canine bulges.
- 4- Presence of a palatal bulge instead of a buccal one.
- 5- Distal tipping or migration (splaying) of the lateral incisor

**Why are canines suspect to ectopic eruption?**

- 1- long, arduous path of eruption
- 2- latest of teeth to erupt into arch
- 3- odontoma, supernumary
- 4- tooth size- arch length discrepancy
- 5- trauma



-2<sup>nd</sup> surgical intervention to expose buccal surface of maxillary canine



12 yrs after treatment...  
percussion test + i.e no ankylosis  
\*Note Incisors' resorbed roots

## Take home messages

- Early diagnosis
- What age to take a panoramic radiograph?
- What age to refer for orthodontics?
- Trauma can cause developmental disturbances, always remind parents
- Intrusions are highest risk for sequelae in permanent teeth
- Close & long term monitoring & multidisciplinary collaboration during multiple periods is necessary

## References

- Warford, J, et al, **Prediction of maxillary canine impaction using sectors and angular measurement.** Am J Orthod Dentofacial Orthop. 2003 Dec;124(6):651-5.
- Von Amerongen, et. al "Case Reports in Pediatric Dentistry" Quintessence Publishing, 2009
- **Pinkham, et. al, Pediatric Dentistry, From Infancy Through Adolescence, 4<sup>th</sup> Ed.**
- <http://www.smiledentaljournal.com>