

Pediatric Considerations for Removing Teeth

Impacted Teeth other than 3rd Molars

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Lecture Overview

General Principles of Extraction

Principles of Pediatric Extractions

The Child as a Patient

Ankylosed Teeth

Impacted Canines and Premolars

Supernumerary Teeth



Principles of Extracting a Tooth

- 1) Separate the Soft Tissue from the Tooth
- 2) Use elevators as a lever and a wedge to luxate the tooth.

Expand the socket to create a path of removal for the tooth.

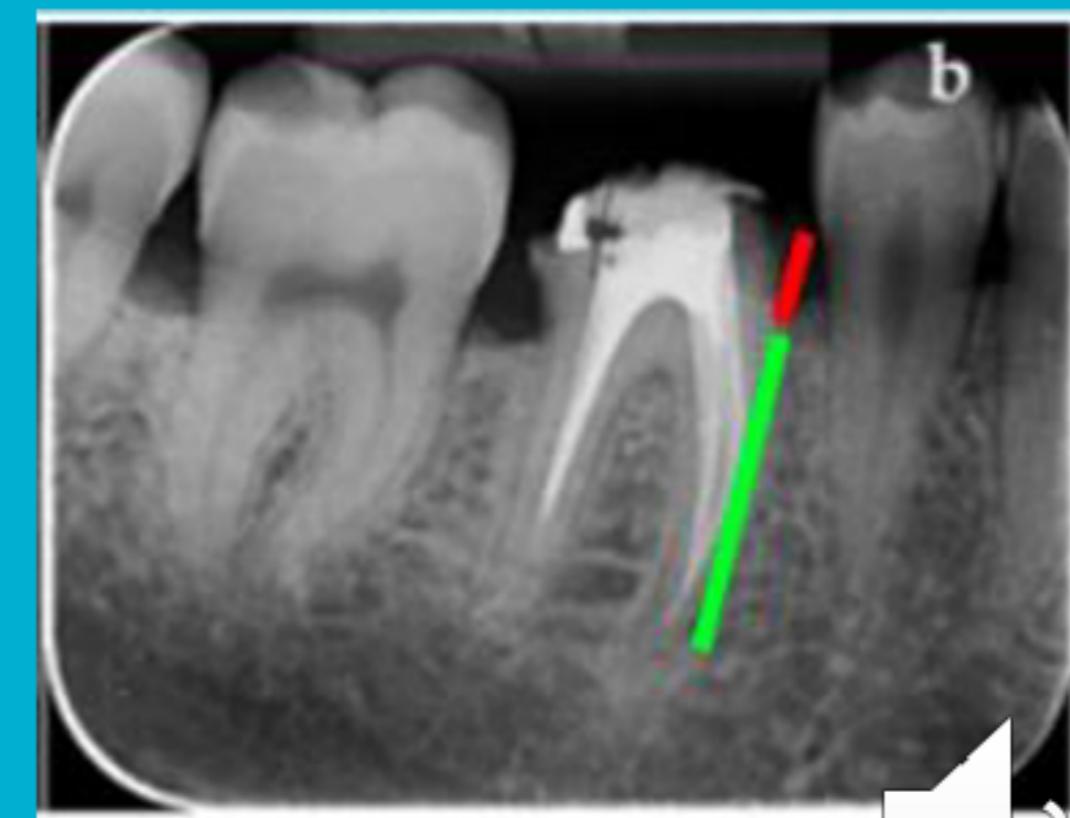
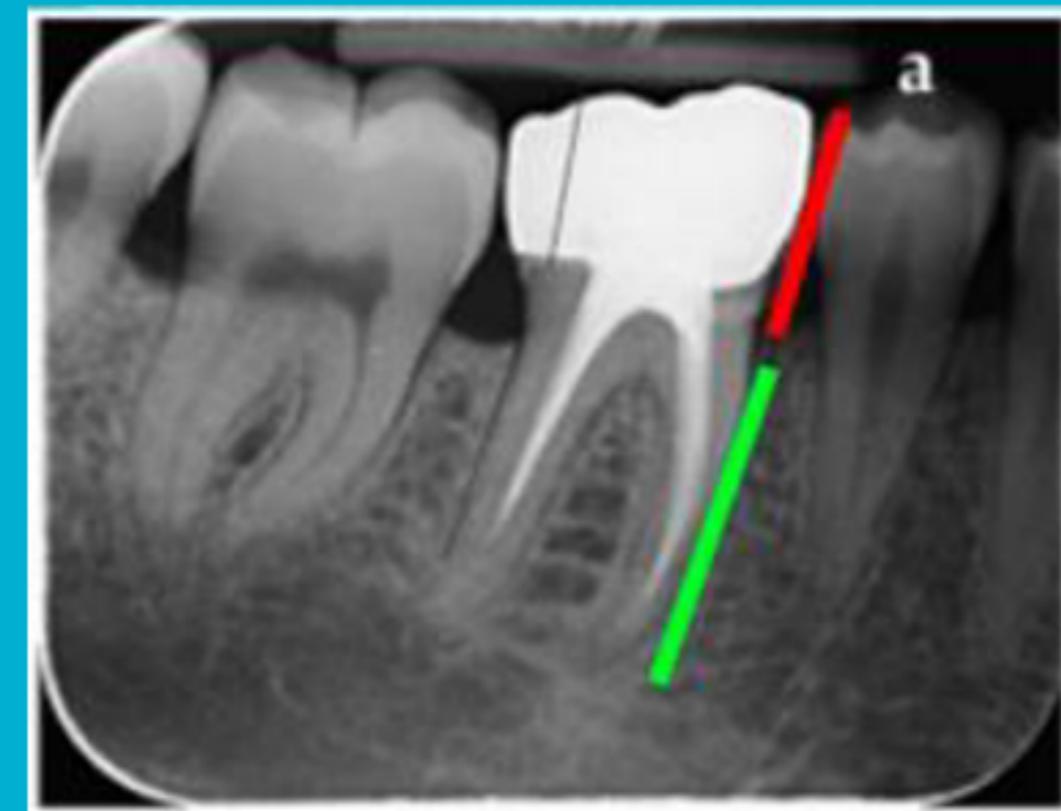
- 3) Use forceps to:
 - Continue to luxate the tooth.
 - Disrupt the PDL holding the tooth in place.



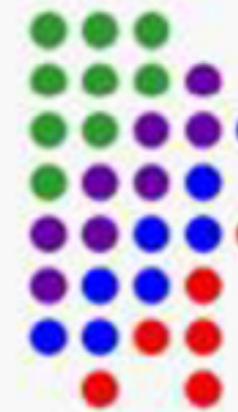
LOOSENING OF THE SOFT TISSUE ATTACHMENT

THREE PURPOSES

1. Allows you to ensure profound anesthesia achieved
2. Allows the forceps to be positioned more apically without interference from or impingement on the soft tissue
3. Allows the elevator to be placed directly onto alveolar bone, without crushing or injuring the gingival papilla



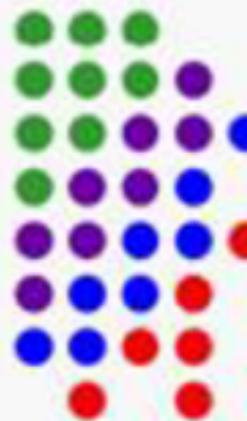
ADAPTATION OF THE FORCEPS TO THE TOOTH



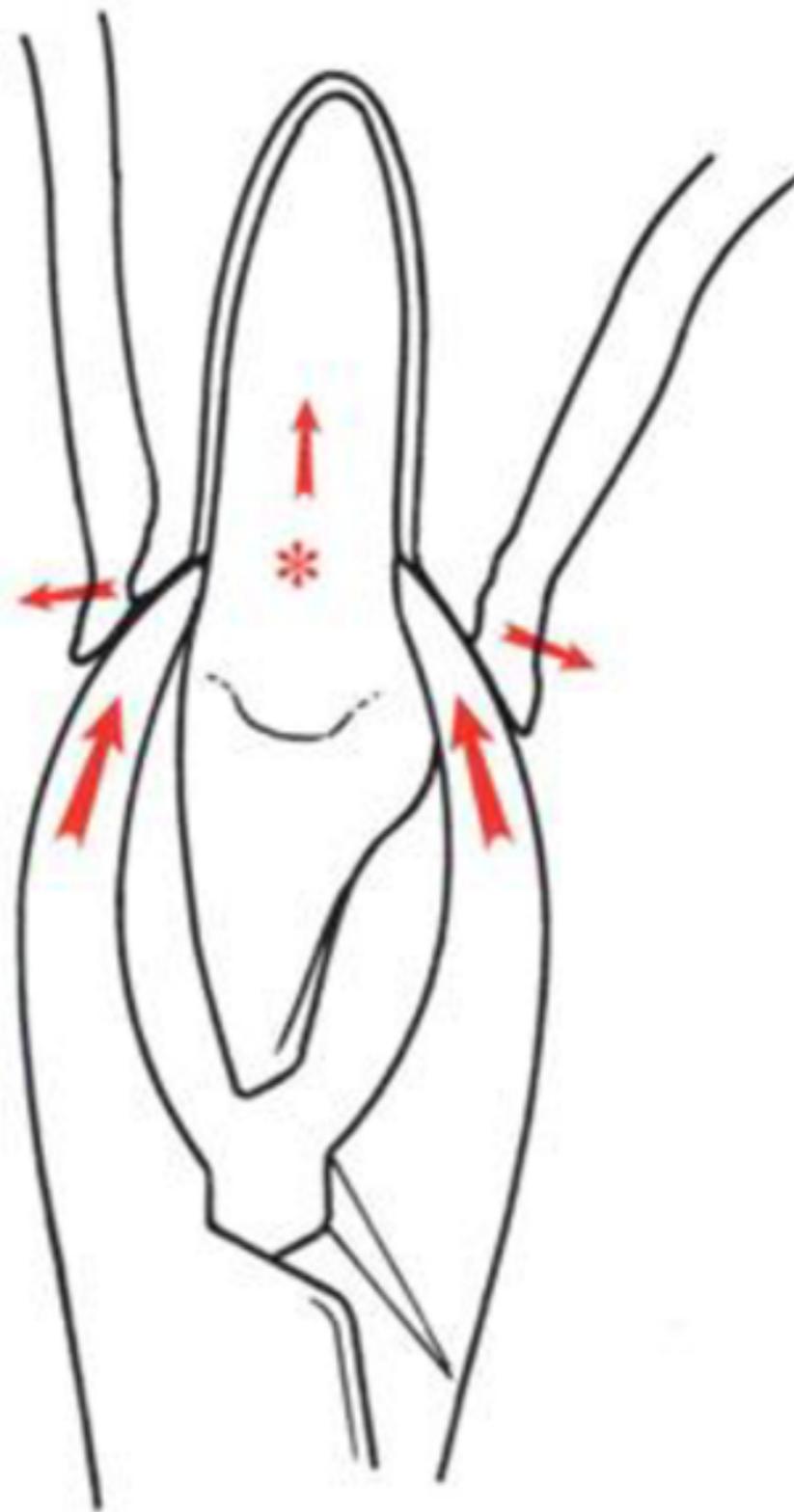
1. The beaks of the forceps should be shaped to adapt to the tooth, apical to the cervical line, i.e. the root surface
2. Seat the forceps such that the beaks grasp the root underneath the loosened soft tissue
3. The lingual beak is usually seated first, then the buccal beak
4. Make sure the beaks are beneath soft tissue and not engaging an adjacent tooth



ADAPTATION OF THE FORCEPS (cont.)



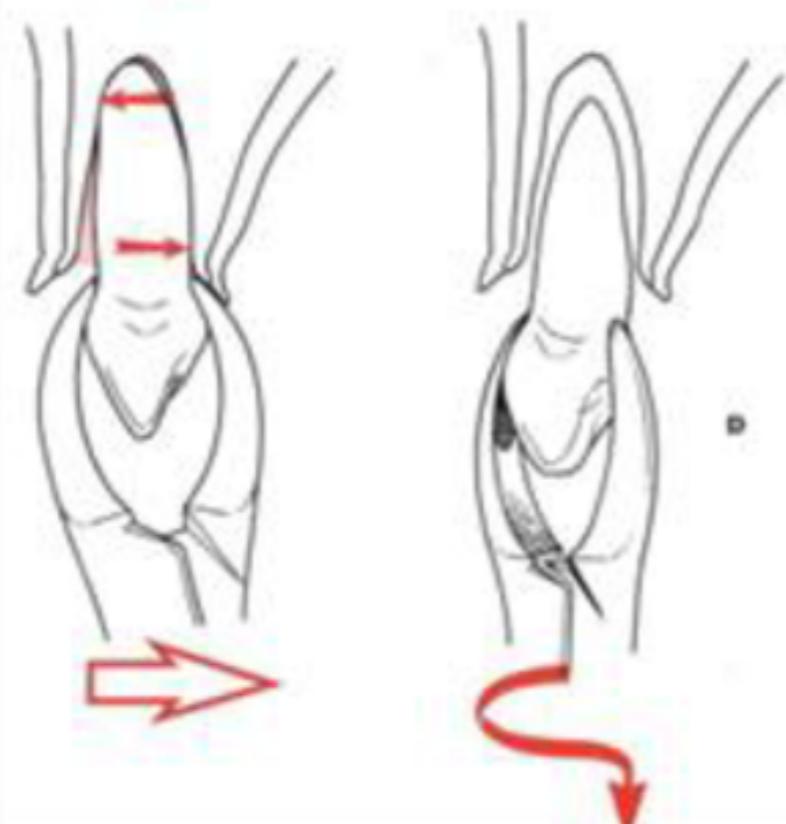
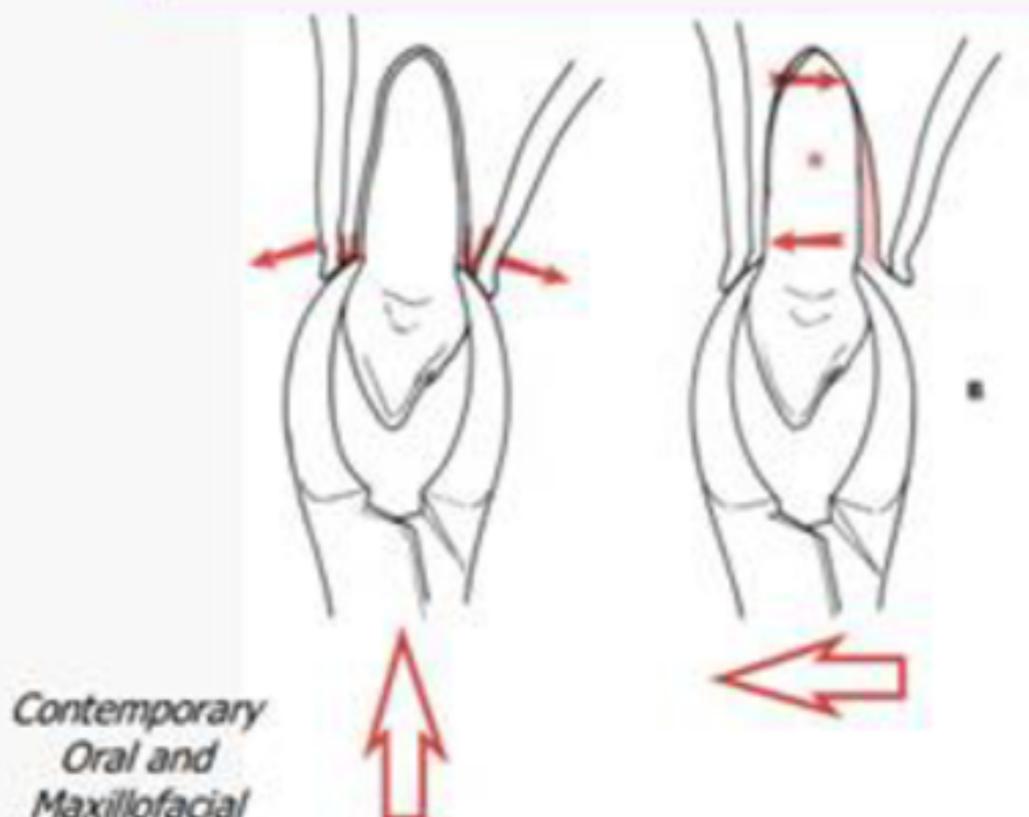
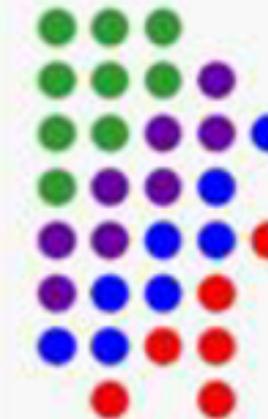
- Keep the beaks parallel to the long axis of the tooth so that the luxation forces are maximally effective and to reduce the chance of root fracture
- Force the forceps apically as far as possible



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Maxillofacial
Surgery*



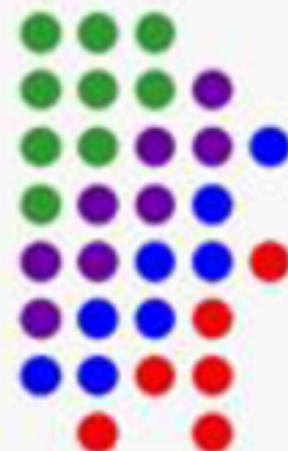
LUXATION OF THE TOOTH WITH THE FORCEPS



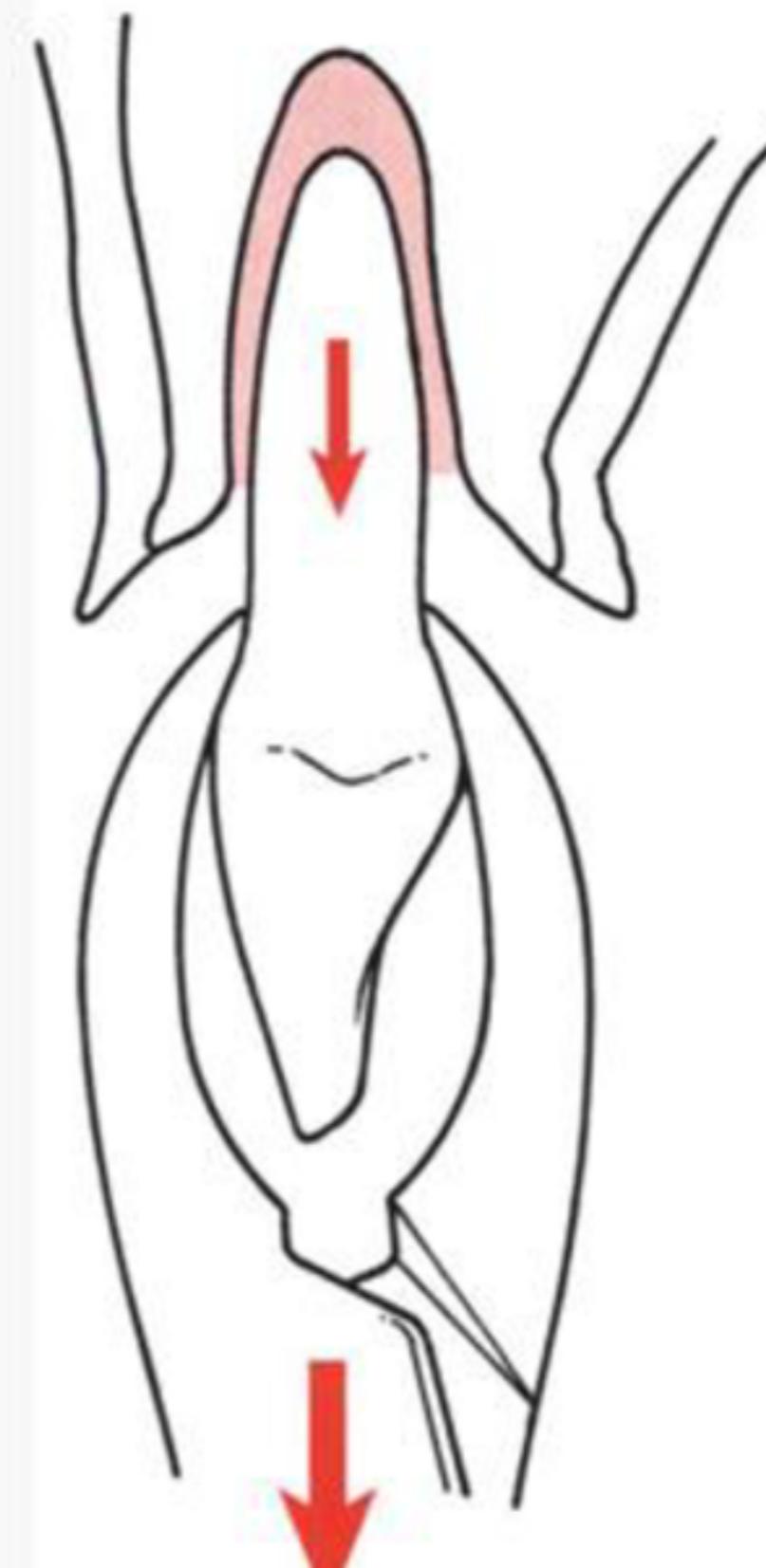
- Luxate the tooth apically, buccally, and lingually
- The major portion of the force is directed toward the thinner layer of bone
- Use slow, steady, deliberate force, gradually increasing in intensity
- As the alveolar bone expands, reseat the forceps apically
- For appropriate teeth, apply rotational motions
- (Beginners have a tendency to apply inadequate pressure for insufficient amounts of time)



REMOVAL OF THE TOOTH FROM THE SOCKET



- The tooth is **NOT** removed until the two objectives of extraction have been accomplished:
 1. Alveolar bony walls expanded
 2. Periodontal ligament disrupted
- Limit tractional forces to your last motion used
- A slight tractional force, usually directed buccally, can be used
- Develop a sense for the direction the tooth wants to move!

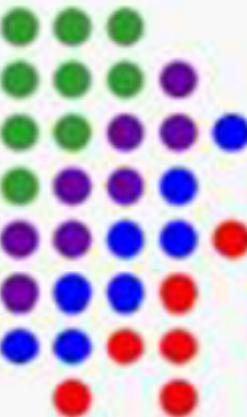
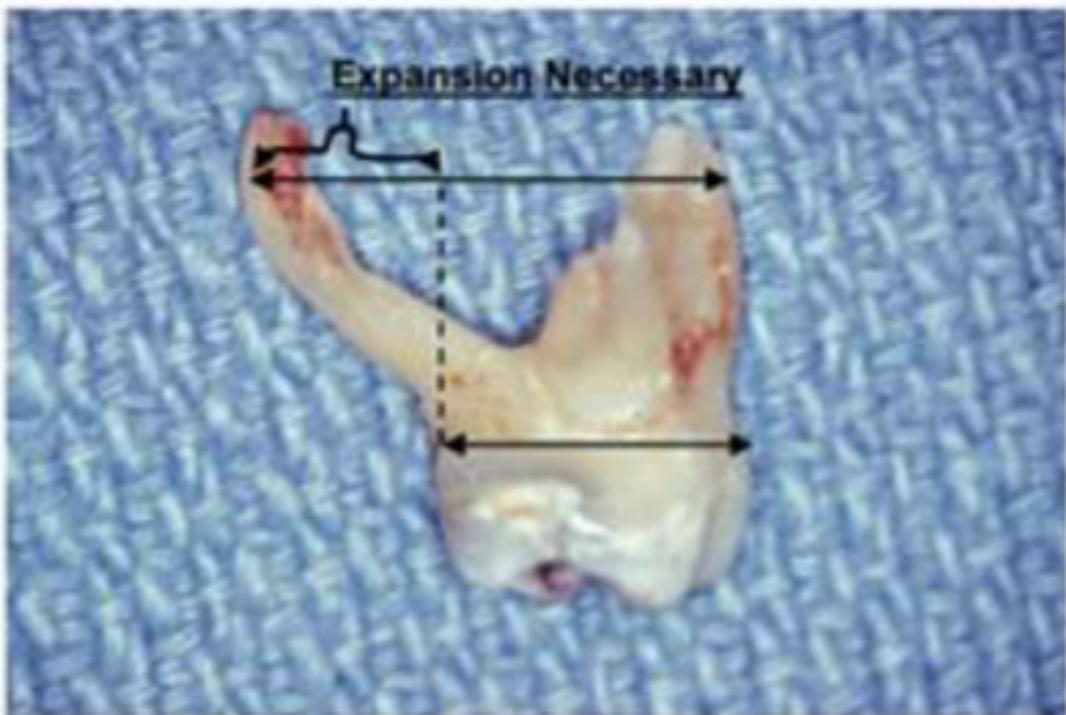


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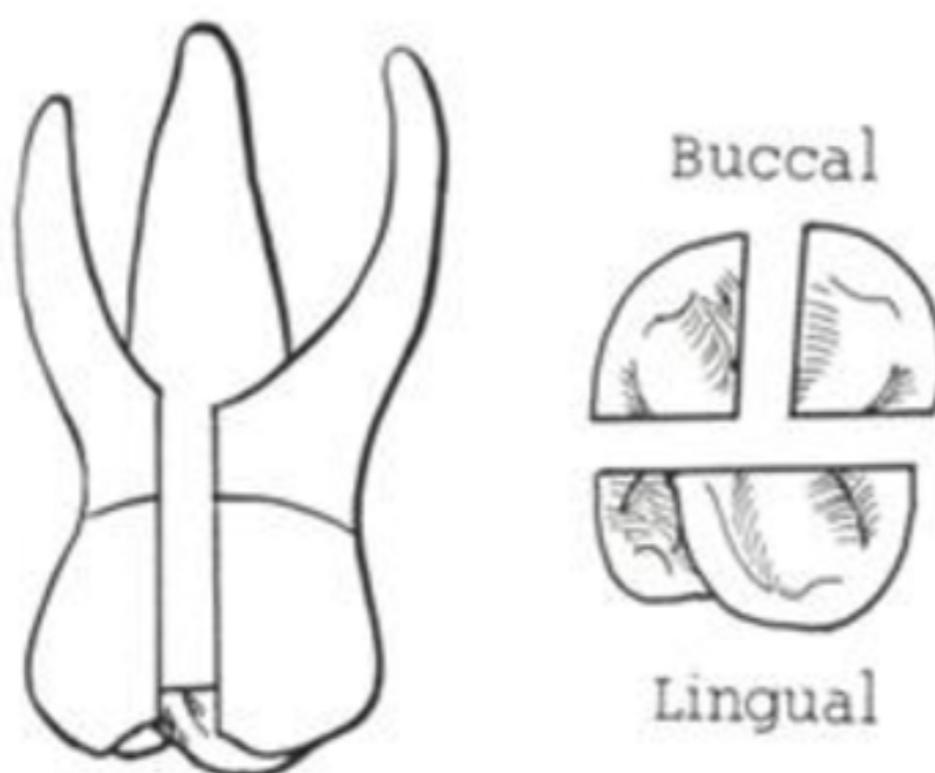
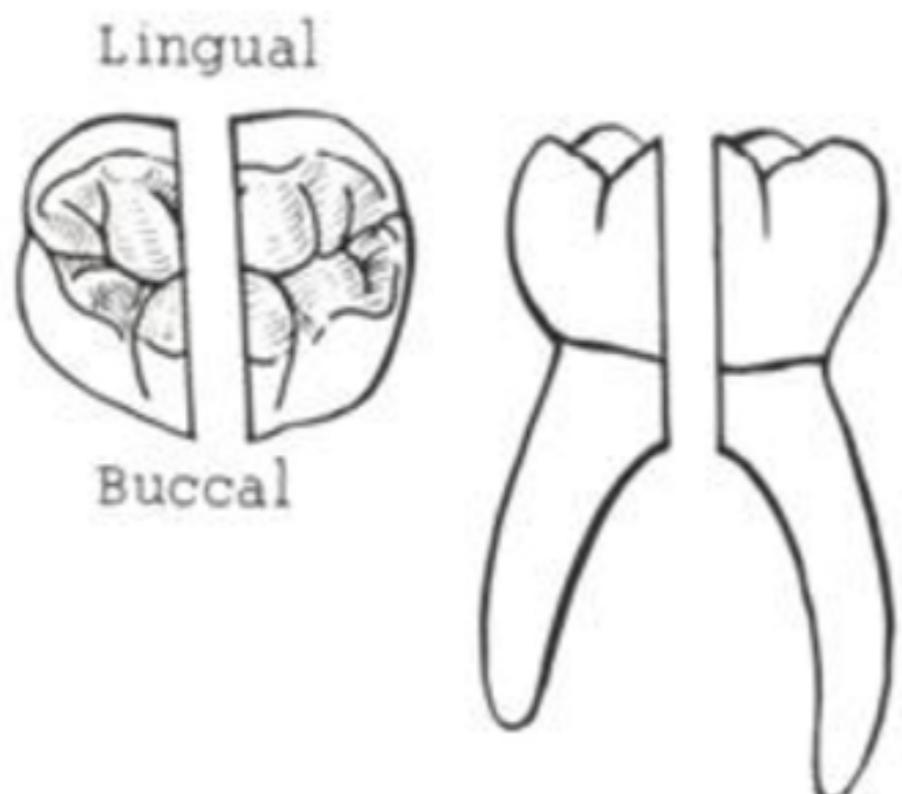
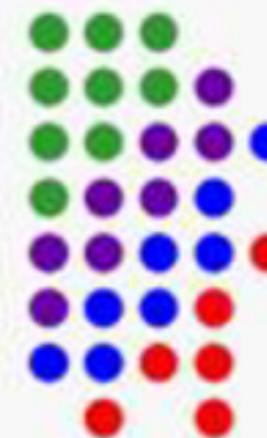


MODIFICATIONS FOR PRIMARY TOOTH EXTRACTION

- Same principles apply, but care must be taken if roots are very long and delicate, or if the succedaneous tooth causes uneven root resorption
- Pay careful attention to the direction of least resistance and deliver the tooth into that path



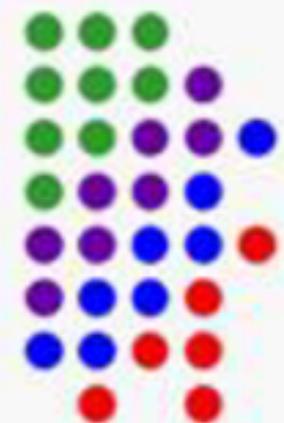
SECTIONING PRIMARY TEETH



- If the roots of the primary molar embrace the crown of the permanent premolar, consider sectioning the tooth
- However, it is rare for the roots of the primary molar to cause the permanent tooth's extraction
 - If this ever happens, replace the tooth bud and suture socket closed
- Use caution when sectioning not to damage the premolar tooth beneath



FRACTURED PRIMARY TOOTH ROOTS



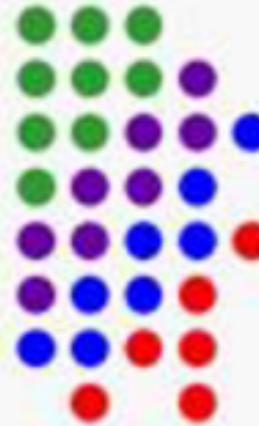
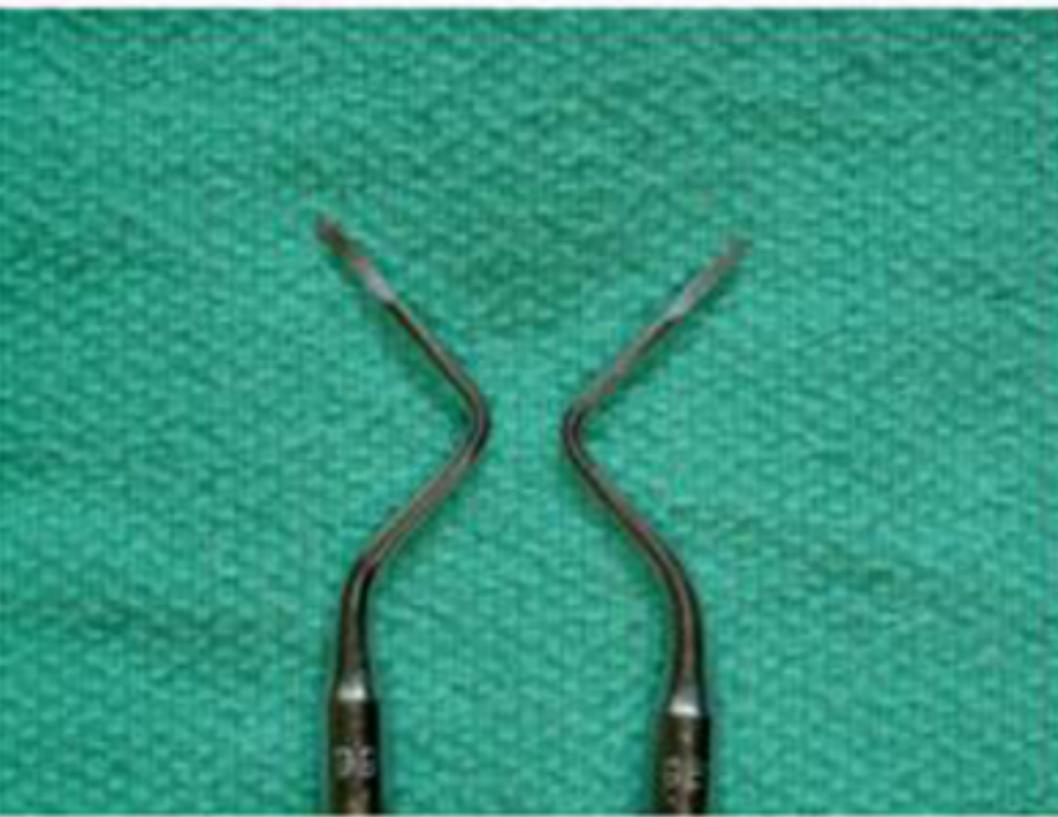
(Quote from AAPD Reference Manual 2013-2014 – Pages 269-70)

The dilemma to consider when treating a fractured primary tooth root is that removing the root tip may cause damage to the succedaneous tooth, while leaving the root tip may increase the chance for postoperative infection and delay eruption of the permanent successor.² The literature suggests that, if the tooth root can be removed easily, it should be removed.² If the root is very small, located deep in the socket, situated in close proximity to the permanent successor, or unable to be retrieved after several attempts, it is best left to be resorbed.²

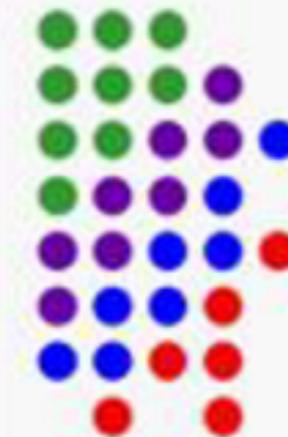


FRACTURED ROOTS/ROOT TIP REMOVAL

- Use spoon excavator, root tip picks, or elevator
- If the root is clearly visible, mobile, and can be removed easily, then removal is best
- If several attempts fail, or the root tip is very small or very deep, it is best left to be resorbed



POST-EXTRACTION CARE OF THE SOCKET



- **DEBRIDEMENT** (only if necessary)
 - If granuloma, cyst, or debris present ► remove it
 - The arterioles of granulation tissue have little or no capacity to retract and constrict, which leads to bothersome bleeding
 - Be mindful of the permanent tooth bud beneath
 - If neither periapical lesion nor debris is present, do **not** curette socket
 - Curettage of socket wall produces additional injury and **may delay** healing
- **COMPRESS SOCKET**
 - The expanded buccolingual plates should be compressed back to their original position

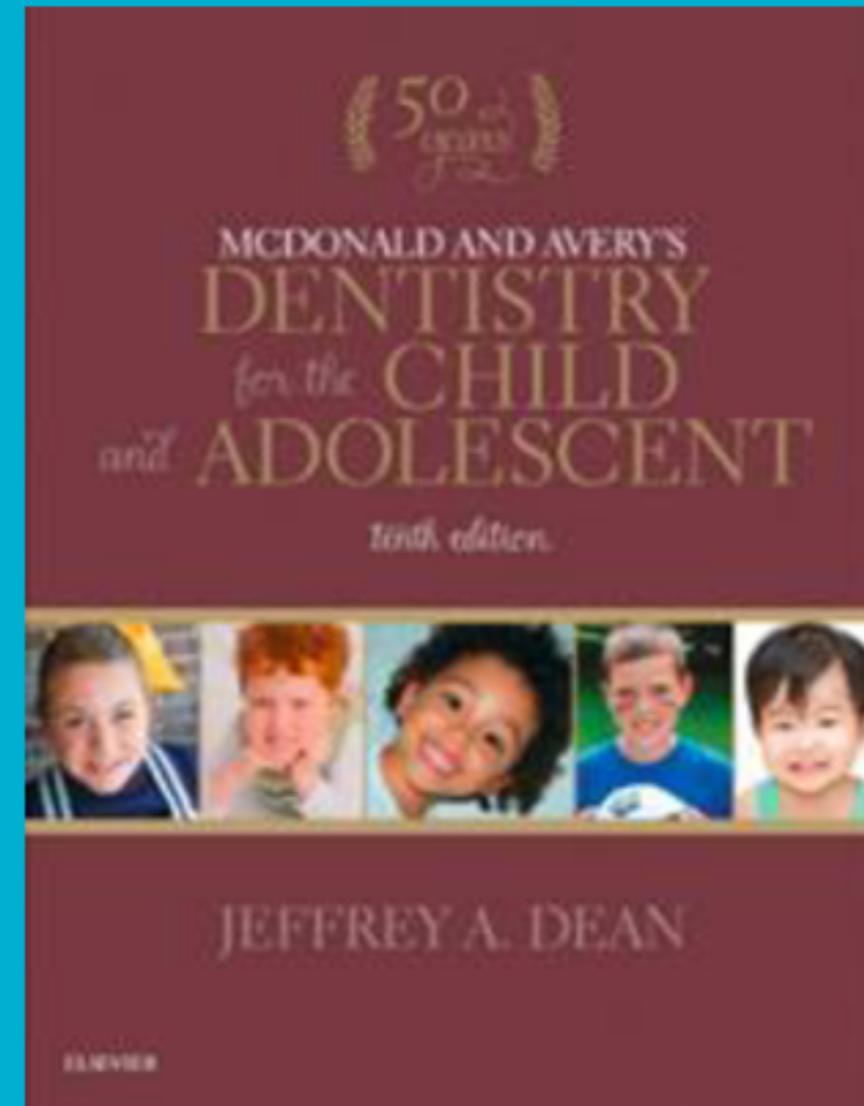


Pediatric Considerations

Chapter 29: Oral Surgery for the Pediatric Patient

Missing Permanent Teeth

AAO Recommends Ortho Eval by Age 7



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Chapter 15: Local Anesthesia and Pain Control

Table 15-1

Maximum Recommended Doses of Local Anesthetics

Dose	Proprietary Name	Percent of Local Anesthetic	Vasoconstrictor	Duration of Anesthetic	Maximum Recommended Dose
Lidocaine	Xylocaine	2	Epinephrine 1:100,000	Pulpal: 60 min Soft tissue: 3-5 h	4.4 mg/kg
Mepivacaine	Carbocaine	3		Pulpal: 20-40 min Soft tissue: 2-3 h	4.4 mg/kg
Prilocaine	Citanest Forte	4	Epinephrine 1:200,000	Pulpal: 60-90 min Soft tissue: 3-8 h	6.0 mg/kg
Articaine	Septocaine	4	Epinephrine 1:100,000	Pulpal: 60-75 min Soft tissue: 180-360 min	7 mg/kg



Know How to Calculate the Amount of Anesthetic You are Providing

- 1% Solution has 1gm/100gm of liquid.
- 1gm equals 1000 mg, and 1gm of water is 1ml.
- You can represent 1% solution as 10mg/ml, 2% Solution has 20mg/ml, etc.
- Dental cartridge has 1.7 ml of solution.
- $\% \text{ Solution} \times 1.7 \text{ ml} = \text{Total mg/cartridge}$
- $\text{mg/ml} \times 1.7 = \text{Total mg/cartridge}$
- One cartridge of 2% Lidocaine has:
 - $20\text{mg/ml} \times 1.7 \text{ ml} = 34\text{mg of Lidocaine}$



Let's Apply the Math for Lidocaine

Max Dose 4.4mg/kg

25 lb/11.3 kg, Max Dose 50 mg of Lido, 1.5 Cartridges Max Amount of Lidocaine.

50 lb/22.7, Max Dose 100 mg of Lido, 3 Cartridges Max Amount of Lidocaine.

75/34 kg, Max Dose 150mg of Lido, 4.5 Cartridegs Max Amount of Lidocaine.

(Numbers Rounded to Nearest 1/10th)



Table 15-2**Common Medications and Dosages for Oral Pediatric Postoperative Pain Management**

Medication	Availability	Dosage
Acetaminophen	Elixir: 160 mg/5 mL Tablets: 325 mg Chewable: 160 mg	10-15 mg/kg/dose given at 4-to 6-hour intervals
Ibuprofen	Suspension: 100 mg/5 mL Tablets: 200, 300, 400, 600, 800 mg	4-10 mg/kg/dose given at 6- to 8-hour intervals
Tramadol	Tablets: 50, 100 mg	1-2 mg/kg/dose given at 4- to 6-hour intervals – maximum 100 mg
Codeine and acetaminophen	Suspension: 12 mg/5 mL 12 mg codeine/120 mg acetaminophen/5 mL	0.5-1.0 mg/kg/dose given at 4- to 6-hour intervals
Hydrocodone and acetaminophen	Suspension: 7.5 mg hydrocodone/325 mg acetaminophen/15 mL Tablets: 5 mg hydrocodone/325 mg acetaminophen	0.3 mL/kg/dose given at 4- to 6-hour intervals <50 kg 0.135 mg/kg



ANKYLOSED TEETH

- Caused by fusion of cementum to alveolar bone
- Area of fusion may be small and not evident on radiograph
- Often associated with congenital absence of succedaneous tooth ► restore to occlusion – can remain in function \geq 20 years
- Removal can be difficult – My personal advice ► **Refer**



Impacted Teeth

AAO Recommendation

Ortho eval by age 7

Imaging at that eval

Identify Missing Teeth

Identify Impacted Teeth

Identify Problems with Eruption

Reasons to Keep Primary Teeth

Preserve Bone

Facilitate Normal Growth in that Area

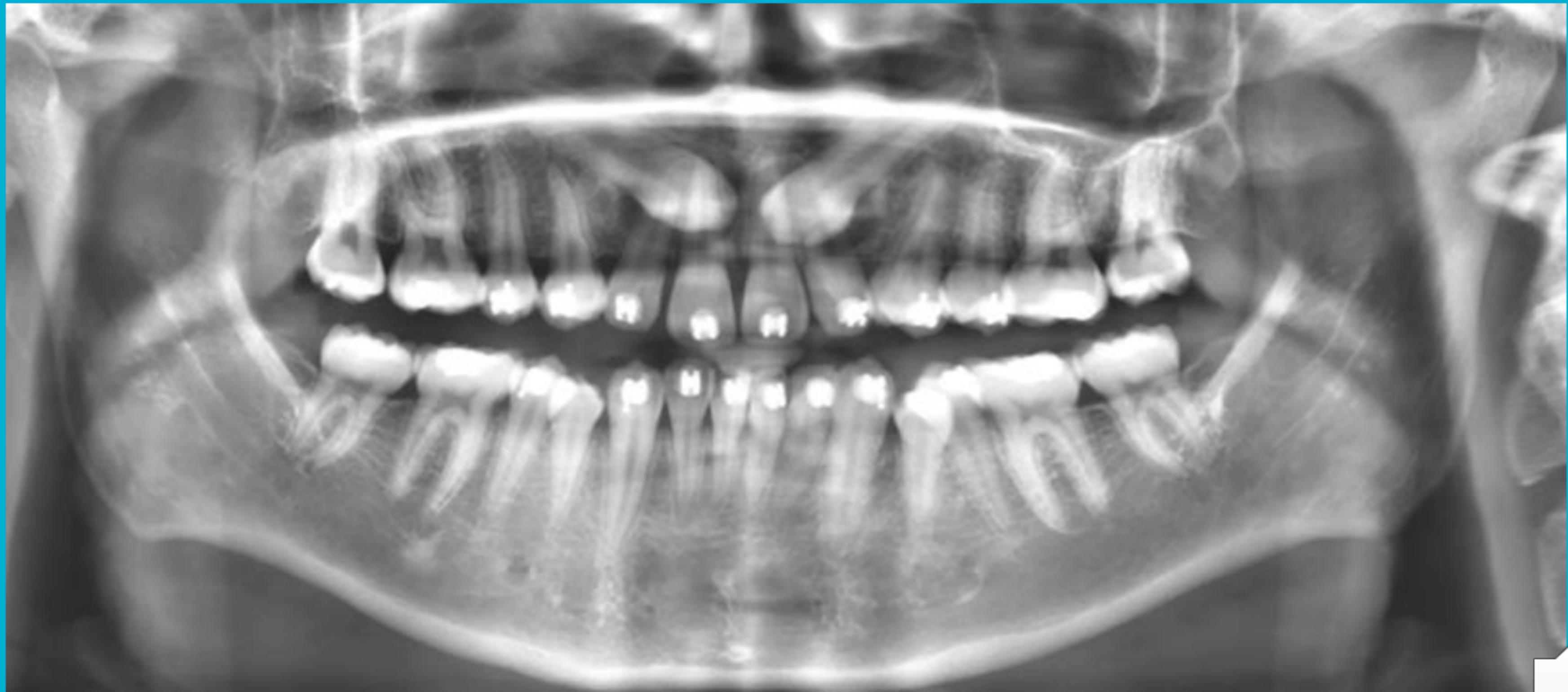
Reasons to Remove Primary Teeth

Maintain Proper Spacing of Remaining Teeth

Sometimes You can eliminate Space Altogether/No need for an Implant.



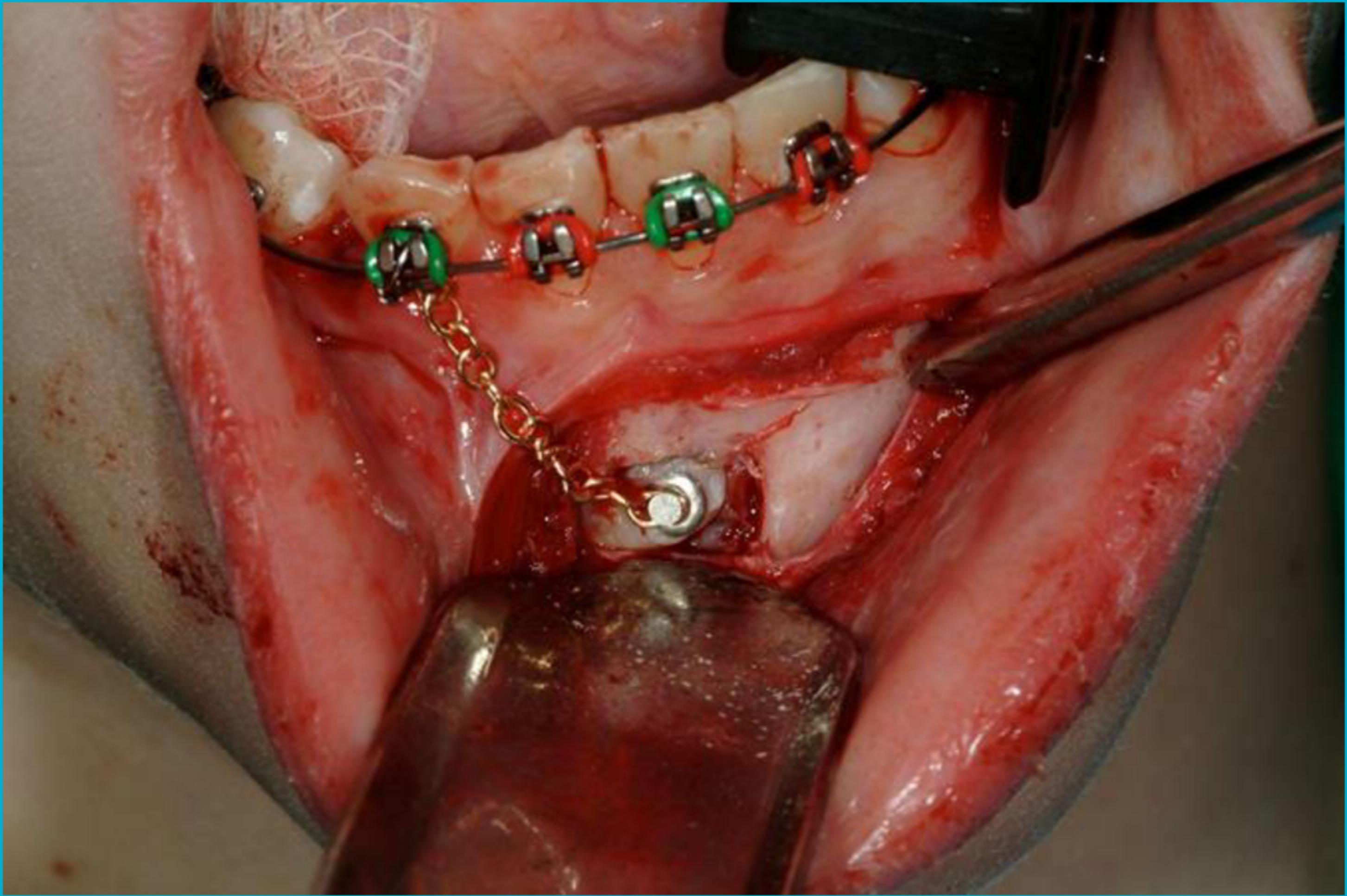
Impacted Canines





Impacted Lower Canine





Impacted Second Molar



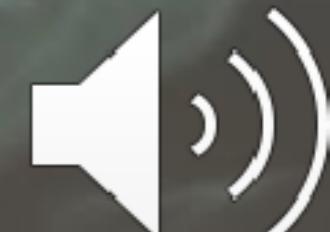
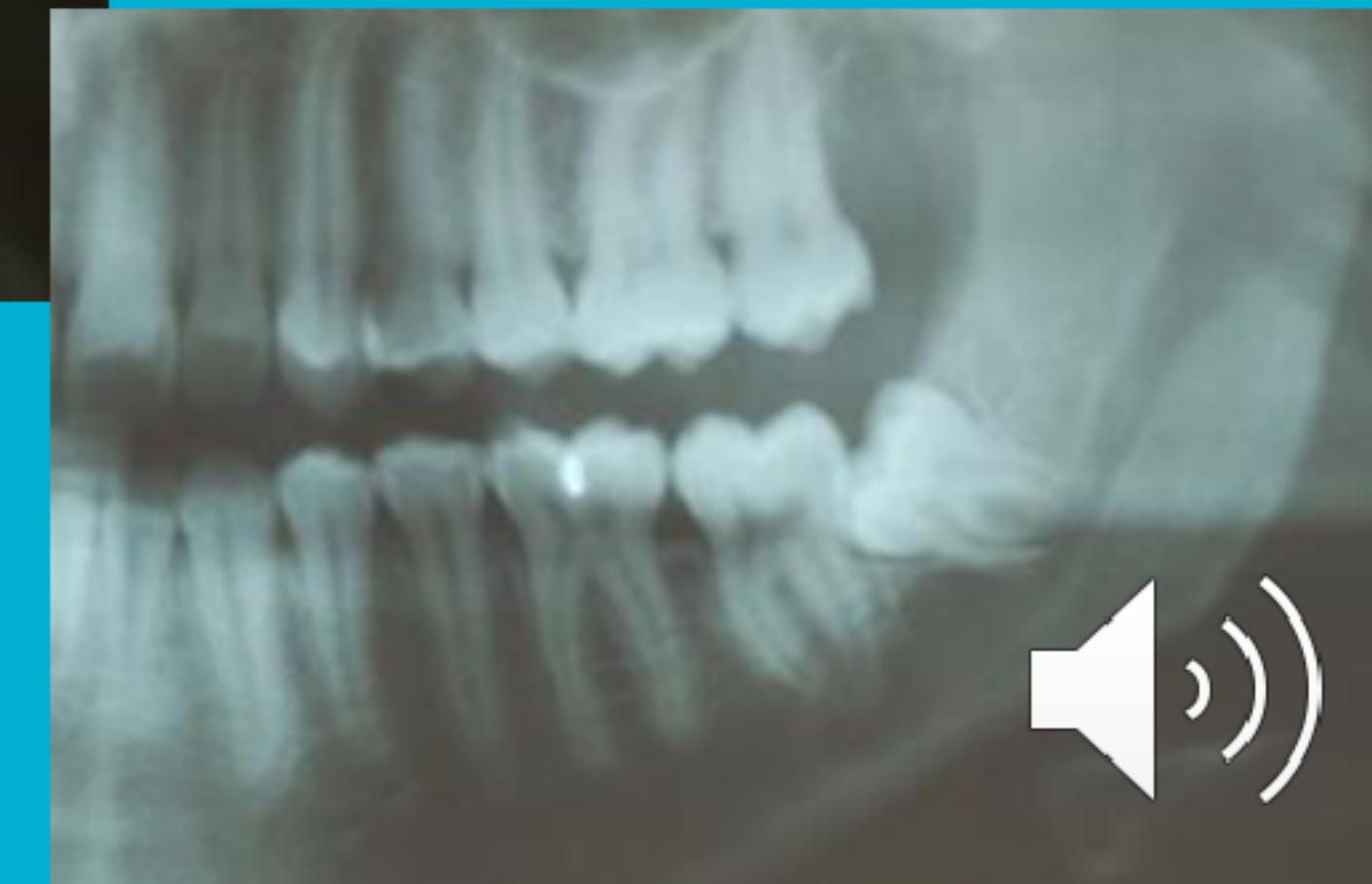
Impacted Second Molar Forced Eruption

Immediately Post Op

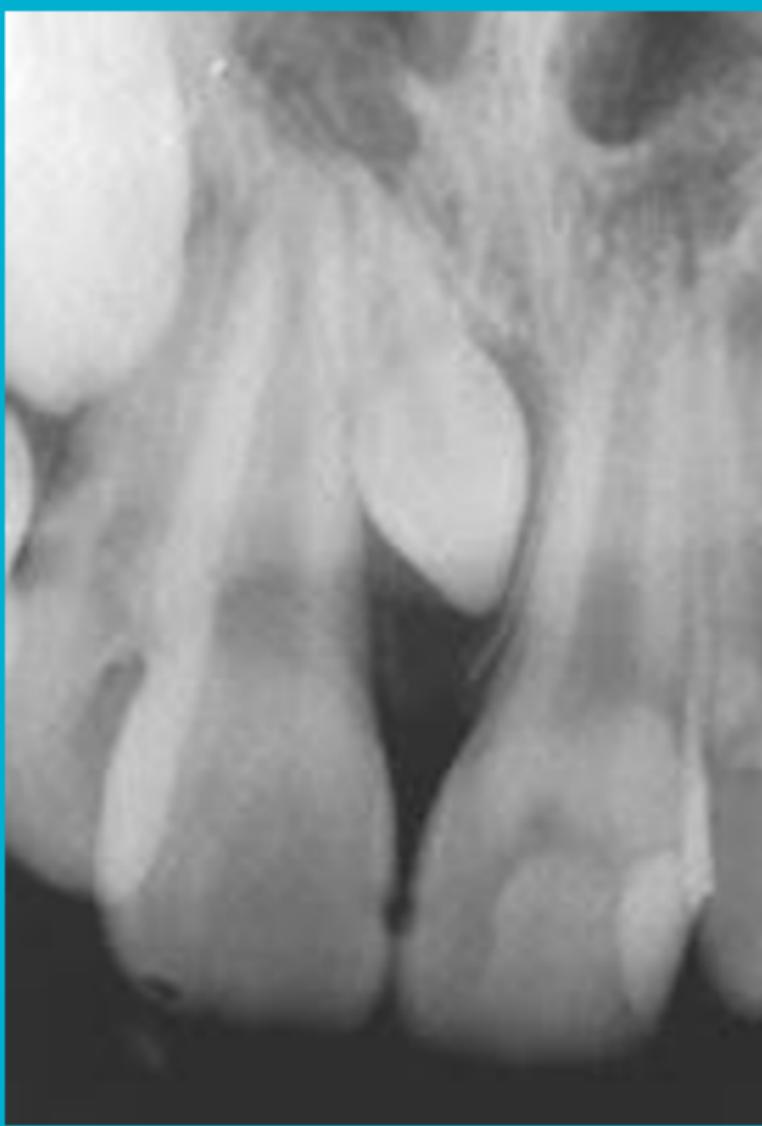
Pre Op



6 Mos Later



Microdents



Impacted Supernumerary Incisor



Impacted Premolars

