

# Challenges in Exodontics

Or, How To Not Break The Jaw

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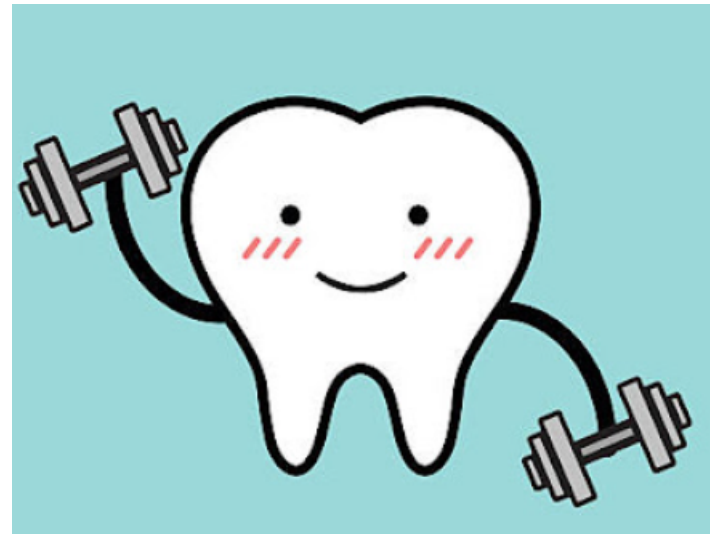
Practice Limited to Veterinary Dentistry & Oral Surgery

# Learning Objectives

- 1) Recognize common instruments used in veterinary exodontics & how to use them
- 2) Recognize the most common complications in exodontics, how to prevent them, and how to treat should complications occur
- 3) Recognize when exodontics cases should be referred for further evaluation prior to surgery or once complications have occurred

# Instrumentation

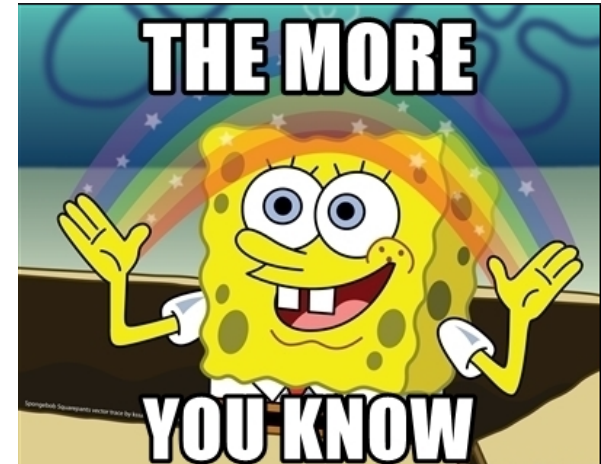
Work smarter, not harder



# Exodontics Instrumentation

## Dr. Ward's List of "Ask Me How I Know":

- They call doing difficult things "like pulling teeth" for a reason!
- Good quality, sharp, well-maintained instrumentation is a must
- Use instrumentation as it is intended to prolong its working life, minimize fracturing of tooth roots, and avoid iatrogenic trauma
- Always extend the index finger along the instrument's shank to reduce patient trauma in the event of slippage
- Work circumferentially around the tooth
- **Always** *always* always section multi-rooted teeth, even if they're loose (unless you really like digging out tiny root fragments of Yorkie molars 😊)
- Make your gingival flap first – this helps prevent trauma to the soft tissues you need for closure
- Debride (gently) and lavage the alveoli after extraction to remove bone, tooth, and soft tissue debris (and then smooth the alveolar bone with your diamond bur)



# Elevators



Cislak #1-4 winged elevators



- Elevation is the process of fatiguing/tearing the periodontal ligament and expanding the alveolar bone (socket)
- Elevators are used as levers to lift the tooth from the alveolus
- Inserted into the PDL space and gently rotated until resistance is met – hold for 15 seconds, then continuing to move downward toward the apex of the tooth
- Blade is semicircular

# Luxators



Top: Directa Luxator  
Periotome



Right: Cislak 1.3XS and  
1.3S elevating luxators



- Used to cut the periodontal ligament, loosening the tooth from the alveolus
- Inserted into the alveolus between the root and alveolar bone and “driven” downward – luxators will break if used like elevators (twisting motion)
- Blade is straight

# Extraction Forceps



Left: Cislak Extraction  
Forceps EX-27/150SK



Right: Cislak Root  
Forceps 6481



- Used to grasp the loosened tooth and remove from the alveolus
- Grasp the tooth at the cemento-enamel junction, NOT the crown

Place your index finger between the handles so excessive force cannot be generated

# High speed burs



H0.5-FG

U.S. No.	0.5
Ref No.	H0.5
Head Shape	Round
Head Size (1/10 mm)	006
1 or 2 piece	2
Shank Type	FG
Package	5-pk



H699-FG

U.S. No.	699
Ref No.	H699
Head Shape	Tapered Fissure
Head Size (1/10 mm)	9
Head Length (mm)	4.2
1 or 2 piece	2
Shank Type	FG
Package	5-pk



H701-FG

U.S. No.	701
Ref No.	H701
Head Shape	Tapered Fissure
Head Size (1/10 mm)	012
Head Length (mm)	4.2
1 or 2 piece	2
Shank Type	FG
Package	5-pk



above: Generic diamond football

left: Kerr NTi burs

- Used for sectioning multi-rooted teeth, removing alveolar bone, Alveoloplasty after extractions completed
- Change frequently! Burs are cheap and dull quickly (even the diamonds!)



# Miscellaneous things I can't live without



Cislak  
Periosteal  
elevator – EX9



Cislak No. 5  
Round Scalpel



#15 blade

Needle drivers without  
scissors



5-0 or 4-0 Monocryl (I prefer  
reverse cutting needles)

5-0 for cats and small dogs  
4-0 for everything else



Adson Tissue  
Forceps (no teeth)

3x3 Non-woven  
Sponges



# Extraction Techniques For the Difficult Tooth

You can do it! (But I'm here to help if you need it)



# Extraction Techniques For the Difficult Tooth

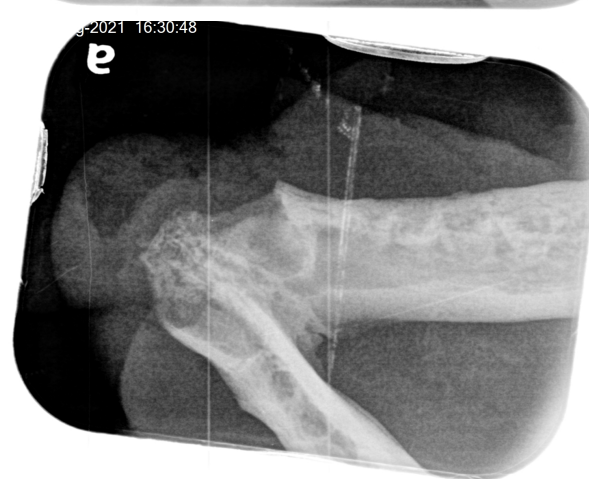
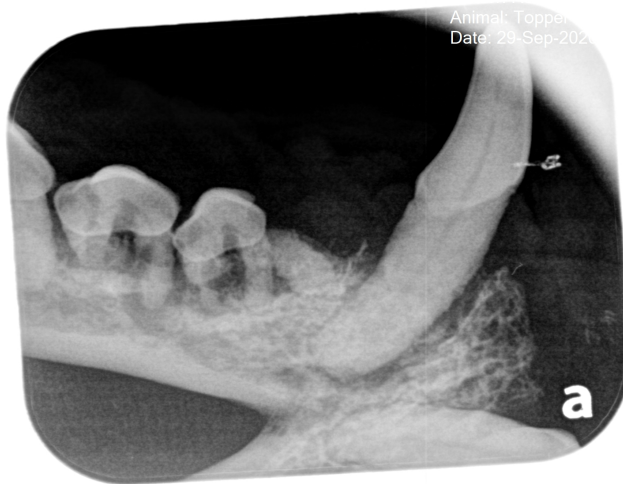
## Mandibular Canine Teeth

- Complications include fracture of the apical portion of the alveolus, symphyseal separation
- Elevate on the mesial, distal, labial aspects only
- Luxate circumferentially – use a thinner luxator on the lingual aspect
- Removal the buccal bone with your bur and create an “outline” to facilitate insertion of instrumentation



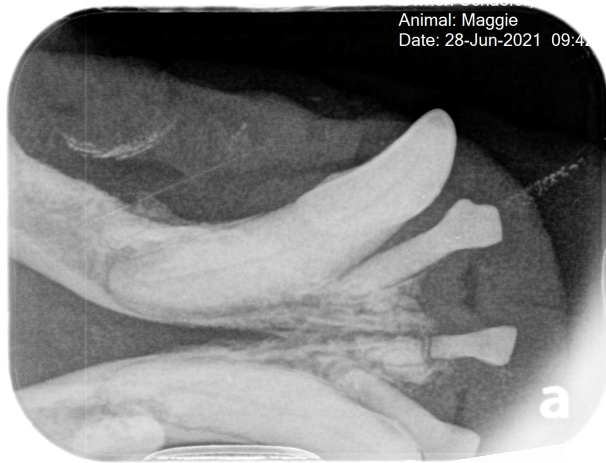
# Extraction Techniques For the Difficult Tooth

## Mandibular Canine Teeth



# Extraction Techniques For the Difficult Tooth

## Mandibular Canine Teeth



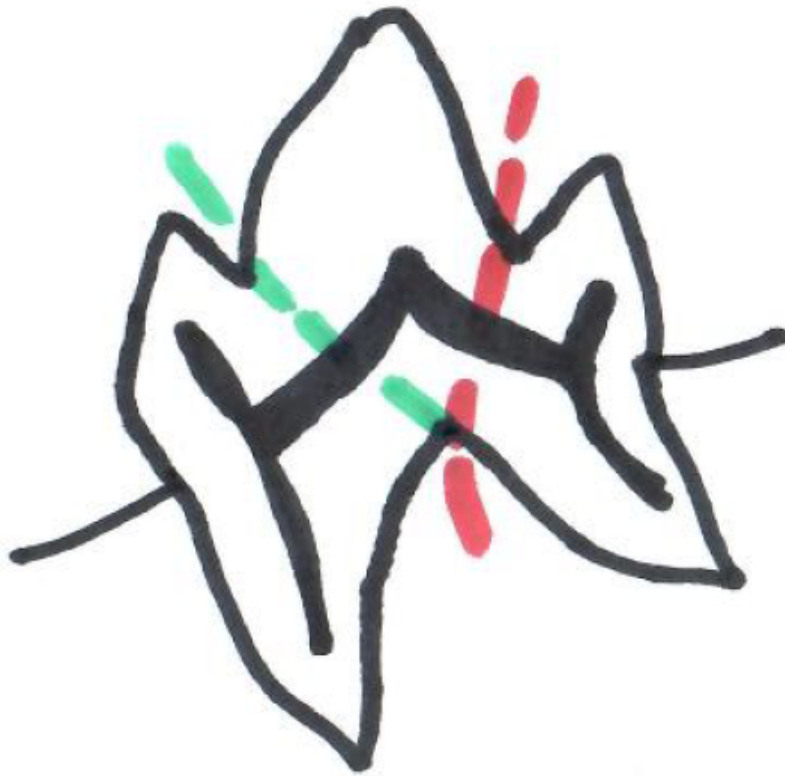
# Pilot Holes

- When closing flaps/mandibulectomy sites in the mandible, pilot holes can lend support to the tissues (remember you don't want to have sutures overlying the alveolus as the tissue is not well supported even if tension is reduced)
- This area is fighting gravity and the thick, heavy, labial frenulum
- Use  $\frac{1}{2}$  - 1 round bur; elevate the mucosa away from the symphysis (lingual aspect of the mandibular canine alveolus) and create several small holes (I usually do 2-3 depending on the size of the dog) drilling in a dorsal to ventral direction
- Place stay sutures (you could use a thicker suture for this – 4-0 monocryl or 3-0 monocryl) through the mucosa then the pilot hole then the other side of your flap
- As you close the site from caudal to rostral, tie the stay sutures



# Extraction Techniques For the Difficult Tooth

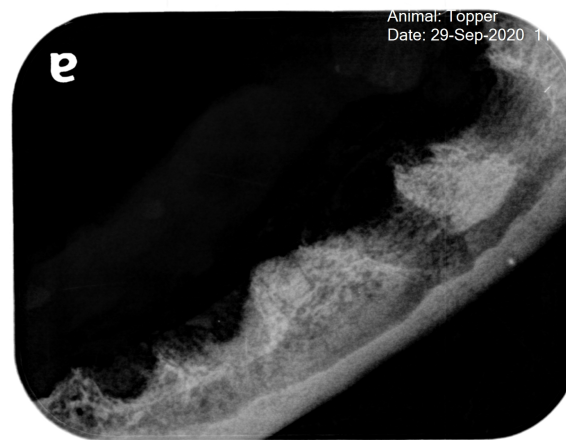
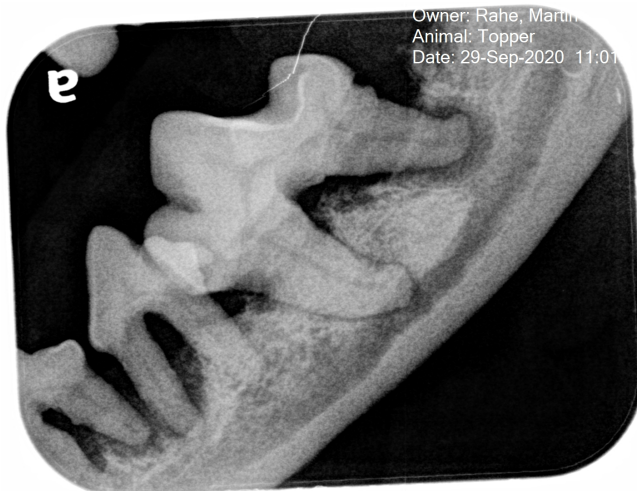
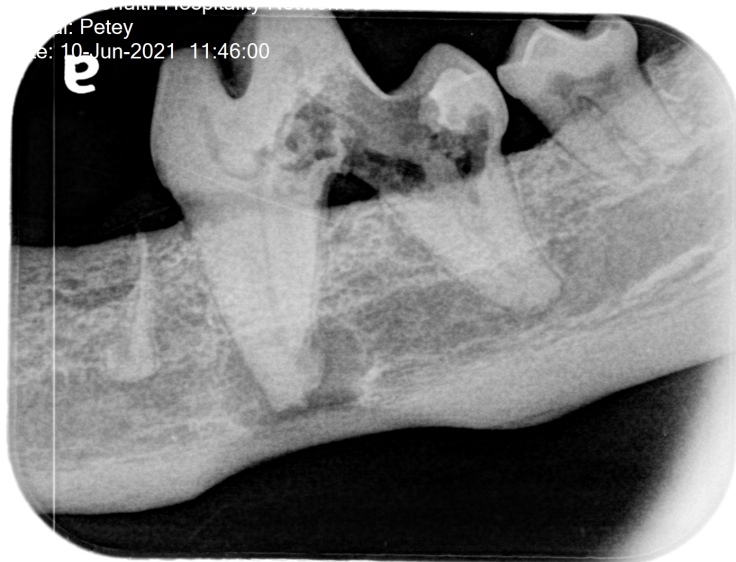
Mandibular First Molars (309, 409)



- Red → first cut
- Green → second cut
- The second cut allows for removal of the central cusp which impedes parallel insertion of the luxator into the alveolus of the mesial root
- Remember the mesial root has a groove on the distal wall that prevents rotation
- Complications include fracture of the mandibular bone through the ventral cortex, fracture of the lingual plate

# Extraction Techniques For the Difficult Tooth

## Mandibular First Molars (309, 409)





# Extraction Techniques For the Difficult Tooth

## Maxillary Canine Teeth



- Excessive rotation will break the buccal alveolar bone
- Or create an oronasal fistula
- Use a round or cutting bur to “outline” the alveolus to make insertion of instruments easier

# Extraction Techniques For the Difficult Tooth

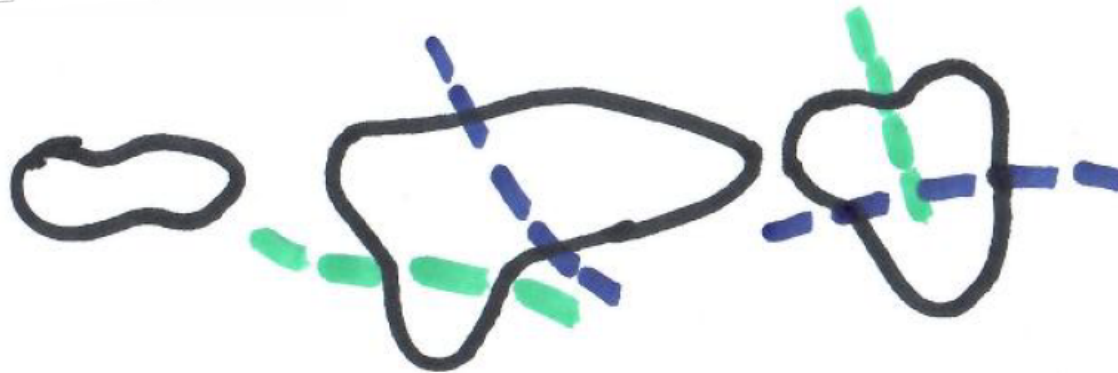
## Maxillary Fourth Premolar and Molars



Blue → first cut

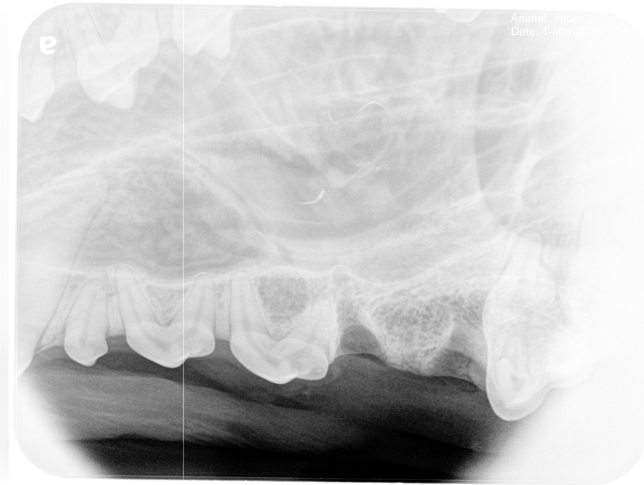
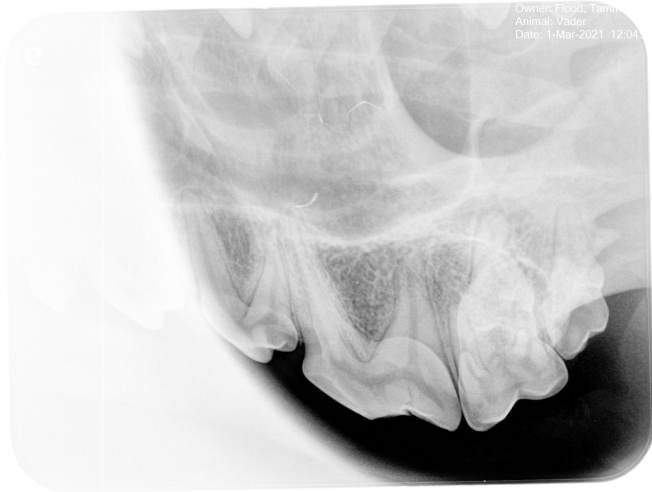
Green → second cut

Sectioning is easier if the head is rotated so you are looking “down” on the cusps of the teeth



# Extraction Techniques For the Difficult Tooth

## Maxillary Fourth Premolar and Molars



# Extraction Techniques For the Difficult Tooth

## Maxillary Fourth Premolar and Molars



# When Something Goes Wrong

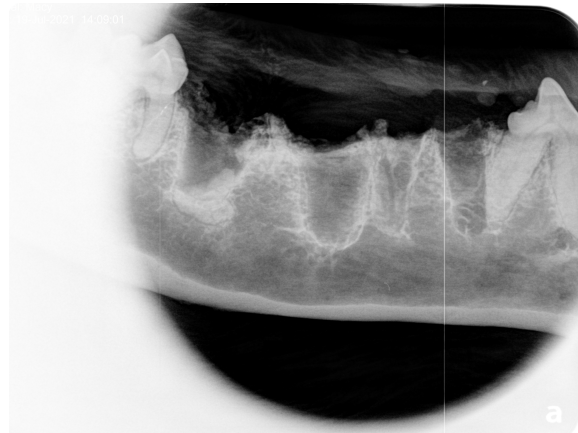
Serenity Now!

(It's only a matter of time, or so they say)



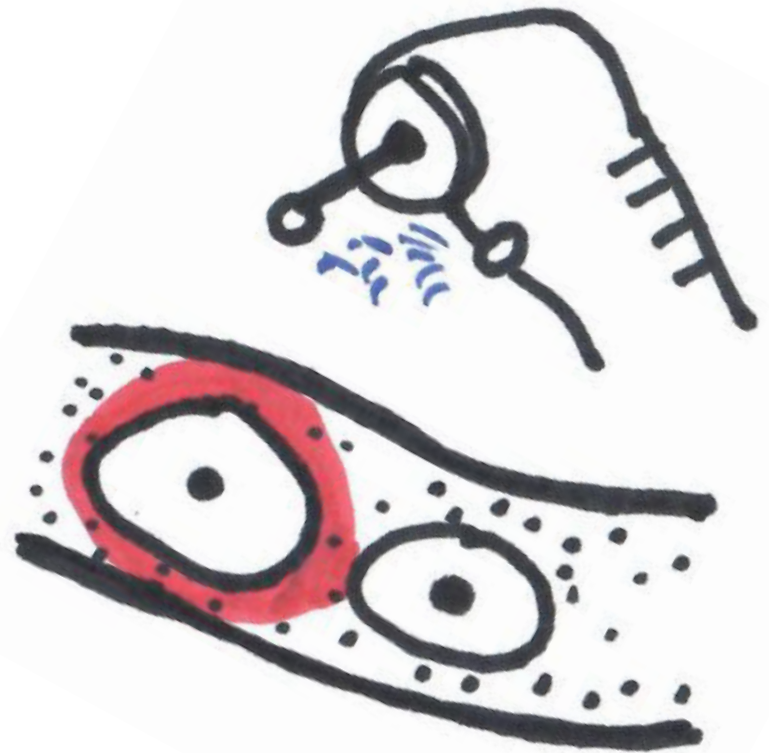
# Complications

## Fracture of a non-resorbing root



# Moat Creation

- Best for when you want to limit how much alveolar bone you are removing
- $\frac{1}{4}$  -  $\frac{1}{2}$  round bur used to create a space around the coronal aspect of the fracture root to allow insertion of a luxator
- Use of suction helps aid in removing only alveolar bone and not tooth structure
- Can also use a “flame tip” diamond bur
- Once the moat is created, use a thin luxator (1.3xs or similar) circumferentially around to sever remaining ligament
- Root Tip forceps and suction can help to pull the remnant out of the alveolus



# Complications

Root fragment in the mandibular canal or nasal passage

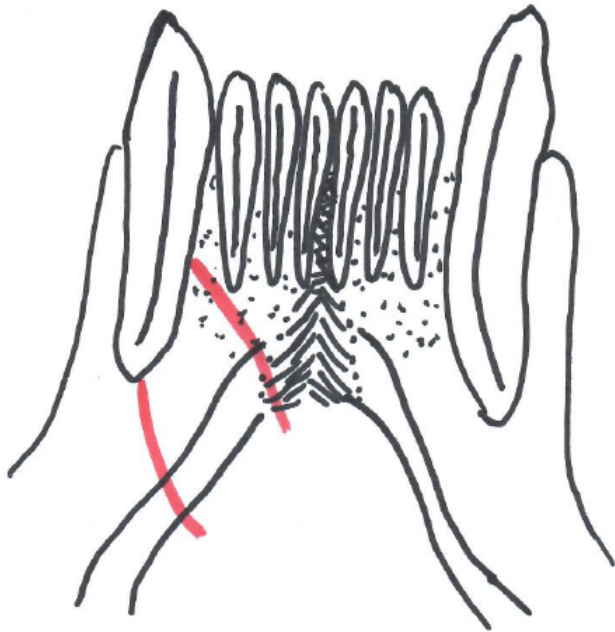


- Take radiograph as soon as you think the root may have been displaced
- Use a needle to determine which way it moved
- Use a round bur to remove buccal bone and suction to retrieve root fragment gently teasing it out of the space

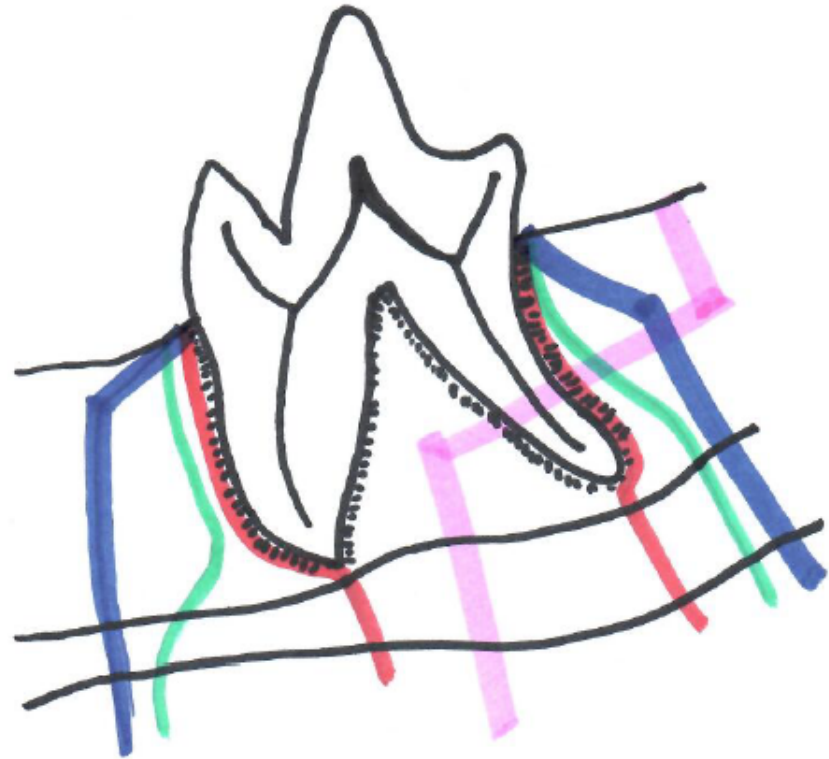


# Complications

Fracture of the alveolus of the mandibular canine and first molar teeth



Typical fracture patterns of the alveolus of the canine tooth



\*\* Red → mesial root – 80%; distal – 62.5%  
Green → M – 10%; D – 18.8%  
Blue → M – 10%; D – 12.5%  
Pink → D – 6.3%

# What About the Symphysis?



- Synchrondrosis between the slightly irregular bony surfaces of the two mandibles
- True joint throughout life in the dog and cat
- Symphyseal separation is more appropriate than fracture for terminology
- Dogs have an equal likelihood of having alveolar fractures; Cats have mostly symphyseal separation and alveolar fracture is not always present

# Other “Interesting” Considerations

- **Dilaceration** = curving of the roots or crown that is abnormal
- Common in Yorkies and other small breeds, but occurs across the companion animal spectrum
- Can lead to endodontic disease/pulpitis and need for extraction other than due to severe periodontal disease



- Difficult to manage the apical attachment of the PDL
- May need to widen the apical portion of the alveolus before attempting to elevate/luxate and remove
- Dental radiographs are often wrong about the orientation or severity of the curvature

# Other “Interesting” Considerations

- **Undereruption** = tooth is partially through the alveolar bone margin, but the majority of the crown structure is still within the bone
- Pericoronitis is common
- Common in brachycephalics and patients with narrow rostral mandible
- Luxation to the apical aspect circumferentially very important to reduce trauma to adjacent teeth and need for buccal bone removal



# Other “Interesting” Considerations

- Unerupted = crown has not moved beyond the alveolar bone margin
- Dentigerous cyst formation is common (canine teeth and first premolar, particular in brachycephalics)
- Buccal bone removal may be more extensive to be able to visualize the crown structure
- Alveolar debridement to remove any cystic tissue is imperative



# When to Refer

- Anytime you just don't feel comfortable with an extraction or your ability to get a tooth out without enormous frustration or risk of complications
- When the anesthesia is trickier and you think it might make you feel rushed
- You've experienced a complication you don't feel comfortable managing on your own



- You're super busy and trying to get through your morning to get at least a snack before afternoon appointments!



# Questions?

Thank you for your attention! You can always e-mail me at [dentistry.cinci@medvet.com](mailto:dentistry.cinci@medvet.com) with cases, radiographs, etc.