

# EXTRACTION IN ACTION

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LVT, VTS Dentistry



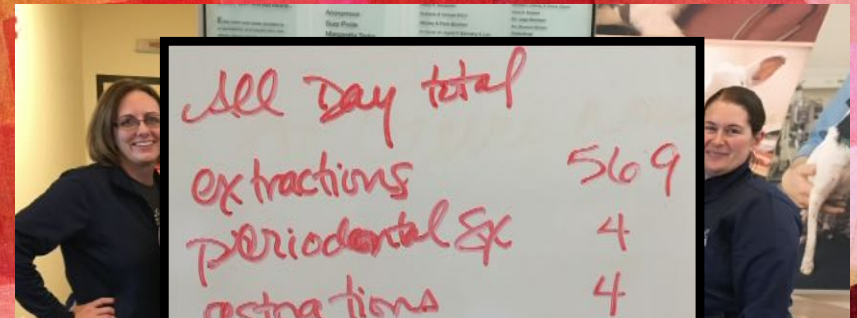
## DOGS 42 & CATS 30

*the number of tooth 'patients' in each pet*



## ANIMAL SANCTUARY VOLUNTEERING

Best Friends Kanab, Utah January 2017



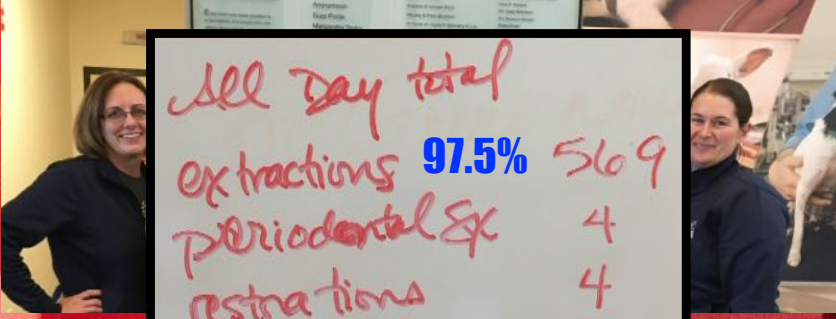
## ANIMAL

Best F

All Day total	
extractions	569
periodontal ex	4
restorations	4
root canal	3
mass removals	2
mandibulectomy	1

## ERING

2017



**ANIMAL**

Best F

*all Day total*

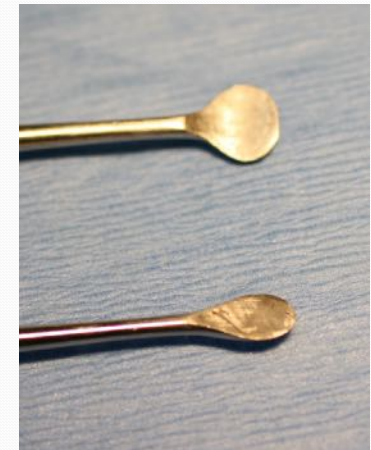
extractions	<b>97.5%</b>	569
periodontal ex		4
restorations		4
root canal		3
mass removals		2
mandibulectomy		1

**ERING**

2017

## EXTRACTION EQUIPMENT

- Periosteal elevator
- Molt #2 / Molt #4
  - Cislak EX 9
  - Serrated edge version for debridement = serrated EX-58



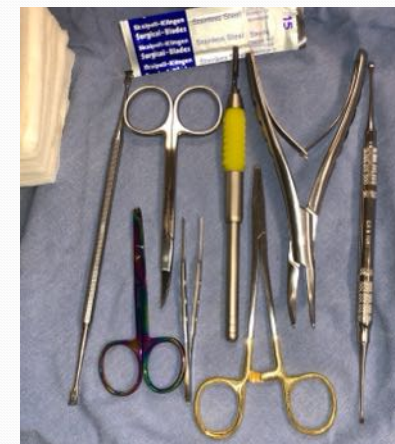
## DENTAL ELEVATOR

- Elevator vs. *Luxators*
  - Winged vs straight
- Sharp working head
- Shape to fit root
- Place with forces
  - Fatigue PDL
  - (sing elevator music)



## EXTRACTION EQUIPMENT

- Small breed extraction forceps; modified Rongeurs
- Scalpel blade – 15
- 'Zombie'
- Suture
  - Monofilament
  - 4-0 to 5-0
  - Reverse cutting
  - Tapered - cats

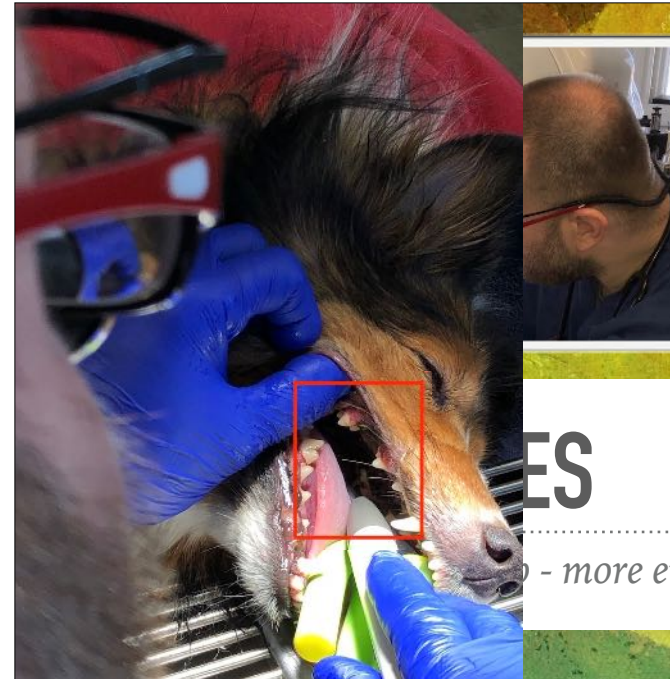






# LOUPES

*see more/find more; sit up - more ergonomic*



# ES

*more ergonomic*



[www.WSAVA.org](http://www.WSAVA.org)

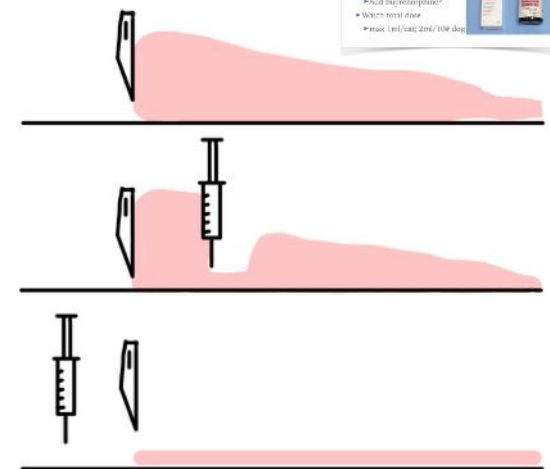
## LOCAL 'BLOCKS'

## PLACE EARLY

- If you cannot safely perform a deeper regional block, at least infiltrate a line of agent in the buccal mucosa at the site prior to the incision.

- Don't mix lidocaine and bupivacaine
- 12 minute local block video:

[bit.ly/blockvideo](http://bit.ly/blockvideo)



### REGIONAL AND LOCAL BLOCKS

- Agents
  - Lidocaine – quick, not too long
  - Bupivacaine – place early (4-6 minute onset)
  - 0.5% with 1:200,000 Epinephrine (less bleeding)
  - 2mg/kg cats
  - 2mg/kg dogs
  - Acid hypersensitivity?
  - Warm next dose
  - max: 1ml/kg; 2ml/10kg dog



## PRE-OPERATIVE INTRAORAL RADIOGRAPHS

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- Documentation (charting)
- Anatomical abnormalities
  - extra roots
  - fused roots
  - curved roots (dilaceration)
- Pathology
  - tooth resorption
  - root fracture
  - crown fracture



## ADDITIONAL PROBLEMS; MAY ALTER EXTRACTION CHOICES

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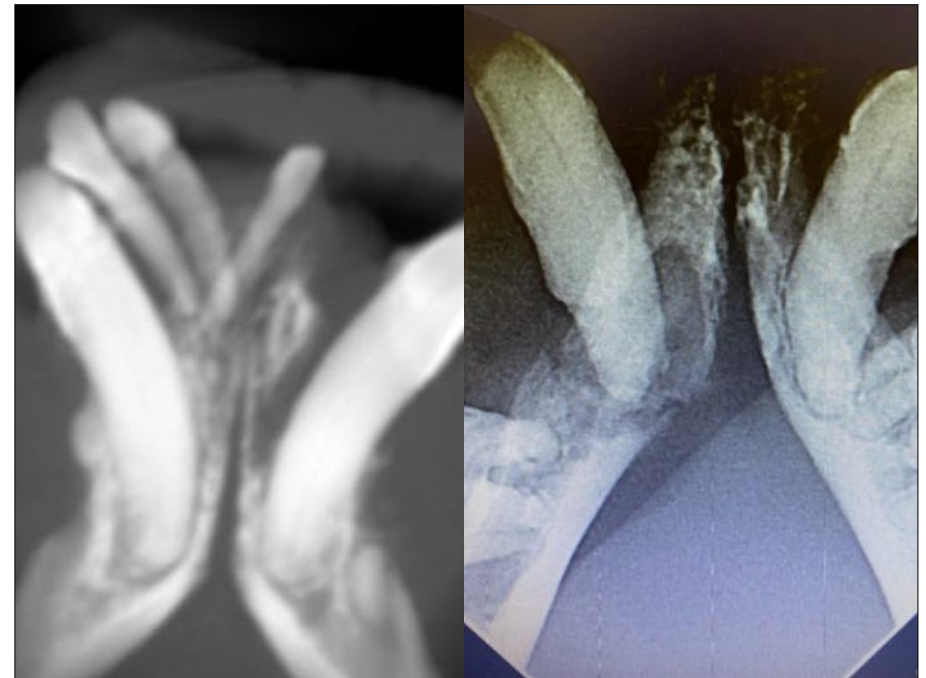
- Thin Mandibular Bone
- Neoplastic Changes



## ALTER EXTRACTION CHOICES

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bone



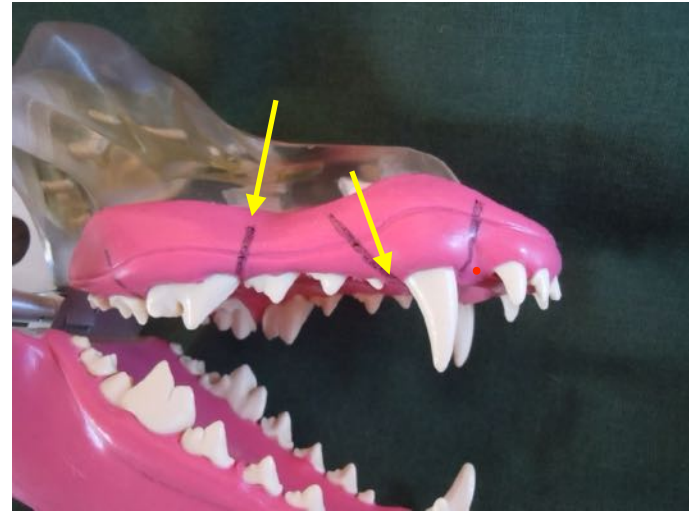
## EXTRACTION STEPS – SYSTEMATIC

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- Gingival Flap (plan flap closure before flap creation)
- Remove minimal alveolar bone; access furcation; crescent groove PDL space
- Section tooth if multiple roots
- Elevate tooth segment(s)
- Finish site – curette, (Serrated 2/4 Molt)
- Alveoloplasty/smoothing
- Release and suture flap

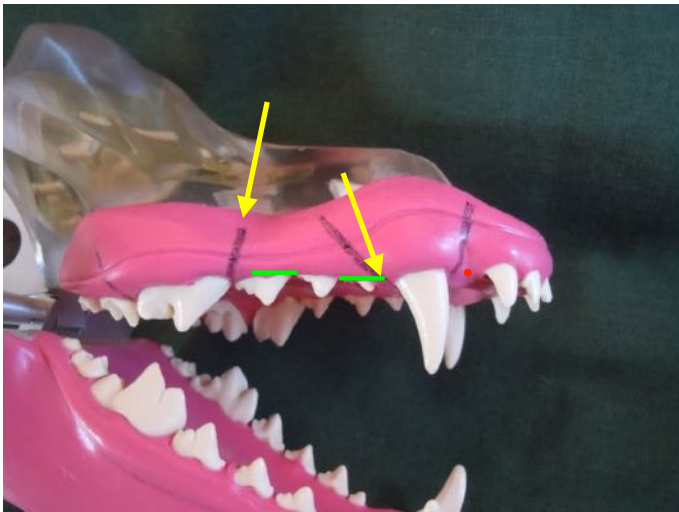
## MAXILLARY RELEASING INCISIONS

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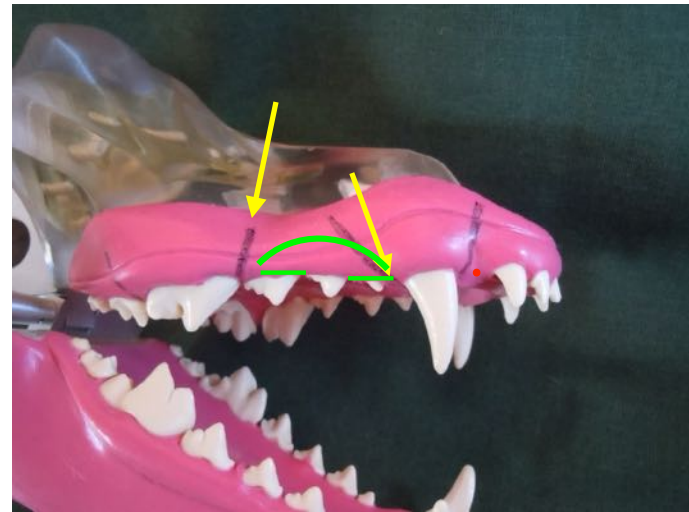
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## MAXILLARY RELEASING INCISIONS



Ritchie JVD March 2018; Modified Technique for Extraction Site Closure of the Maxillary Molars

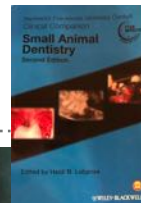
## GINGIVAL FLAP – MANDIBULAR CANINE

- Releasing incision
  - From distal aspect
  - Y-shaped with lingual and buccal extensions
  - At mesial aspect – buccally
- Elevate to access the distal aspect of tooth



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## ELEVATE FLAP

### Buccal Flap



### Lingual Flap



## Which flap has the most blood supply and least suturing?



Square  
flap

Triangle  
flap

Envelope  
flap

Start the presentation to see live content. For screen share software, share the entire screen. Get help at [pollev.com/app](https://pollev.com/app)

## ELEVATE FLAP

- Periosteal elevator
- Elevate attached gingiva, extending under the alveolar mucosa a few millimeters
  - gingiva vs. mucosa
- Past the mucogingival line
  - Don't bluntly dissect any further than is necessary; we can always cut more



## USE OF A PERIOSTEAL ELEVATOR FOR FLAP CREATION

- how to hold, side use
- sharp instruments are less likely to slip



## USE OF A PERIOSTEAL ELEVATOR FOR FLAP CREATION

- how to hold, side use



## ALVEOLAR BONE REMOVAL

- Mesial/distal grooves
- Remove ~1/4 of buccal bone - not much buccally, but interdentally, if envelope flap



### Dental Bur Suggestions

	Buccal Bone	PDL sides	Tooth sectioning
Dog	2	1/2	701 +/- surgical length
Cat	1/2	1/4	699

Consider 329 or 330 pear burs as alternatives for all uses in cats

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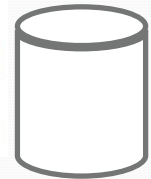
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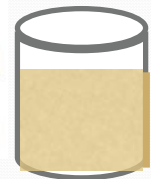
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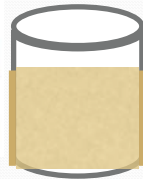
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## ALVEOLAR BONE REMOVAL

- Mesial/distal grooves
- Remove ~1/4 of buccal bone - not much buccally, but interdentally, if envelope flap
- Expose root at its thickest
- Remove additional bone as necessary



## MANDIBULAR CANINE; EXPOSE THE ROOT AT ITS THICKEST

- The largest diameter of the root:



- Never take anything bigger out of a smaller hole unless you've had an epidural and can name it afterwards.

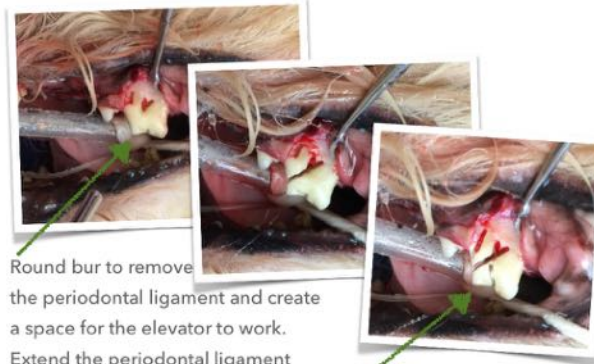
## ALVEOLAR BONE REMOVAL

- Expose furcation
  - Multi-rooted tooth
- Additional as necessary
  - Cortical bone
  - Interseptal bone
    - Remove bone in between roots for better exposure



## SECTION TEETH

- From furcation
- Crosscut fissure bur with coolant
- Protect soft tissue



Round bur to remove the periodontal ligament and create a space for the elevator to work. Extend the periodontal ligament "troughs" removing the mesial cusp of the mesiobuccal root. Also this removes a diamond portion of the crown for best elevator access.

## MAXILLARY 4<sup>TH</sup> PREMOLAR



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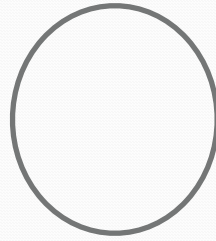


## MAXILLARY FIRST MOLAR

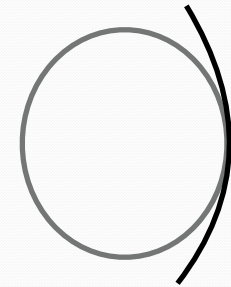
- Difficult to flap if only extraction
  - Elevate palatal mucosa and close behind 4th premolar
  - Extracting 2<sup>nd</sup> molar gives better flap
- Section into 3 roots



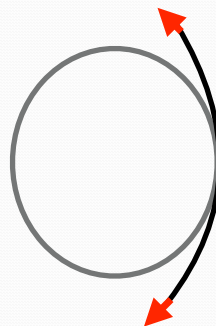
## SELECT LUXATOR/ELEVATOR SIZE BASED ON TOOTH ROOT SIZE



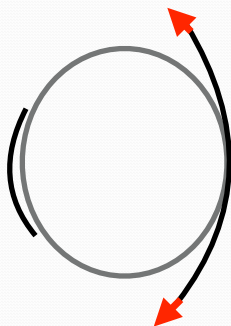
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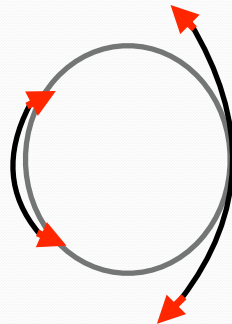


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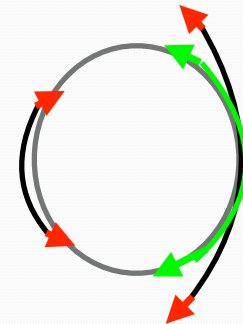




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## LUXATOR OR ELEVATOR?

### ► Luxator

- Thin, flatter
- Mainly to incise PDL
- Press and hold, no twist

### ► Winged Elevator

- Advance into PDL space
- Can scoop to next location
- Hold 10 sec, attempt advance depth, hold/be patient



## LUXATOR OR ELEVATOR?



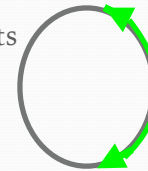
## ELEVATION FORCES

- Deliberate, patient
- Control elevator
  - Advance into PDL space
  - Finger stop
  - Not lateral luxation upper canine
- Between teeth
- Between tooth segments
- 



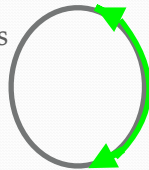
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- Scoop not twist
- Sing elevator music
- Practice to get to 2 minutes per root...



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## SMALL MANDIBLE EXTRACTIONS

- Cup mandible with supporting hand
- Remove interseptal bone, preserve buccal bone if possible
- “May be fragile”





## EXTRACTION FORCEPS

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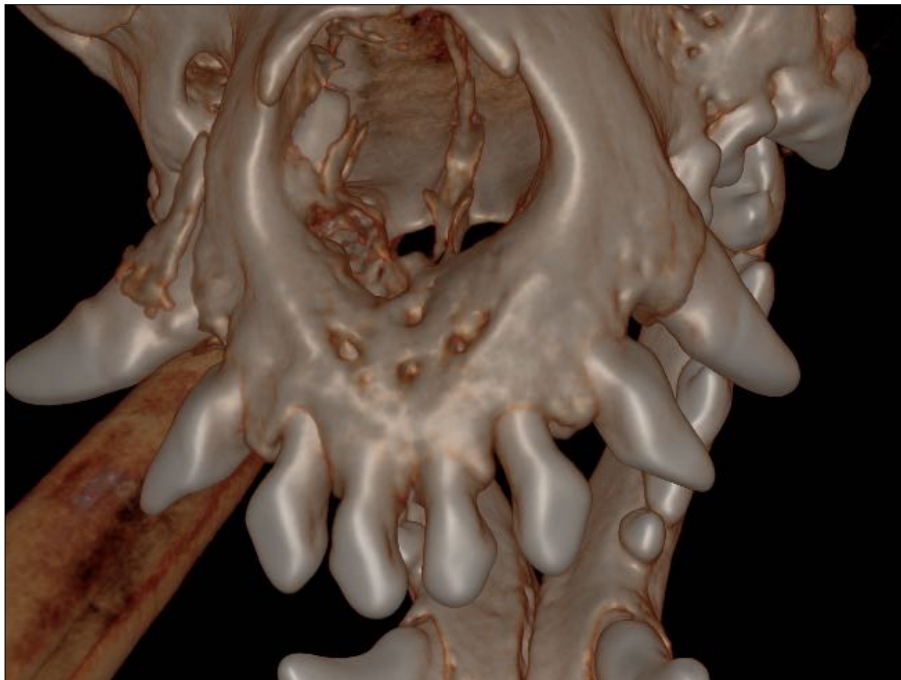
- ▶ Don't use force
- ▶ Grasp gently
- ▶ Gentle rotation, then hold
  - ▶ Be cautious with curving roots, especially maxillary teeth



## MAXILLARY CANINES

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- ▶ Additional buccal bone removal
- ▶ Don't elevate crown laterally
- ▶ Watch palatal area



## MANDIBULAR CANINES

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- ▶ Remove bone in the 'triangle' overlying the tooth





"Luxating All the Way" An alternative method of extraction  
 authored by Loïc Legendre, DVM, Dipl. AVDC, Dipl. EVDC, AVDC-ZWD

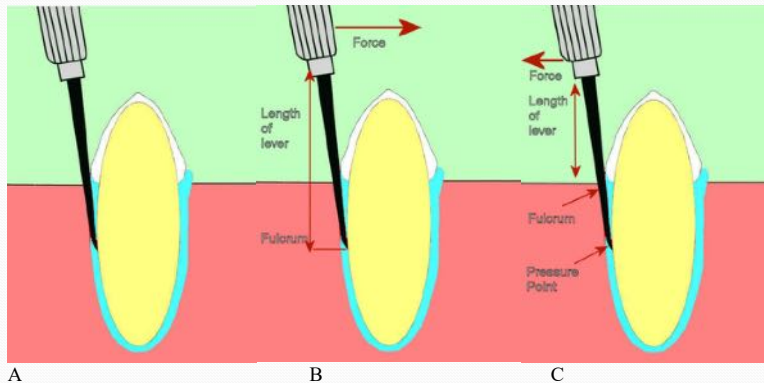


Figure 1:

- A. Luxator properly wedged into periodontal ligament space.
- B. Correct way to apply pressure to the root being extracted; Longer lever allows for more force and the pressure between luxator and root is spread over large area.
- C. Incorrect way to apply pressure to the root; shorter lever means smaller force, there are also 2 pressure points. One at the end of the luxator against the tooth and one mid shaft of the luxator against the alveolar bone. These result in both patient and instrument damage.

Apply pressure for 30 seconds.

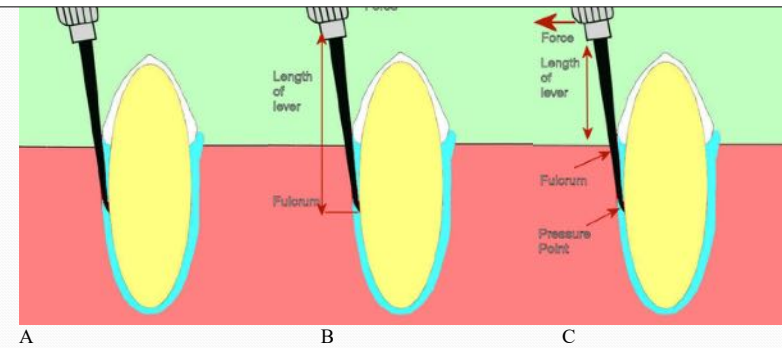


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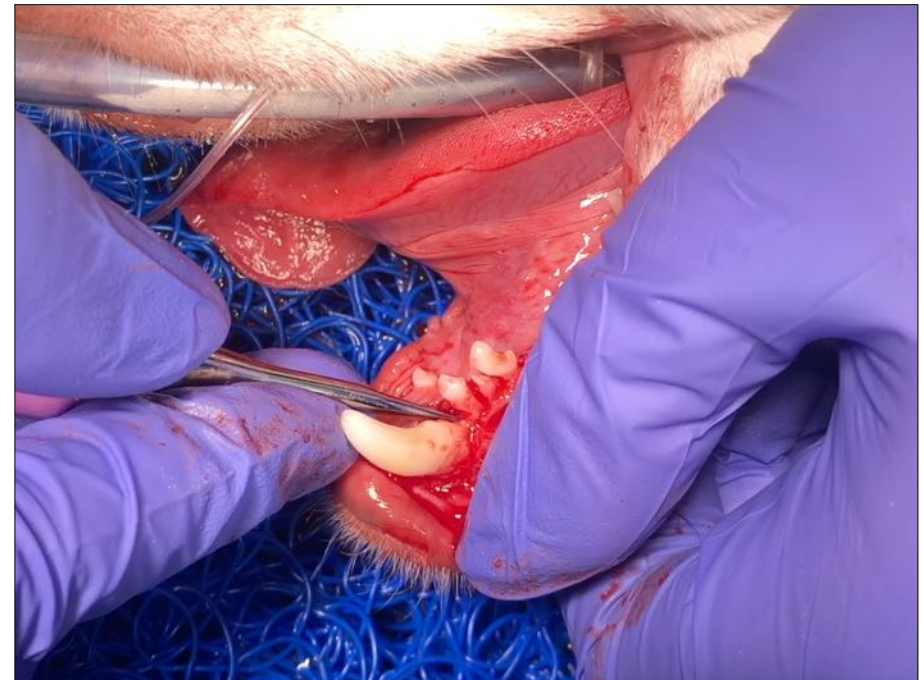
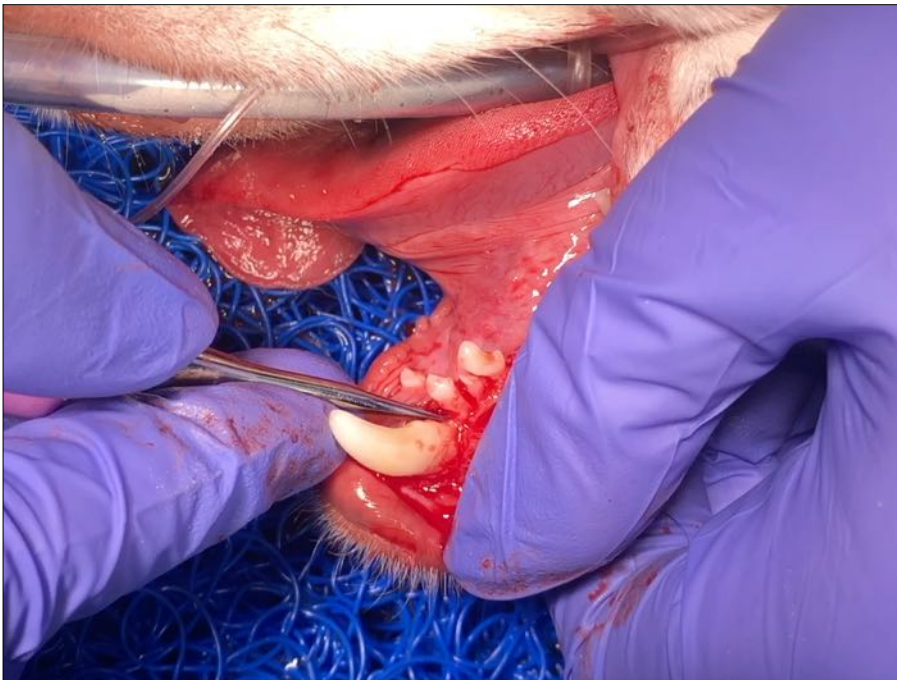
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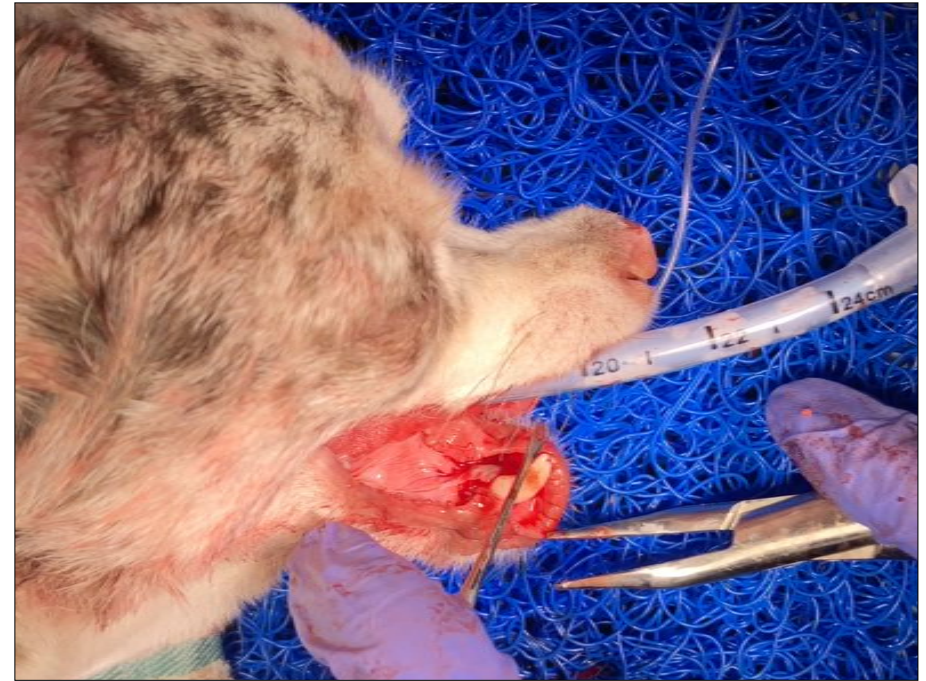
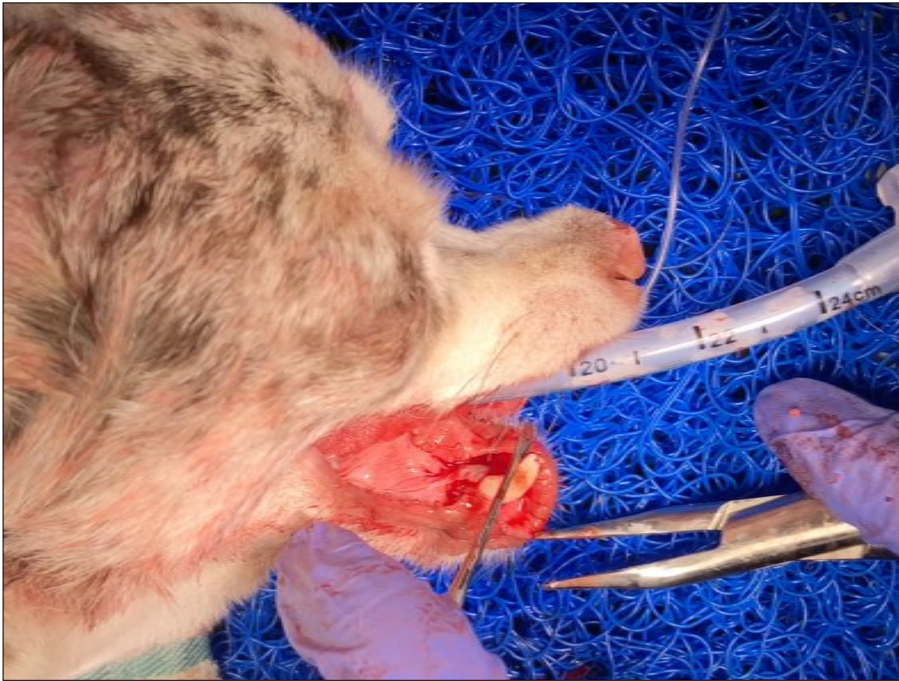
Apply pressure for 30 seconds.

Repeat on other side of the root. Most of the luxating is done on mesial and distal surfaces of roots. When root has 1 to 2 mm motion with only digital pressure, use extractor forceps to rotate root and extract.

Curette alveolus, flush. Smooth out bone. Fenestrate periosteum at base of flap to release tension.

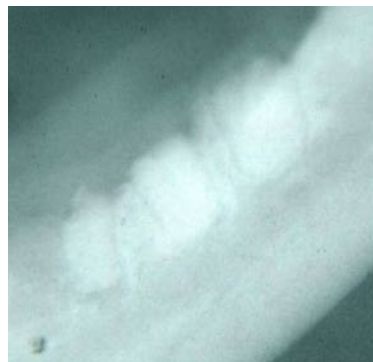
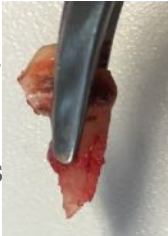
Suture flap closed, inverted cross mattress or single interrupted sutures.





## COMPLICATIONS

- Root tips
  - Root tip picks
  - Bone removal
    - Interseptal
- Ankylosis
  - Avoid pulverizing
- Tooth resorption



## POTENTIAL CONSEQUENCES OF ROOT PULVERIZATION:

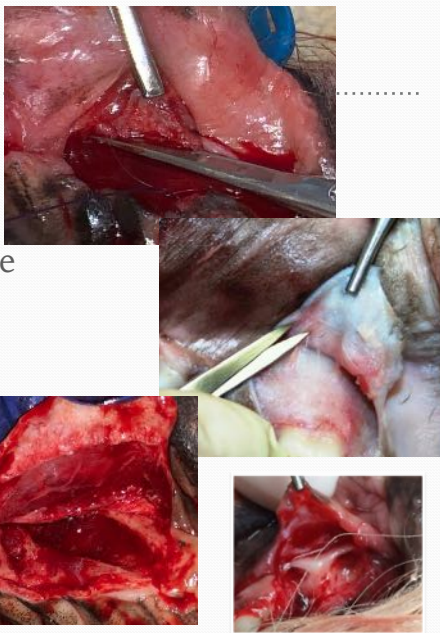


bone necrosis  
air embolism  
sublingual/  
subcutaneous  
emphysema



## RELEASE FLAP

- Lift flap
- Incise periosteal fibers
  - On the underside of the elevated flap
  - Grasp the edge and lift
  - Incise fibers
- Release tension
  - Essential step!
- Release palatal/lingual



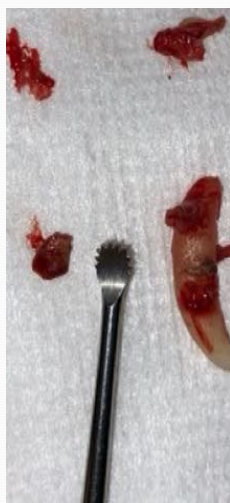
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## FINISHING

- Curettage
  - hand curette
  - EX-58S
  - osteomyelitis?



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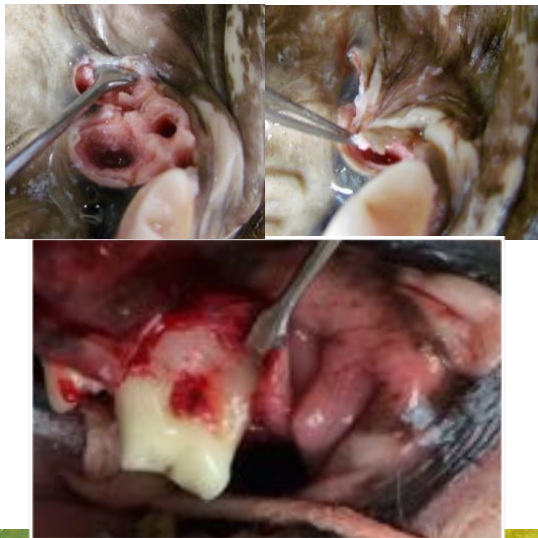


## FINISHING

- Alveoloplasty
- Graft?
  - Osseopromotive
- Suture
  - Minimize tension
  - collar of gingiva
  - monofilament; cutting/taper
  - chromic gut is appropriate



## MAXILLARY MOLARS CLOSURE; GOAL TIGHT GINGIVAL COLLAR



## MAXILLARY MOLARS CLOSURE; GOAL TIGHT GINGIVAL COLLAR



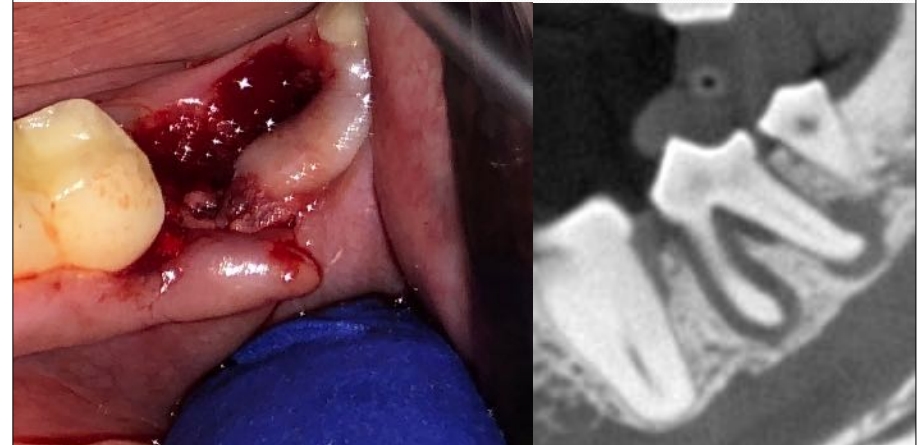
Richie JVD March 2018;  
Modified Technique for  
Extraction Site Closure of  
the Maxillary Molars

## Split Flap

- An alternative when evaluating gingiva and mucosa
- Ensure gingiva, not mucosa is replaced as a tooth collar



## Split Flap

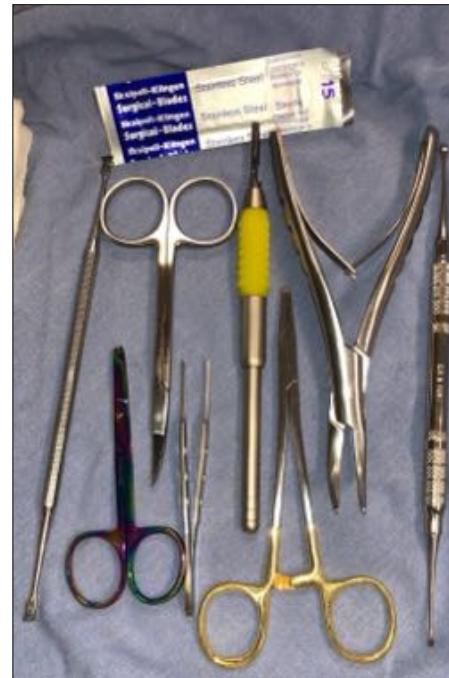


## Split Flap



## WE WISH WE HAD KNOWN SOONER REGARDING ORAL SURGERY:

- Don't use one pair of scissors for everything
- Don't use PDS or braided suture in the mouth
- Do use poliglecaprone25; chromic gut can be good
- Always create a flap, and ensure tension free closure
- Elevate both sides of your extraction site (palatal/lingual)
- Cruciate and short continuous closures may be appropriate







## WE WISH WE HAD KNOWN SOONER REGARDING ORAL SURGERY:

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- Use slow controlled pressure to fatigue the PDL during extractions.
- Sing elevator music.
- Always use a **finger stop**
- Should plan to use a 'zombie' every time you use a bur

# ADDITIONAL RESOURCES

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[tooth.vet/wvc-lectures](https://tooth.vet/wvc-lectures)

VetCEYoullUse on facebook



[tooth.vet/wvc-lectures](https://tooth.vet/wvc-lectures)



# THANK YOU

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We welcome your  
questions and feedback.  
[ce@tooth.vet](mailto:ce@tooth.vet)