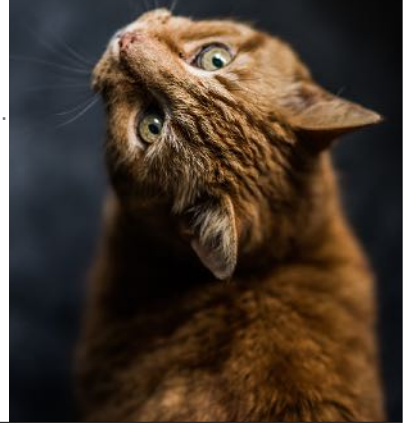
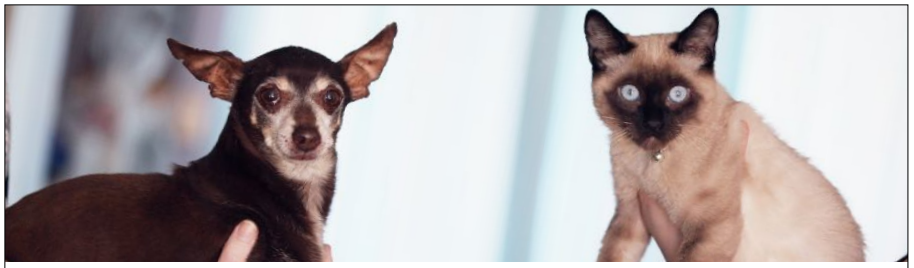
THE FELINE FOE

TOOTH RESORPTION AND THE STOMATITIS SAGA



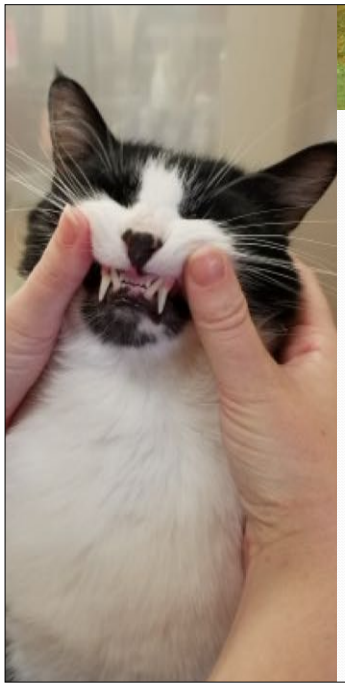
Jennifer Mathis, DVM, CVPP, DAVDC

Vanessa Huizar, LVT, VTS Dentistry



"CATS ARE NOT SMALL DOGS"

- The difference:
  - Dogs consider us owners
  - Cats consider us staff

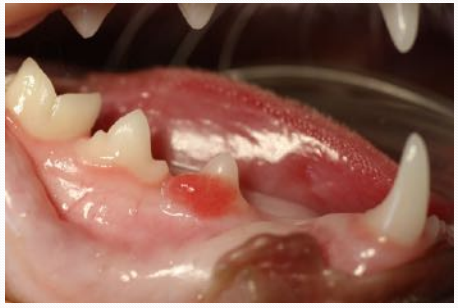


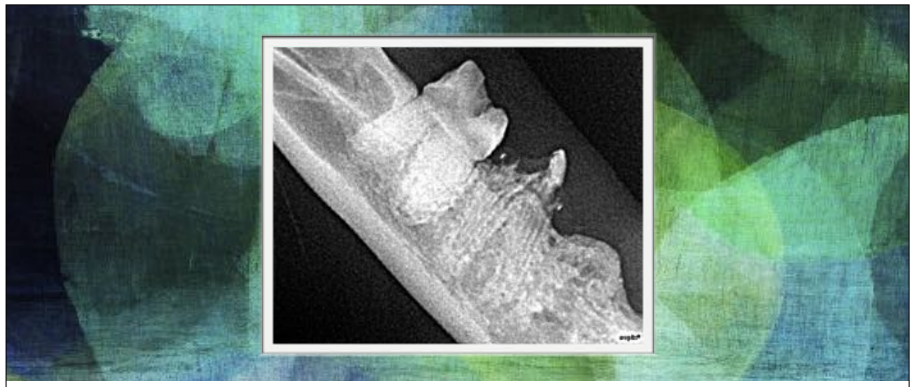
Feline Dental Issues

- Periodontal Disease
  - Juvenile Periodontitis
  - Chronic alveolitis – osteitis
- Stomatitis
- Tooth Resorption

Oral Examination

- Often challenging in some patients, especially if painful
- Evaluate
  - Calculus, plaque
  - Inflammation
  - Tooth resorption – 307/407
- Full exam – anesthesia
  - Probing
  - IMAGING

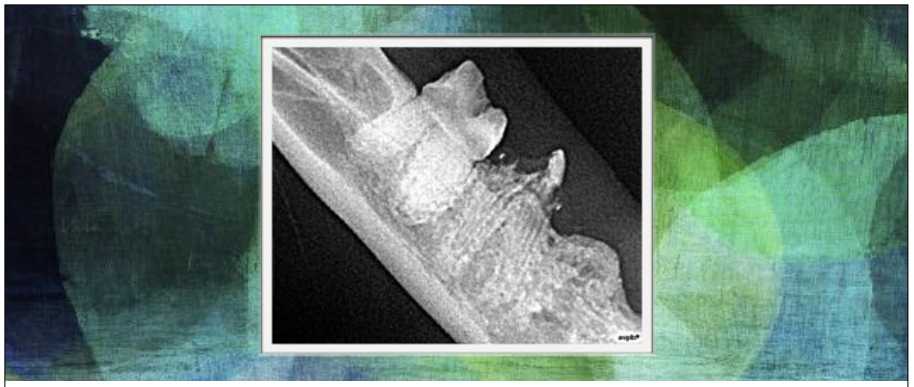




69–100% OF CATS AGE 10+

have radiographic signs of tooth resorption

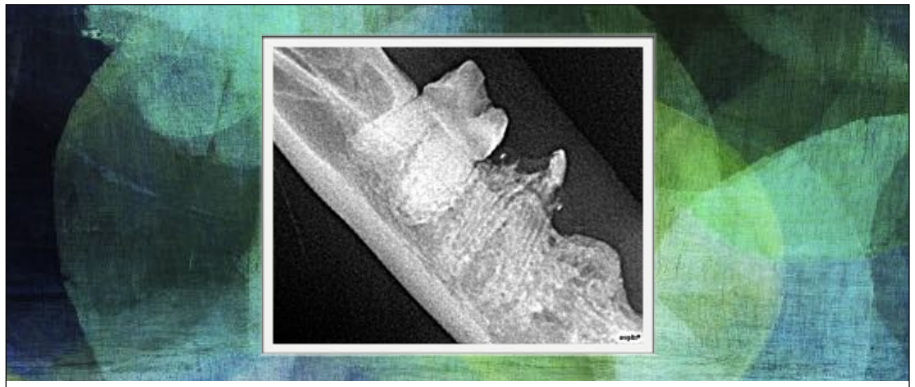
JVD Girard 2008



ONLY 19–20% ON EXAM

of the same groups had visual evidence on awake oral exams

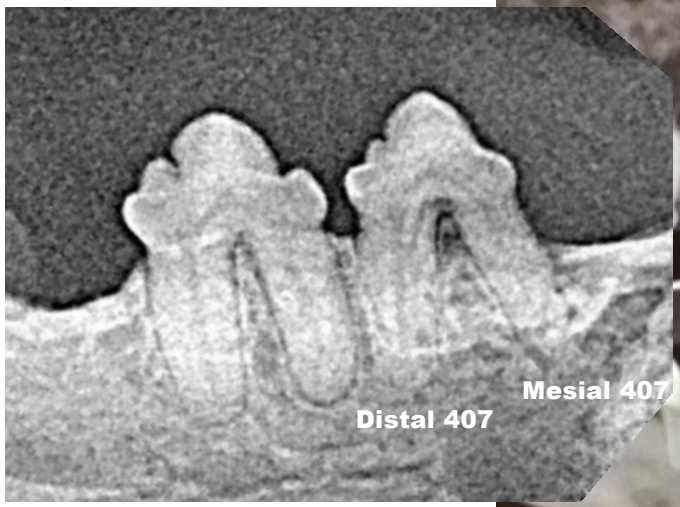
JVD Girard 2008



SUBSTANTIAL NUMBERS MISSED

when rely only on oral exam

DETECT TOOTH RESORPTION



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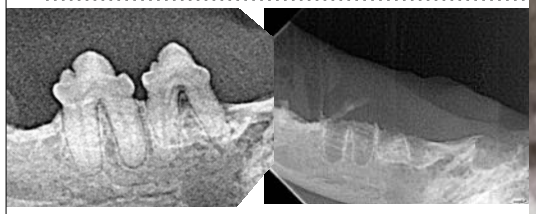
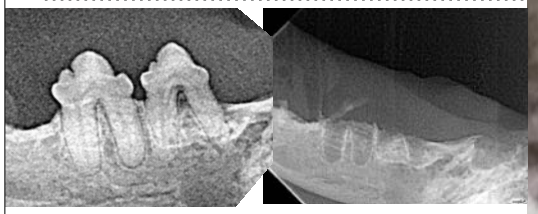


3D IMAGING

more diagnostic

DETECT TOOTH RESORPTION



3D IMAGING

more diagnostic

Chronic Alveolitis/Osteitis

- Older cats
- Chronic osseous changes
  - osteomyeltitis
- Maxillary canines
- Large, bulbous alveolus
  - BBE
  - (buccal bone expansion)
- Extruding tooth
- Extraction

Chronic Alveolitis/Osteitis

- Older cats

Feline Oral Examinations

- FAS considerations
- red gum margin
  - or nothing seen
- Level of calculus is not a determinant of dental disease.

Feline Oral Examinations

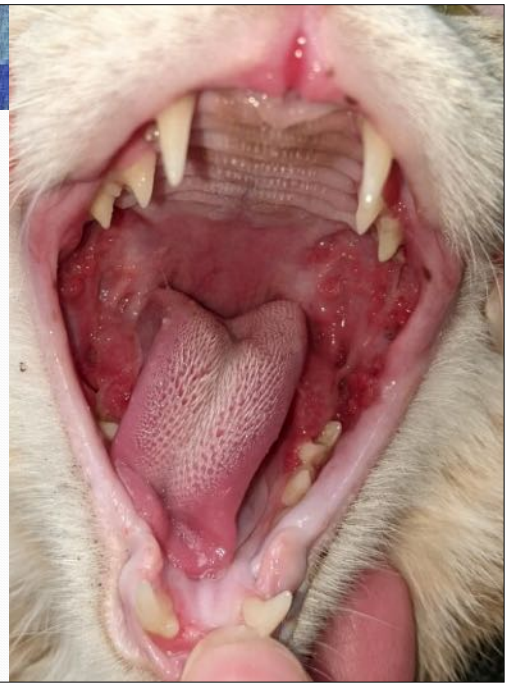
- FAS considerations
- red gum margin
  - or nothing seen
- Level of calculus is not a determinant of dental disease.
- Caudal mouth changes

Stomatitis - Definition

- Gingivitis
- Palatitis
- Chelitis
- Glossitis

bit.ly/bellowsinflam

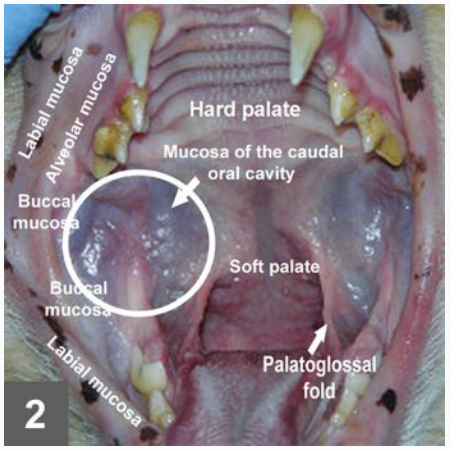
- Mucositis
- Caudal mouth inflammation



Further definitions

bit.ly/bellowsinflam

- **Caudal mucositis:** inflammation of mucosa of the caudal oral cavity, bordered medially by the palatoglossal folds and fauces, dorsally by the hard and soft palate, and rostrally by alveolar and buccal mucosa ('faucitis' incorrect)
- Bellows Nov 2010 Clinician's Brief: 2



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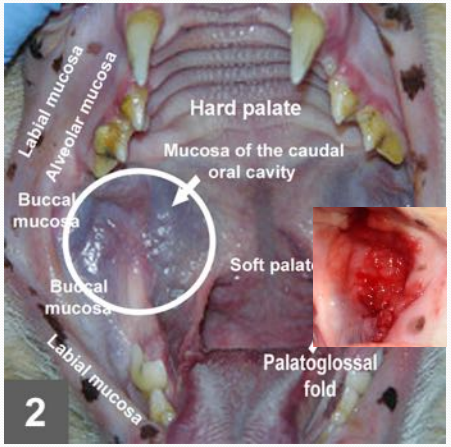

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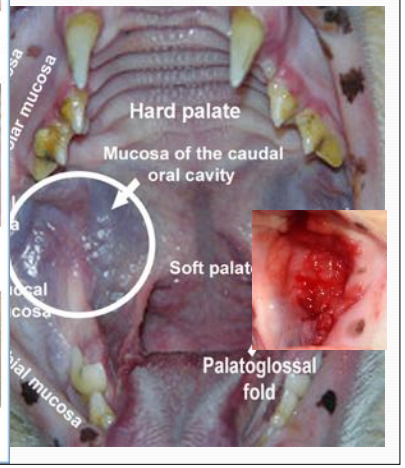
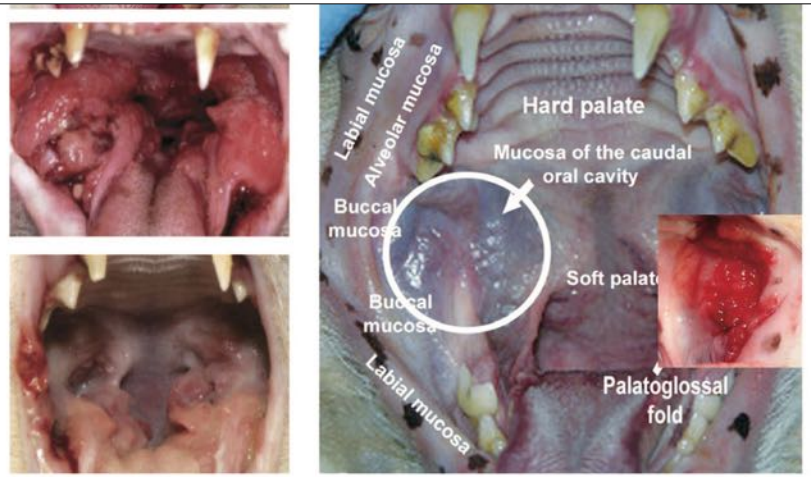


Feline Chronic Gingivostomatitis (FCGS) aka Stomatitis

Widespread oral inflammation that extends to the caudal mouth causing caudal mucositis and ulcerations

- No casual relationship with other diseases
- Multifactorial; (inappropriate response to plaque)
- Associated with immune dysfunction
- Multi-cat households are 70% more likely; (some cats just don't like "roomies")
- Not contagious



Is there caudal mouth inflammation?

Once caudal mouth inflammation has been identified, this is FCGS.

Contributing factors

External agents

- Gram negative anaerobes, Bartonella?
- Calici virus, FIV or FeLV
- Immunosuppression

- Antigens
  - Food components
  - Environment

Host factors

- Immune Dysfunction
- Hypergammaglobulinemia
- Plasma cells and lymphocytes
- "Hyper-immune" patient
- "Plaque intolerant"
- Complete plaque avoidance unlikely

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Lee Arzi VCNA April 2020:

- No answers with causal relationship studies. FCV has the most evidence of association with Feline Chronic Gingivostomatitis

Lee Arzi VCNA April 2020:

"Update on FCGS"

Lee Arzi VCNA April 2020:

"Update on FCGS"

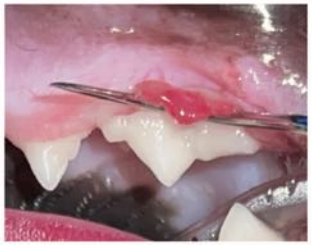
- Etiopathogenesis
  - likely multifactorial
- Key Points:
  - most decreased CD4/CD8 ratio
    - ratio associated with immune dysfunction in humans
  - each additional cat in household increased the odds by over 70%
  - esophagitis concurrent
    - none have GI dz signs
    - consider empirical esophagitis tx
      - shared signs GI and FCGS:
        - ptyalism, nausea, inappetence

Stomatitis or Perio?

- Gingivitis – periodontitis
  - Oral cavity inflammation
  - Not considered 'stomatitis'
  - Important to treat
- If no caudal mouth inflammation it may be severe periodontal disease
- Check for caudal mouth inflammation first

tooth.vet/wvc-lectures

Juvenile Periodontitis



- No caudal mouth inflammation
- Under 1 year of age
- Hyperplastic gingiva "curtain gums"
- Treatment goal:
  Prevent bone loss and tooth resorption (TR) through gingival trimming under anesthesia
- May grow out of it by age 2
- When delaying or skipping gingival trimming, more inflammation occurs making TR more likely

tooth.vet/wvc-lectures

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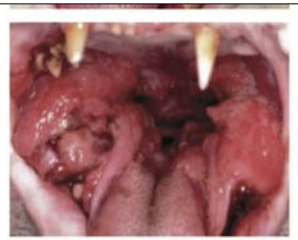

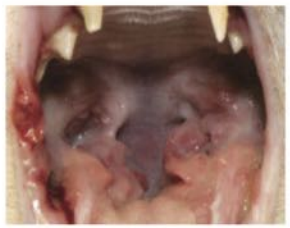

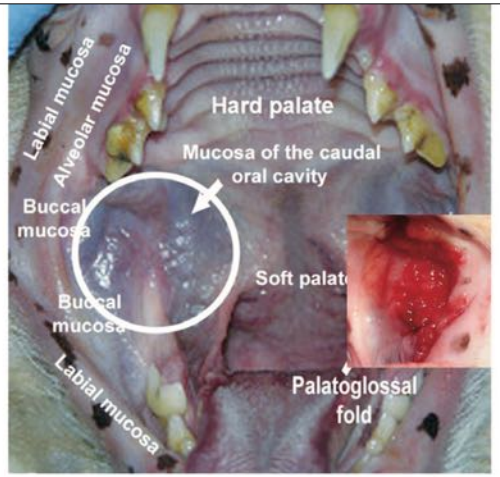

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Management

Management

- Full mouth examination and imaging
- Biopsies – to rule out other conditions
- Immune profiling – in future? CD_4/CD_8 ratio
- Periodontal disease / dental disease
  - Attempt conservative with oral hygiene
  - Extractions likely if chronic – often **first-line**
- Extractions – selective but aggressive
- Pain Management; bit.ly/FGSfacts
- Antibiotics
  - No clear consensus – useful in short term?
    - Clindamycin, amoxi/clav, metronidazole, cefovecin

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Lee Arzi VCNA April 2020:

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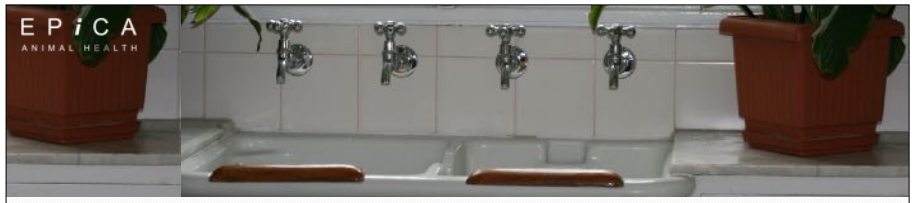
Full mouth extractions

- They are better as 'gummy bears'
- Refractory cases:
  - Pharyngeal proliferation
  - Guarded prognosis

Additional Management

Additional Management

- Anti-inflammatory
  - NSAIDS – long term protocol with caution
  - Corticosteroids – strongly discouraged unless refractory
  - Cyclosporin – varying data – watch toxicity
  - Azathioprine, chlorambucil – insufficient data
  - Doxycycline – anecdotal – humans and dogs;
    - 25-50mg - may work in some individuals, being studied
- Nutritional support - hypoallergenic?
- Miscellaneous
  - CO_2 laser – palliative
  - Assisi Loop
  - Gabapentin
  - Cold laser
  - 1-TDC
  - Duralactin
  - Interferon



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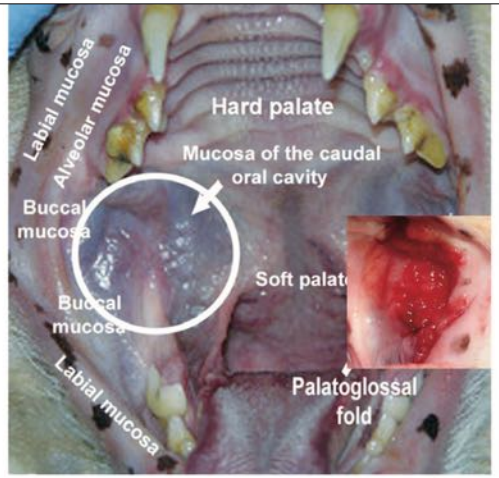
Lee Arzi VCNA April 2020:

- The majority of cats suffering from FCGS require medical management in addition to surgical treatment, and some are dependent on lifelong medications.

Interferon

Interferon

- Feline Interferon Omega (Virbagen)
  - All available studies in calici positive cats
  - Oromucosal application – 100,000 units per day
  - Both anti-viral and immunomodulatory
  - Some long term reports
  - Some reports – peri-lesional or subcutaneous
    - Initial management at time of surgery
- Human Interferon Alpha – ancedotal
  - Parenteral injection neutralize antibodies in 3-7 weeks



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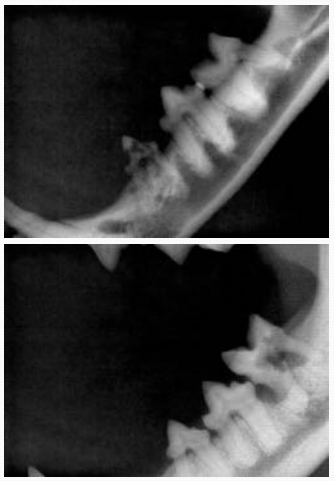
- FCGS is treated through full mouth extractions (FME) including the canines and incisors.
- It is very important to avoid breaking the mandible, this means full mouth x-rays to evaluate how to perform proper extractions.
- Patients with FCGS and FME have a 67-90% chance of cure or significant improvement.
- The majority of patients without cure can get to a state of control. Patients without FME will never cure.
- Patients with FCGS require medical management in conjunction with oral surgery, NOT in lieu of surgery, for months and sometimes for life.
- The use of steroids prior to FME leads to a decreased rate of success following FME.
- The earlier FME is elected, the better the outcome.

Resorptive Lesions

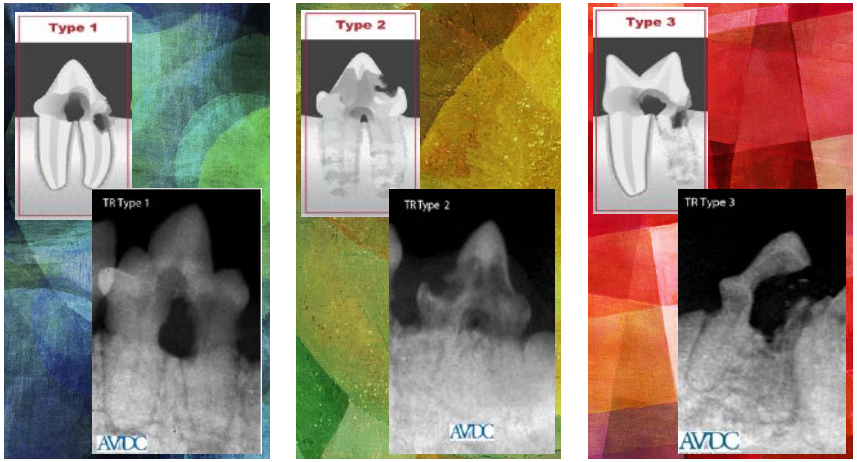
- Replacement resorption
  - 'moth eaten,' looking like jaw
  - root resorbing
    - PDL not present
  - typically recurrent
- Inflammatory resorption
  - focal lucency
  - secondary to periodontal disease
  - incidence decreases with good dental care



TR TYPES

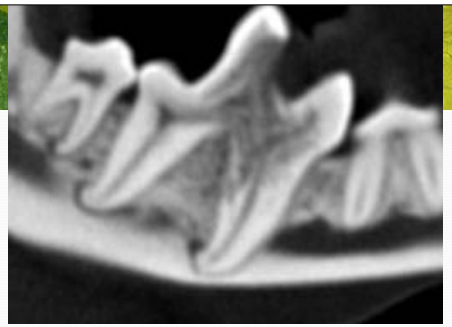
Classification by radiographic appearance

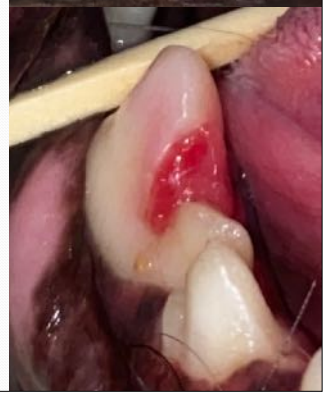
FOCAL LUCENCY	DECREASED OPACITY	MIXED
INFLAMMATORY RESORPTION	REPLACEMENT RESORPTION	BOTH TYPES



Tooth Resorption in Dogs

- Usually internal replacement
- Dogs get the same many types as humans
- Incidence does increase with oral cancer/history of oral cancer
- Painful
- Careful extraction





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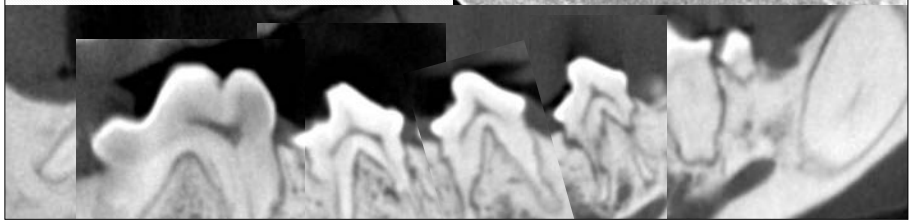
Root Resorption

- May be related to chronic chewing
- CTM (no action) unless:
- Extraction if resorption exposed to gingiva/fluids



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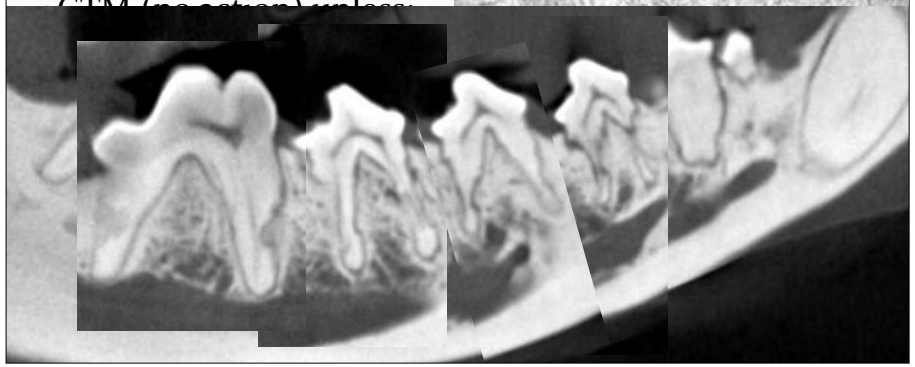
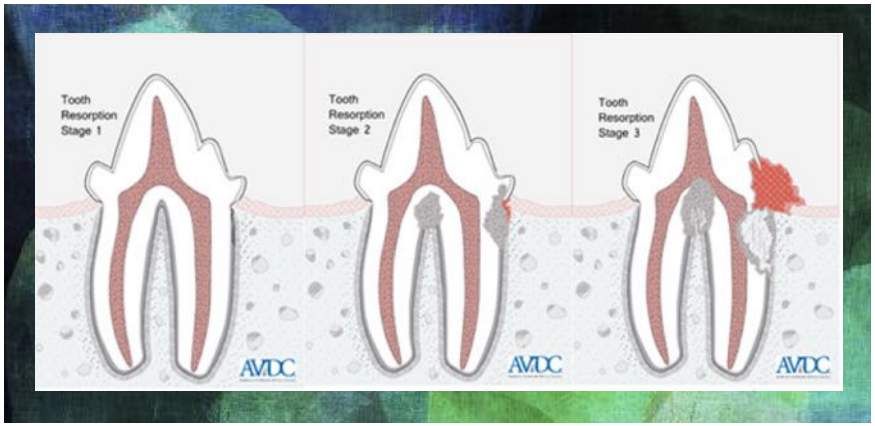


TR STAGES

Classification by severity and/or depth



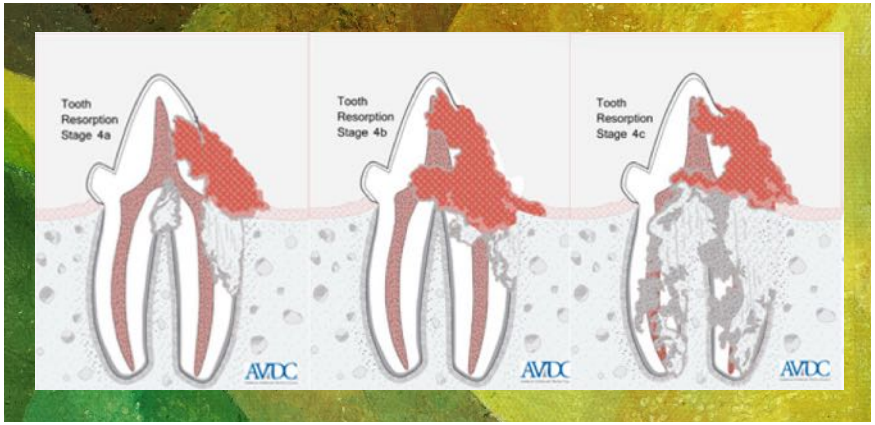
AFFECTS CEMENTUM &/OR ENAMEL (HARD TISSUES)

AFFECTS HARD TISSUES & DENTIN, BUT NOT PULP

EXTENDS TO PULP, BUT TOOTH RETAINS INTEGRITY

TR STAGE 4

extends to pulp, most of tooth has lost its integrity



CROWN AND ROOT EQUALLY AFFECTED

CROWN MORE AFFECTED THAN ROOT

ROOT MORE AFFECTED THAN CROWN

TR STAGE 5

Classification by severity and/or depth

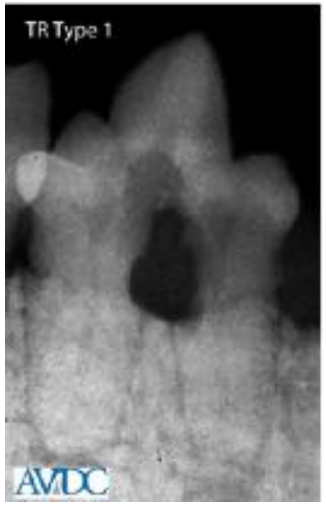
TOOTH REMNANTS ARE ONLY VISIBLE AS IRREGULAR OPACITIES; GINGIVA COVERS

OFTEN TREATMENT GOAL IS TO HELP ADVANCE TO STAGE 5

IS IT OKAY TO LEAVE ROOTS BEHIND? NO

FOCAL LUCENCY

remove all root structures as noted by periodontal ligament presence



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use Modified Extraction Technique (MET) to the level of alveolar bone: crown amputation with surgical closure

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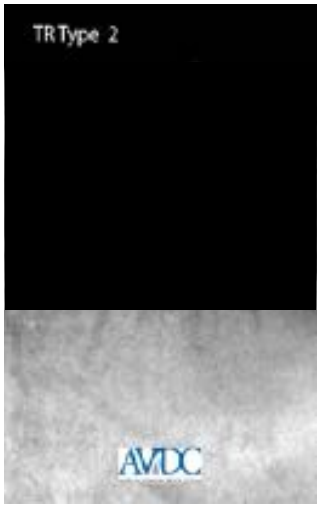

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REPLACEMENT RESORPTION

use Modified Extraction Technique (MET) to the level of alveolar bone: crown amputation with surgical closure

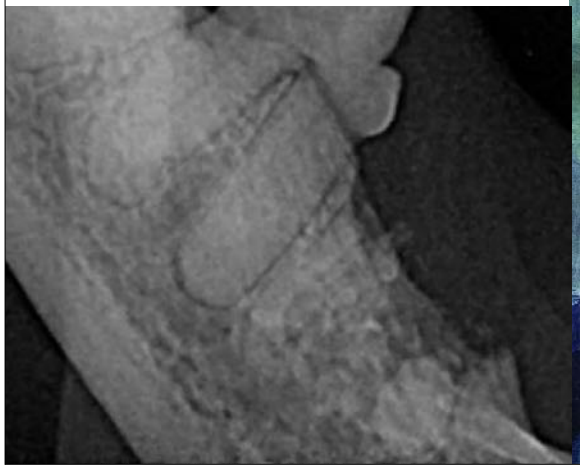
IS IT OKAY TO LEAVE ROOTS BEHIND?

YOU MUST INFORM CLIENT AND DOCUMENT THE INTENTIONAL ROOT RETENTION (IRR) AND CONTINUE TO MONITOR(CTM)

RESORPTION

use Modified Extraction Technique (MET) to the level of alveolar bone: crown amputation with surgical closure

POTENTIAL CONSEQUENCES OF ROOT PULVERIZATION:



bone necrosis

air embolism

sublingual/ subcutaneous emphysema

Treatment?

TR STAGE 4, TYPE 2 - DR BROOK NIEMIEC

- Is this TR?

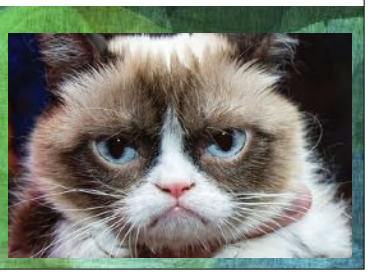
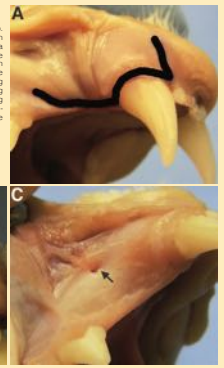


Figure 2

Photographs showing elevation of the mucoperiosteal flap. The incision for the mucoperiosteal flap is indicated in black (A). The vertical releasing incision was made with a #15c blade interdentally between the left mandibular canine (304) and third incisor (303) teeth. This was followed with an intrasulcular 304 incision carried into the edentulous space between the 304 and the third premolar tooth (307). Tensing (arrow) of the labial frenulum (B) while incising and elevating the mucoperiosteal flap aids in releasing it from underlying bone. A #2 Molt periosteal elevator is used to elevate the periosteum from bone exposing an intact mental vascular pedicle and foramen (arrow) (C).



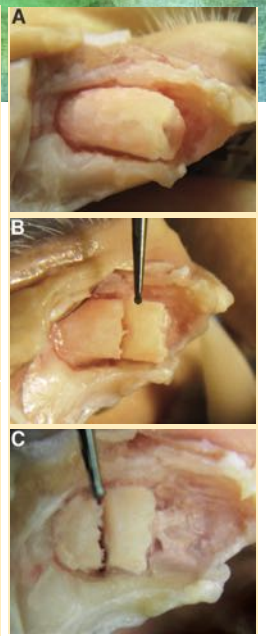
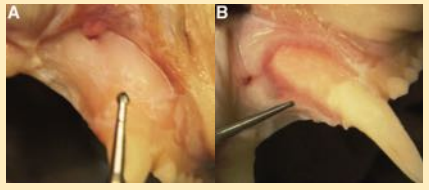


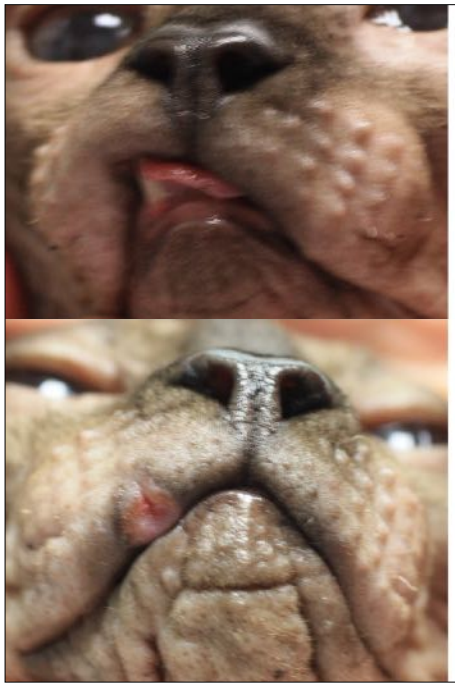
Figure 3

Photographs showing bone removal around the left mandibular canine tooth (304). Labial alveolar bone is removed using a #2 round cutting bur (A). Note that the shaft of the bur is laid parallel to the root thereby acting as a guide during bone reduction, aiding inadvertent cutting of the root structure. Widening of the periodontal space and cutting of the periodontal ligament using a #1/4 round bur (B) serves to further weaken the root's alveolar attachment.



LIP ENTRAPMENT

- removal of an upper canine in a cat removes the 'buccal bulge' of bone during extraction
- the lower canine in many cats can cause traumatic lip issues
  - Occasionally blunting with a restoration is effective
  - Other cases require shortening and root canal therapy or extraction



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Pyogenic Granuloma

- Around lower first molar
- Proliferative
- Sometimes ulcerated
- Biopsy recommended
- Extraction may be needed

Challenges of Feline Dentistry

- Cats can be unique
- Unusual presentations
- Challenging to manage
- Only 30 teeth to treat
- While they may not thank you, their owners will!