

Understanding Tooth Resorption in Cats

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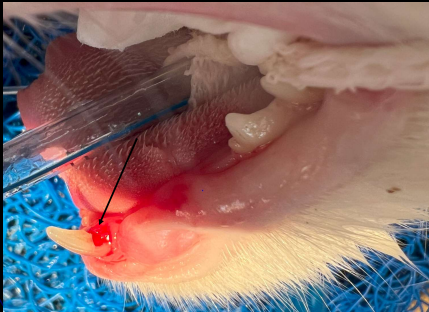
1

Today's Agenda & Learning Objectives:

- Recognize and understand the mechanism of tooth resorption
- Understand the various types of tooth resorption
- Understand the basic treatment modalities for managing clinical cases of tooth resorption

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What is tooth resorption??



3

POLL

Have you seen clinical tooth resorption in your feline patients?

- Yes
- No

4

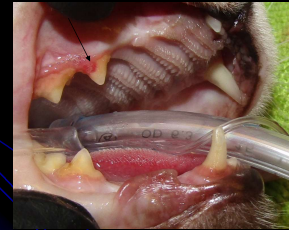
What is tooth resorption??

- Focal source(s) of pain in the mouth
 - Change in chewing pattern
 - Food may drop out of mouth
 - Some cats stop eating!



What is tooth resorption??

Some lesions are obvious



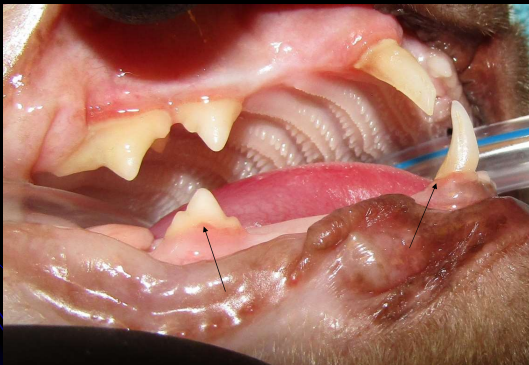
Some, not so obvious



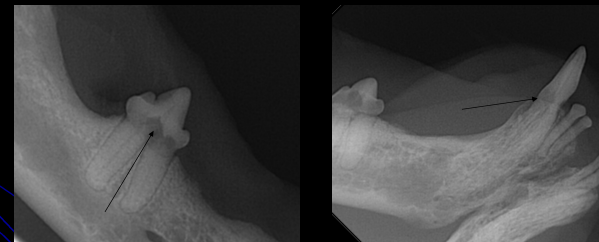
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Not so obvious....



Not so obvious....



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If you identify a site of tooth resorption.....

- Look for more sites!
- Requires complete oral exam
- May see additional lesions in the future

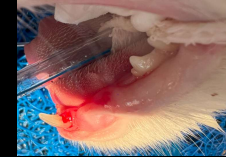


Tooth Resorption

This is NOT cariogenic bacterial decay (cavities)

Avoid calling these cat cavities to clients

- cavities have a known cause
- cavities can be treated
- cavities can be prevented

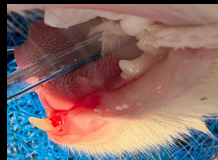


9

10

Tooth Resorption

These are “odontoclastic” lesions where odontoclasts are invading and destroying tooth structure



The inciting cause of tooth resorption??

We don't know!

- Many theories put forth over the years
- None have held up over time
- No specific proven etiology



11

12

The inciting cause of tooth resorption??

We don't know!

- Not an infectious agent-(viral or bacterial)
- Not contagious
- Is an inflammatory lesion



13

POLL

What % of cats in your practice have feline tooth resorption?

- Rarely
- About 25%
- 25-50%
- Over 50%

14

How common is tooth resorption in cats??

It depends.....pick your study

- 2% on up to 75% incidence
 - Unusual to see this in 1-2 year old cats
- Will typically start becoming clinically significant in the 4-5 year range
- Can involve any tooth in the mouth, but very commonly involves the lower PM3's (07's), lower M1's (09's) and often the lower canines (04's)

15

Patterns of resorption vs stages of resorption.....

Three Patterns

- Type 1
- Type 2
- Type 3

Five Stages

- Stage 1
- Stage 2
- Stage 3
- Stage 4
 - 4a
 - 4b
 - 4c
- Stage 5

16

The Patterns of Resorption*

- Inflammatory (Type 1)
 - Periodontitis present in 72% of teeth reflecting type 1 roots
- Replacement (Type 2)
 - Periodontitis present in 15.6% of teeth reflecting type 2 roots
- Type 1 roots were 8 times more likely to be associated with periodontitis

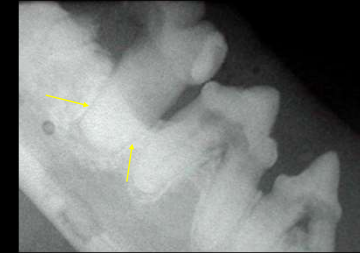


*DuPont GA, DeBowes LJ J Vet Dent. 2002 Jun;19(2):71-5.

17

Inflammatory (Type 1) Root Resorption

- Distinguishable periodontal ligament space
- Radiodensity of the root structure is distinctly different than the surrounding alveolar bone, and more resembles that of nearby unaffected roots



18

Replacement (Type 2) Root Resorption

- Obscured periodontal ligament space
- Density of the root(s) starts to match that of surrounding alveolar bone



19

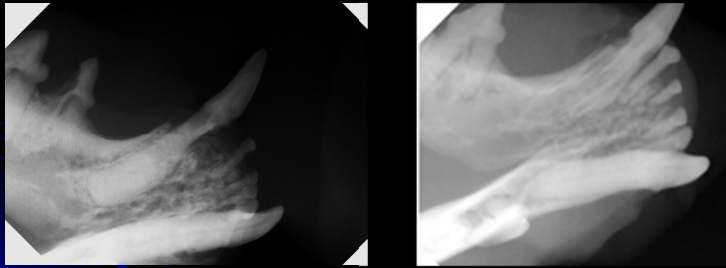
Type 3 Resorption....

- Elements of BOTH Type 1 and Type 2 tooth resorption



20

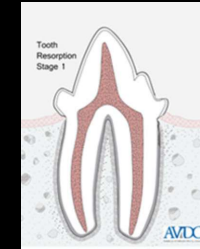
Patterns of resorption are a radiographic diagnosis!!



21

Stages of resorption (the progression of disease).....

- **Stage 1 (TR 1):** Mild dental hard tissue loss (cementum or cementum and enamel).

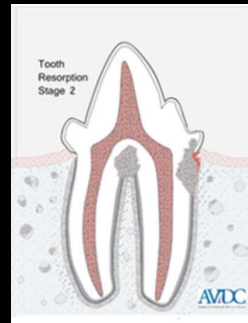


AVDC.org Stages of Tooth Resorption

22

Stages of resorption (the progression of disease).....

- **Stage 2 (TR 2):** Moderate dental hard tissue loss (cementum or cementum and enamel with loss of dentin that does not extend to the pulp cavity).

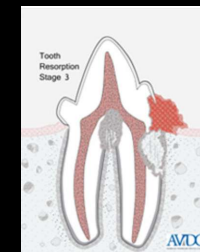


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23

Stages of resorption (the progression of disease).....

- **Stage 3 (TR 3):** Deep dental hard tissue loss (cementum or cementum and enamel with loss of dentin that extends to the pulp cavity); most of the tooth retains its integrity.

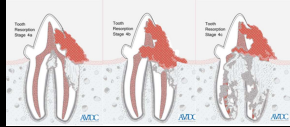


AVDC.org Stages of Tooth Resorption

24

Stages of resorption (the progression of disease).....

- **Stage 4 (TR 4):**
Extensive dental hard tissue loss (cementum or cementum and enamel with loss of dentin that extends to the pulp cavity); most of the tooth has lost its integrity.

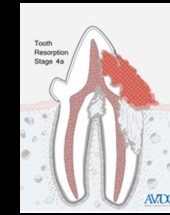


AVDC.org Stages of Tooth Resorption

25

Stages of resorption (the progression of disease).....

- **TR4a:** Crown and root are equally affected

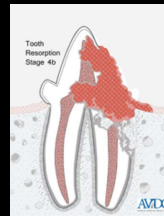


AVDC.org Stages of Tooth Resorption

26

Stages of resorption (the progression of disease).....

- **TR4b:** Crown is more severely affected than the root

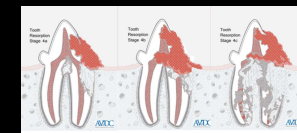


AVDC.org Stages of Tooth Resorption

27

Stages of resorption (the progression of disease).....

- **TR4c:** Root is more severely affected than the crown



AVDC.org Stages of Tooth Resorption

28

Stages of resorption (the progression of disease).....

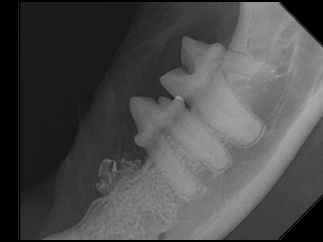
- **Stage 5 (TR 5):**
Remnants of dental hard tissue are visible only as irregular radiopacities, and gingival covering is complete



AVDC.org Stages of Tooth Resorption

“Ghost Roots.....”

- Advanced stage 4c or early stage 5...



29

30

Advanced Stage 4c, early Stage 5



31

POLL

Is this site at the missing #307 premolar clinically relevant?

- Yes
- No

32

Treatment options for tooth resorption:

Surgical extraction



Crown Amputation



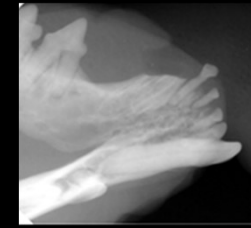
33

Your decision to extract or crown amputate relies on your dental radiographs!

Surgical extraction



Crown Amputation



34

The Bottom Line.....



- Visual assessment alone does not provide enough information to make the appropriate recommendation regarding extraction versus crown amputation

35

The Objectives of Extraction....

- The tooth.....
- The whole tooth.....
- And nothing but the tooth.....



36

The Objectives of Extraction....

- Completely remove the offending tooth
 - Crown
 - All root structure
- Surgical approach offers the best visibility and accessibility



37

Radiography is Critical !!!

- Your decision-making process depends on the information provided by intraoral radiography
- Radiography assists the doctor during the extraction or crown amputation procedure



38

What Are the Questions We Ask to Decide?



39

The First Set of Questions Are.....

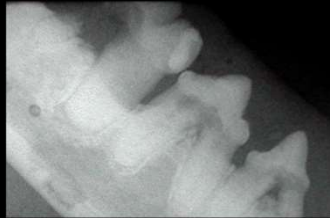
- Is there clinical evidence of tooth resorption?
- Is there radiographic evidence of tooth resorption?
- Is a surgical procedure indicated? (maybe not for TR5)



40

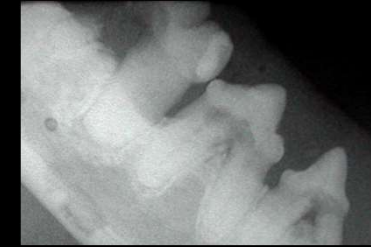
The Second Set of Questions Are.....

- Is there a distinguishable periodontal ligament space?
- What is the radiodensity of the root structure compared to surrounding alveolar bone?
- Is there additional pathology to consider beyond tooth resorption lesions?



And Finally?

- What is the pattern of resorption?
- What treatment is indicated?



41

42

Therapy: Type 1 Roots

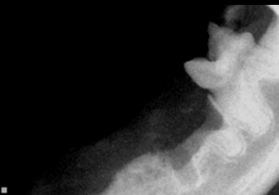
- Surgically extract
- Illuminate your operative field
- Magnify your operative field



43

Take Post Operative Radiographs!

- Verify what you think you did and what you really did were one in the same.....



44

Take Post Operative Radiographs!

- The radiographs are part of the medical record that demonstrate an acceptably performed surgical procedure



45

Therapy: Type 2 Roots

- Crown amputation candidates (i.e. crown amputation with *intentional* root retention)
- Create a gingival flap for access (with some sites, an envelope flap may provide sufficient exposure)



46

Crown Amputation

- Crown of the tooth removed at the neck with a high speed bur



47

Crown Amputation

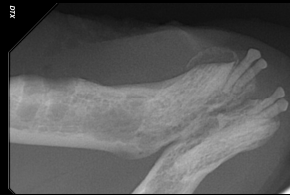
- Remaining cross section of root(s) identified and amputated 2-3mm below the gingival margin with high speed bur



48

Objectives of Crown Amputation

- Eliminate the focus of pain in the cat's mouth
- Remove enough diseased tissue to eliminate its contact with the oral cavity once the flap is sutured close
- Allow the root replacement process to continue as is currently demonstrated radiographically



49

Benefits of Crown Amputation

- Less invasive than extraction
- Quicker procedure compared to extraction
- Easier than extraction



50

What Crown Amputation IS NOT...

- Not meant to completely obliterate or "atomize" the root.
- Not a crutch for poor extraction technique
- Not a procedure that should be done without radiographic evaluation and proper case selection

51

Other Words of Caution

- Avoid going too deep with your amputation process
 - Roots occupy space in the mesial-distal, the buccal-lingual, and the ventral-dorsal planes
 - The deeper you travel with your bur, the more you risk straying off course
- Be aware of adjacent structures, and avoid damaging them during your amputation procedure

52

Contraindications for Crown Amputation

- Type 1 root structure
- Feline stomatitis syndrome
- Periapical disease/lysis associated with the roots in question



Follow Through.....

- Suture flaps closed over operated sites
- Inform client of procedures performed (they will assume missing crowns mean the teeth were extracted)
- Follow the resorption process radiographically over time

53

54

The Benefits of Successfully Treating Tooth Resorption in Cats....



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55

56

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