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Royal (Dick) School of
Veterinary Studies



Completing a Dentistry Assessment

Tips for dental charting and dental radiography



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- Periodontal disease affects 80% of dogs and cats over the age of 3 years old.
- There are many other dental conditions which occur in dogs and cats.
- Can be difficult to identify on clinical examination. Dental problems can be a hidden disease.

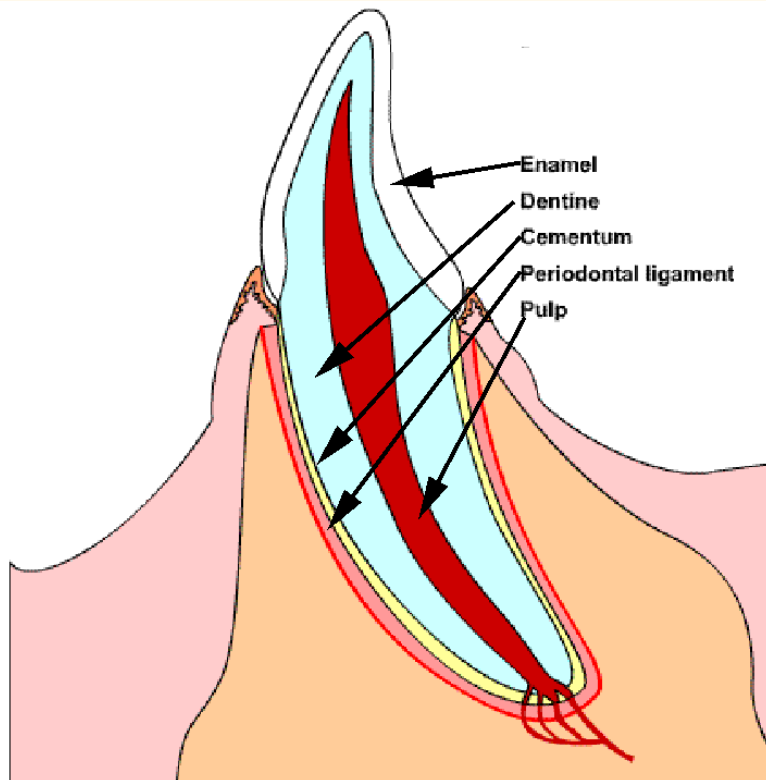
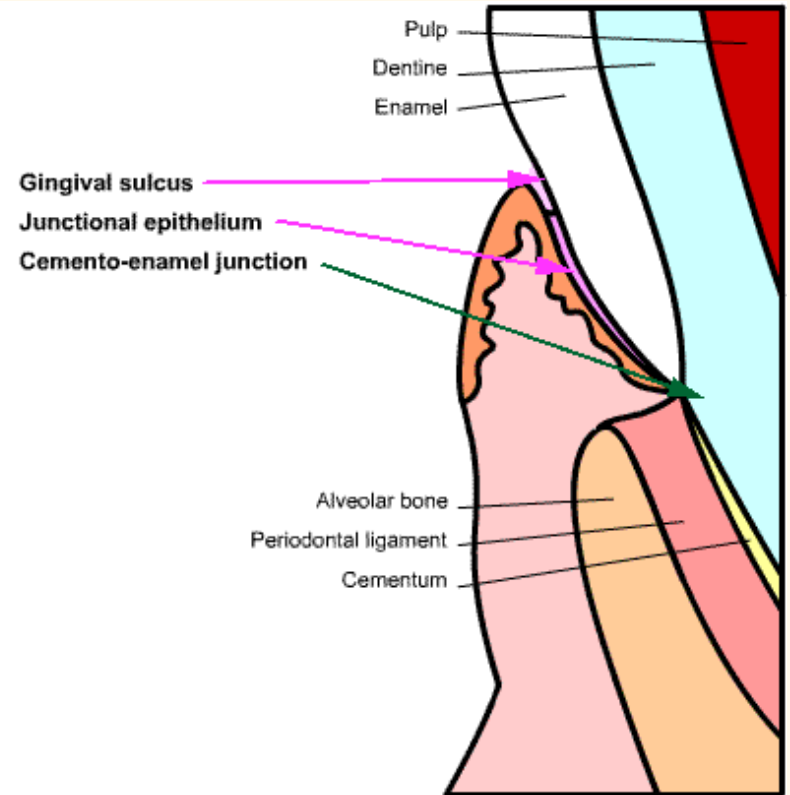


Considerations for Veterinary Dentistry.

- General anaesthesia required (for ethical reasons). Non cosmetic procedures.
- Preserve or achieve function and atraumatic occlusion.
- Good dentistry/surgical skills and planning required.
- Correct instrumentation and equipment needed including dental imaging.
- Harm and complications can arise from incorrect technique, rushing procedures and poor equipment.

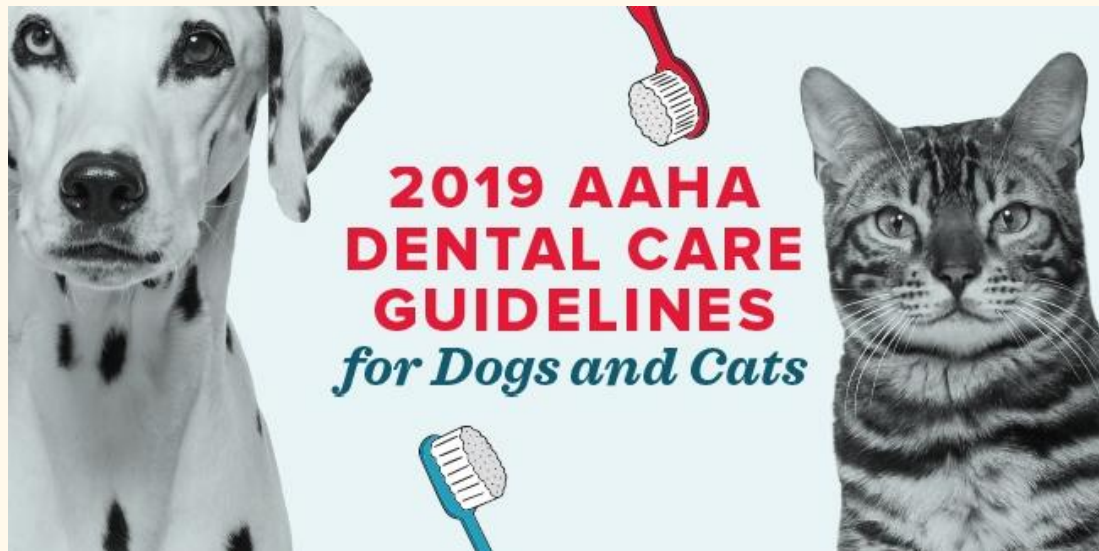


Tooth Anatomy



Oral Assessment.

- Conscious oral examination limited.
- Full oral examination requires general anaesthesia.
- AAHA Dental Care Guidelines (2019)



Complete Oral Assessment

- Extra-oral examination.
- Facial symmetry
- Swellings?
- Lymph nodes.
- TMJ- Range of motion.



Occlusion Evaluation

- Perform prior to intubation
- Close mouth fully and check symmetry of jaws
- Check for tooth contact with apposing teeth or soft tissue. Note abnormalities.



Normal Bite Criteria



- Jaws symmetrical
- Incisor scissor bite.
- The mandibular canine tooth bisects the space between the opposing maxillary third incisor tooth and canine tooth. It is inclined labially.
- Pinking shear of premolars.

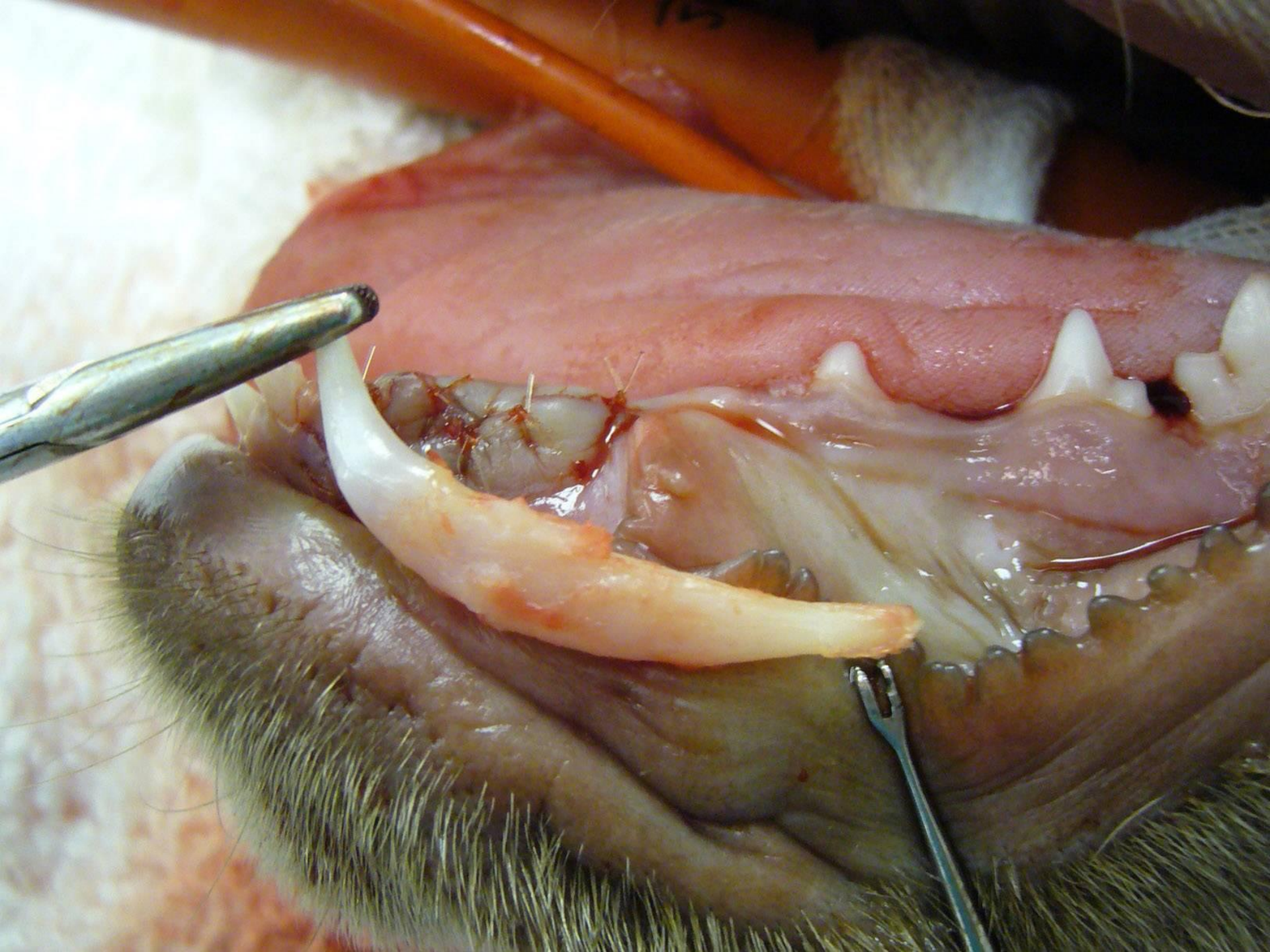
Class 1 Malocclusion (Neutroocclusion)



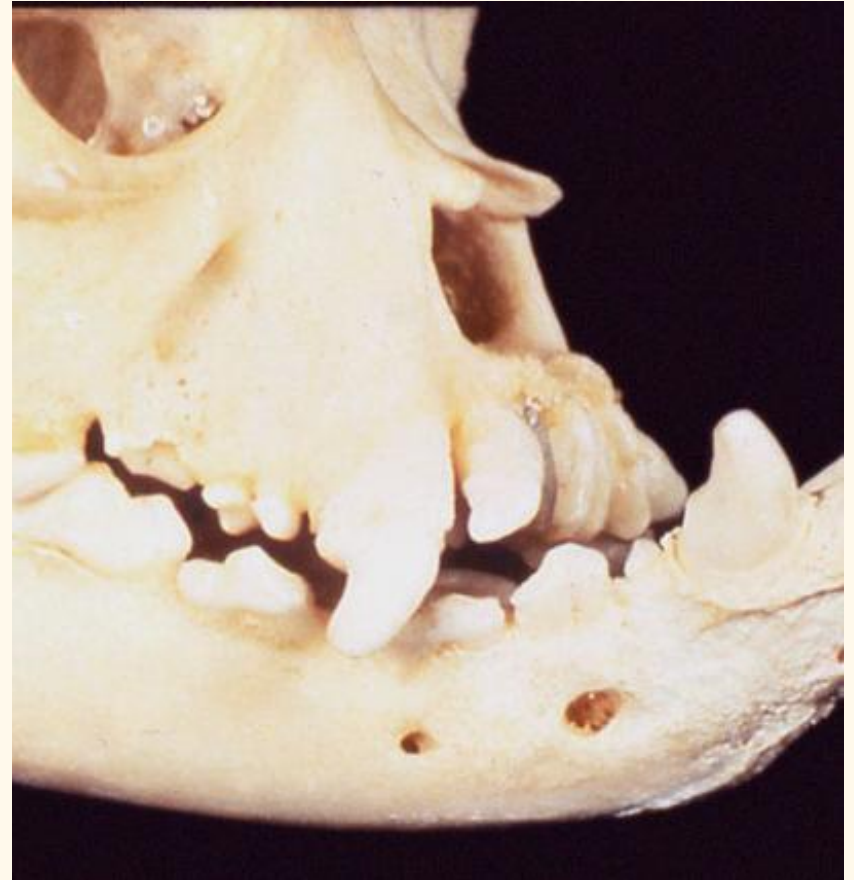
Class 2 Malocclusion- Mandibular Distocclusion.







Class 3 Malocclusion- Mandibular Mesioclusion.





Malocclusion Class 3:
Mandibular mesiocclusion

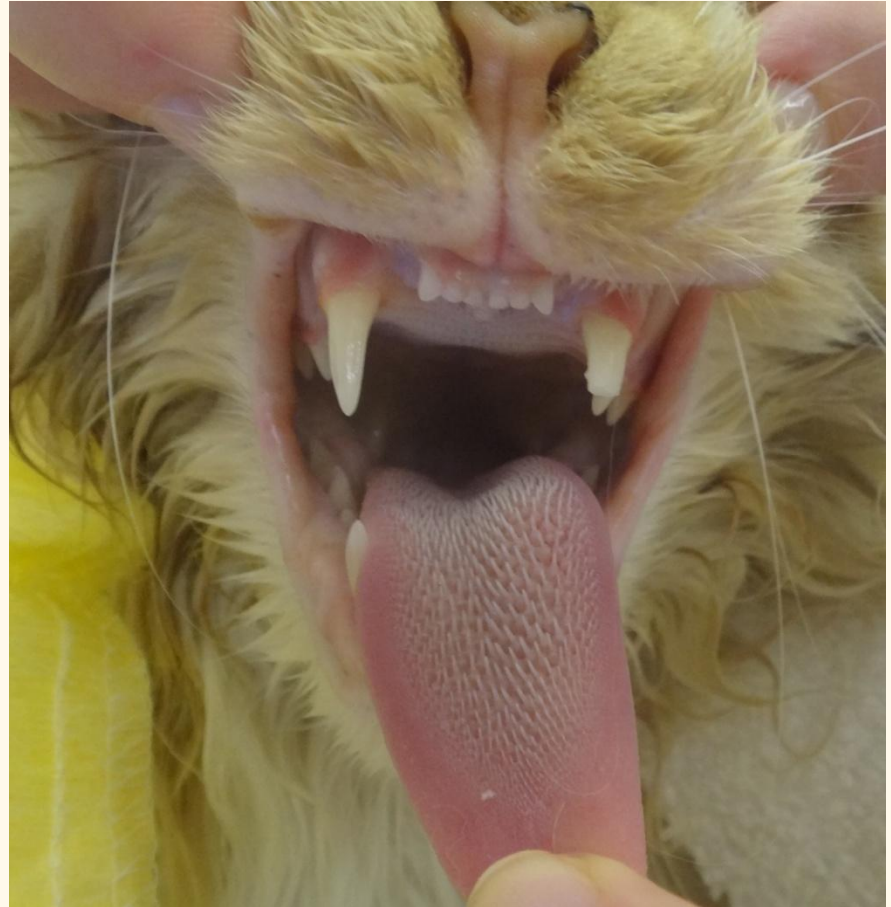


Malocclusion Class 3:
Mandibular mesiocclusion

Intra-oral soft tissues

Check for:

- Swellings
- Oral masses
- Inflammation/ulceration
- Lacerations
- Check lingual and sublingual
- Tonsils and pharynx (intubation)



Dental Charts

- Should be completed for every dentistry case.

 **PERMANENT DENTITION RECORD: DOG** 

Client:..... Animal:..... Sex:..... Clinician:..... Date:.....
 ID:..... Breed:..... Age:..... Assistant:.....

EXTRAORAL FINDINGS	ORAL SOFT TISSUES	OCCLUSAL EVALUATION	OTHER RELEVANT FEATURES

RIGHT

	110	109	108	107	106	105	104	103	102	101	201	202	203	204	205	206	207	208	209	210	
Fucation																					Fucation
TR																					TR
Gingivitis																					Gingivitis
Mobility																					Mobility
Buccal Aspect																					Buccal Aspect
OCCLUSAL: BUCCAL																					OCCLUSAL: BUCCAL
OCCLUSAL: PALATAL																					OCCLUSAL: PALATAL
OCCLUSAL: LINGUAL																					OCCLUSAL: LINGUAL
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Buccal Aspect																					Buccal Aspect
Mobility																					Mobility
Gingivitis																					Gingivitis
TR																					TR
Fucation																					Fucation

RIGHT 411 410 409 408 407 406 405 404 403 402 401 301 302 303 304 305 306 307 308 309 310 311

LEFT

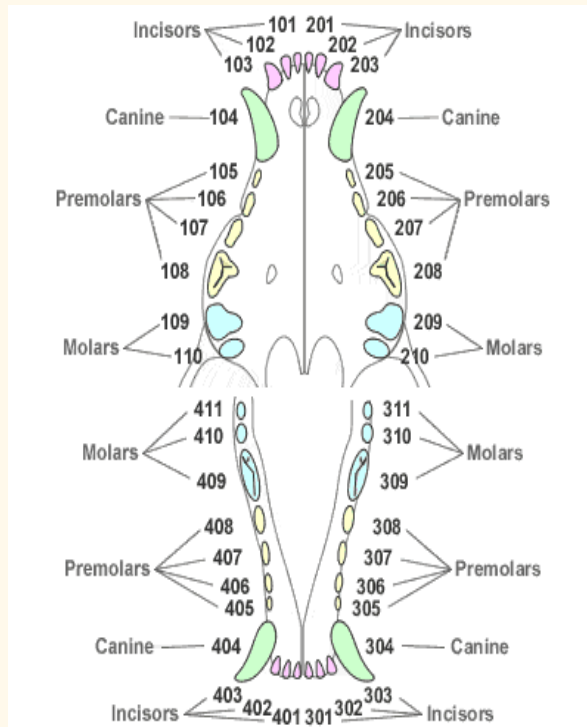
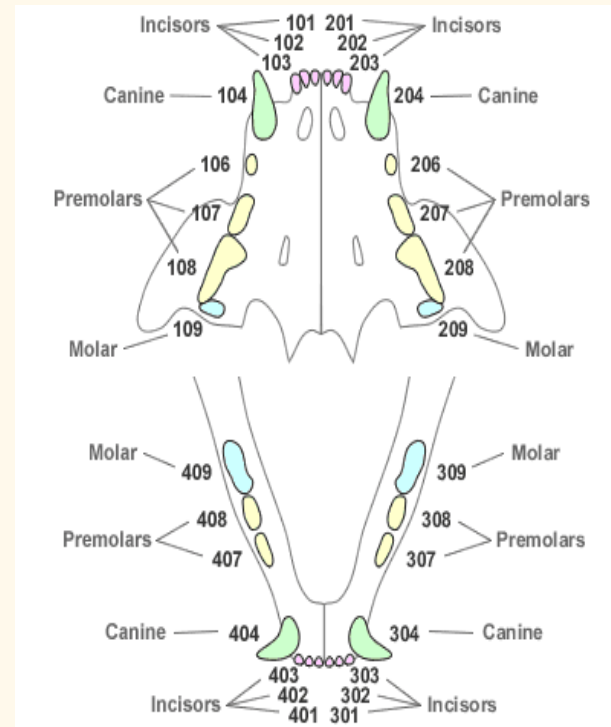
Equipment Requirements

- Good light source
- Periodontal Probe and Sharp Explorer.
- Dental Mirror
- Mouth props
- Dental Radiography



Count the Teeth

- Triadan numbering system



Dog Formula

- 28 Deciduous Teeth-

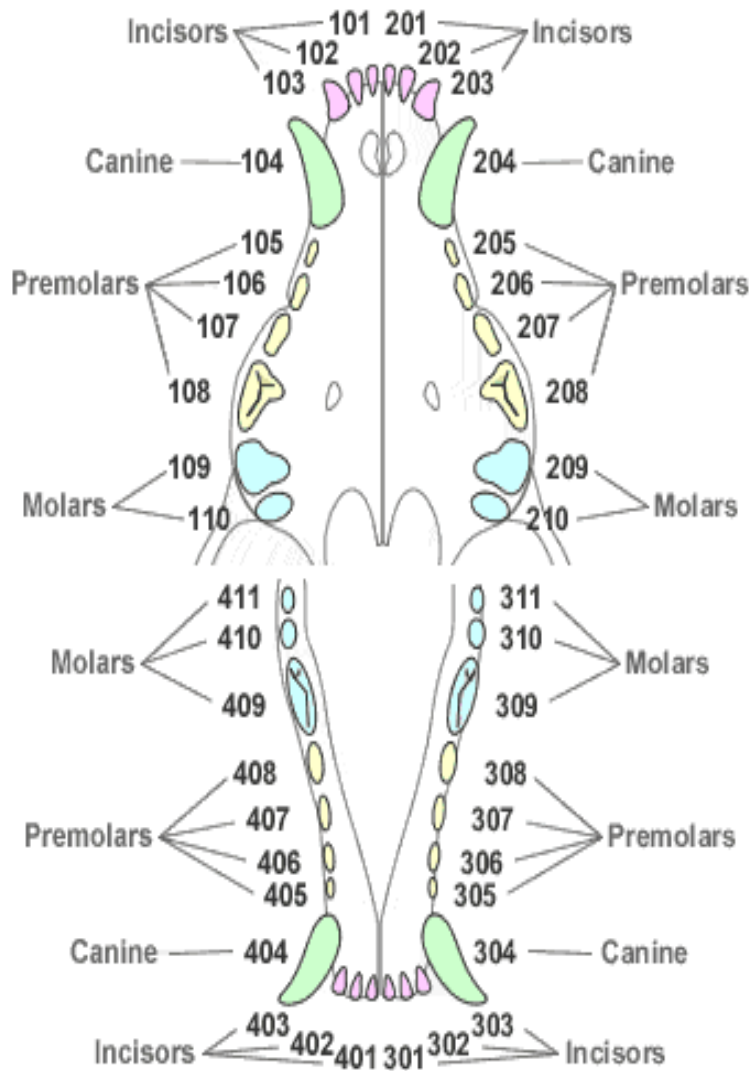
2 X

i 3/3 c 1/1 p 3/3

- 42 Permanent Teeth-

2 X

i 3/3 c 1/1 p 4/4 m2/3



Note;
NO deciduous molars

Cat Formula

26 Deciduous Teeth

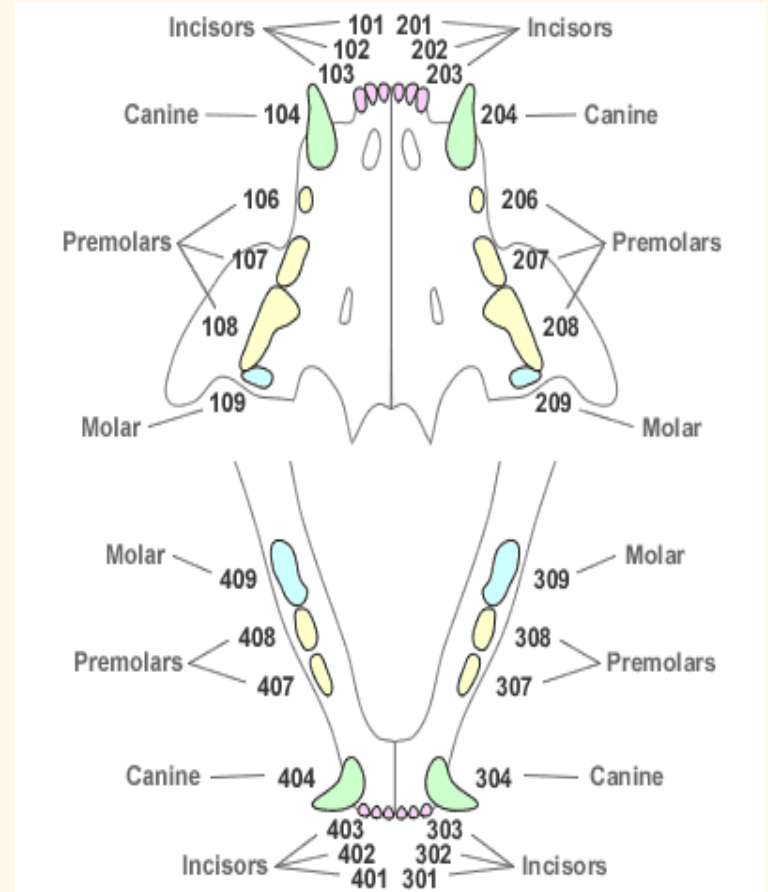
2 X

i 3/3 C 1/1 : P 3/2

30 Permanent Teeth

2 X

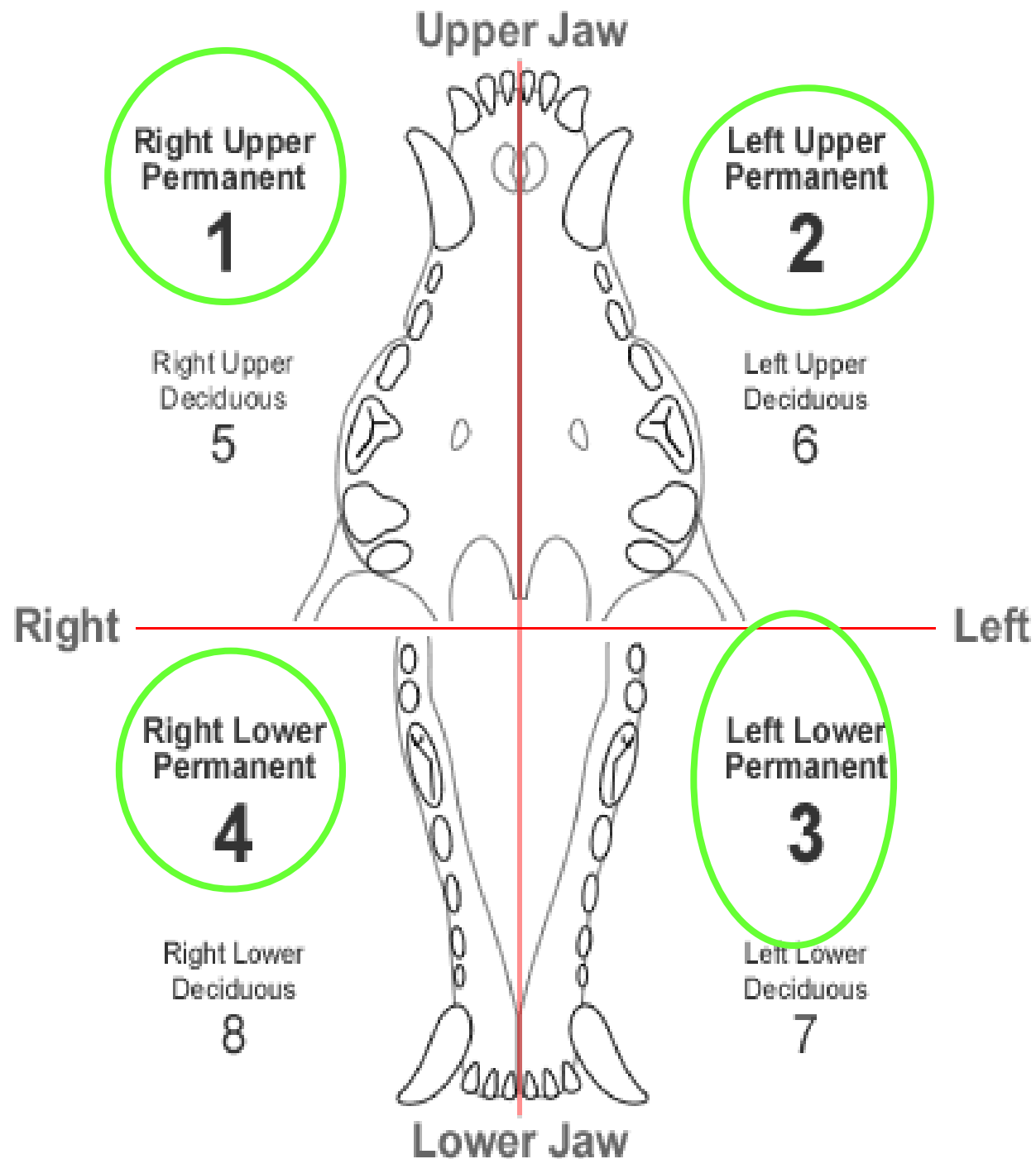
i 3/3 c 1/1 p 3/2 m 1/1



Modified Triadan

Dog

Quadrant Numbers



Triadan Tooth Numbering System

Rule of 4's and 9's

Based on the pig:

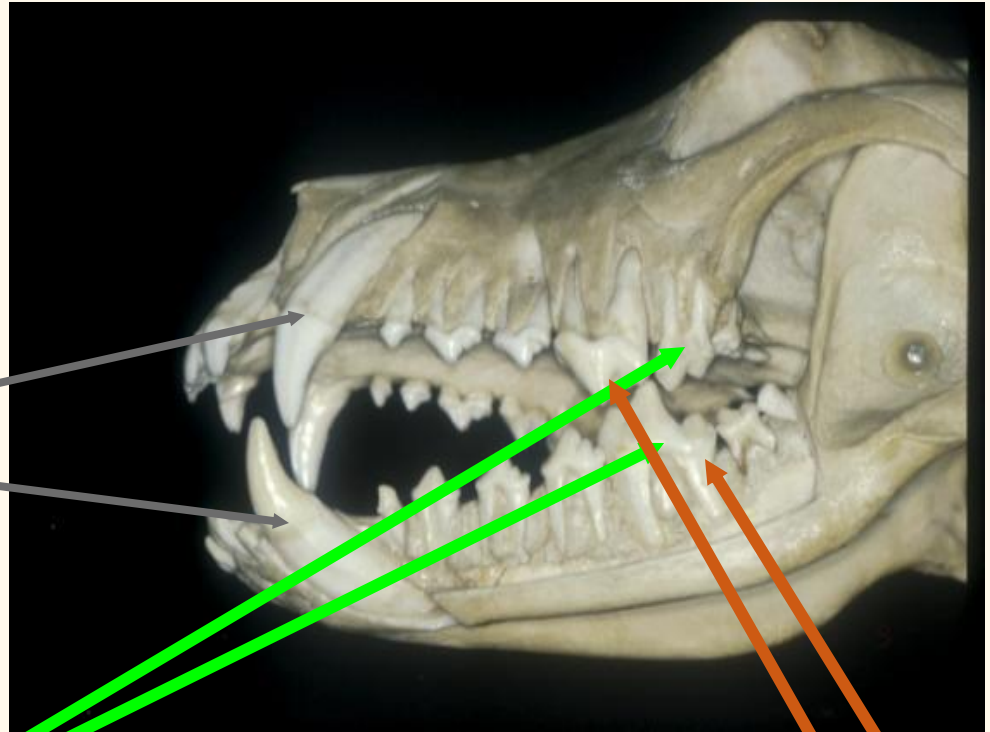
11 teeth per
quadrant

3/3 1/1 4/4 3/3

1. Canine teeth
always number 4
when present

2. First Molar always 9

3. Carnassials always upper PM4 - 8 and lower M1 - 9.



Calculus/Gingivitis Index...Scoring Systems

Gingivitis is the main indicator for pathology.

- **CI is “calculus index” – Ramfjord Calculus Index (1959)**

Calculus is measured from 0 to 3 as per the code key:

- ❖ **0 - No calculus**
- ❖ **1 - > 25% cover**
- ❖ **2 - 25%-75% cover**
- ❖ **3 - 75%-100% cover**

- **GI is “gingival index”- Loe and Silness (1963)**

Gingivitis is measured from 0 to 3 as per the code key:

- ❖ **0 - Normal**
- ❖ **1 – Marginal (red line)**
- ❖ **2 – Bleeds on gentle probing/swollen**
- ❖ **3 – Severe inflammation/spontaneous bleeding**



Plaque Disclosing Solution



Approved Dental Abbreviations

American Veterinary Dental College, Approved abbreviations and nomenclature.

[AVDC Nomenclature – AVDC.org](http://AVDC.org)

[Resident Services – AVDC.org](http://AVDC.org) go to Quick Links for PDF document of AVDC Abbreviations.



Probing of Periodontal Tissues

- Incomplete periodontal exam can lead to periodontal disease being overlooked resulting in inappropriate treatment.
- Evaluating each tooth for:
 - Gingival inflammation
 - Gingival enlargement or recession
 - Periodontal pocketing
 - Furcation exposure
 - Mobility
- Is essential.



Correct probing technique.

- Normal gingival sulcus depth of healthy tooth.
- Dogs 0-3mm
- Cats <1mm
- Good technique to avoid iatrogenic damage –
Modified pen grasp – Light amount of pressure (10-20 grams). Use a 'walking' stroke to move the probe around circumference of the tooth.

- Note any measurements not within normal limits and their location on the dental chart.
- In multi-rooted teeth hold the periodontal probe at 90 degree angle checking for furcation exposure.
- Check both buccal/labial surfaces and lingual/palatal surfaces.
- Furcation scores indicate extent of bone loss in furcation area.

Furcation Involvement

- Stage 1 (F1): Furcation 1 involvement exists when a periodontal probe extends less than half way under the crown in any direction of a multirooted tooth with attachment loss.
- Stage 2 (F2): Furcation 2 involvement exists when a periodontal probe extends greater than half way under the crown of a multirooted tooth with attachment loss but not through and through.
- Stage 3 (F3): Furcation exposure exists when a periodontal probe extends under the crown of a multirooted tooth, through and through from one side of the furcation out the other.



Tooth Mobility

- Stage 0 (M0): Physiologic mobility up to 0.2 mm. Unlikely this could be detected on clinical examination.
- Stage 1 (M1): The mobility is increased in any direction other than axial over a distance of more than 0.2 mm and up to 0.5 mm.
- Stage 2 (M2): The mobility is increased in any direction other than axial over a distance of more than 0.5 mm and up to 1.0 mm.
- Stage 3 (M3): The mobility is increased in any direction than axial over a distance exceeding 1.0 mm or any axial movement.



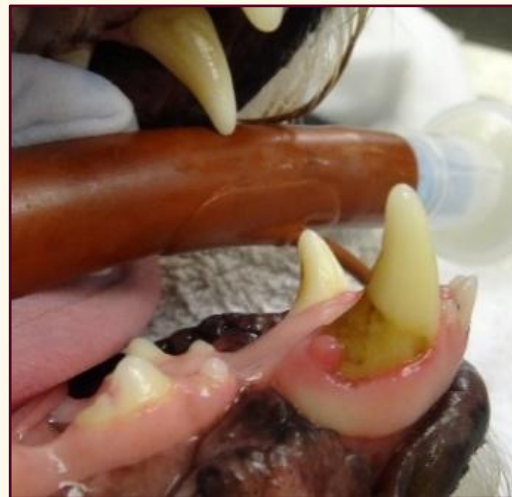
Other Dental Findings

- Circled tooth for missing tooth
- RTR - Retained tooth root
- X - Extracted tooth
- M(x) – Mobile tooth
- P(x) - Periodontal pocket
- T/FX (CCF/UCF) – Fractured tooth



Other Dental Findings

- CA – Caries
- DT/P – Persistent deciduous
- ED – Enamel defect
- GH - Gingival Hyperplasia



Other Dental Findings

- T/NV – Non vital tooth
- SN – Supernumery tooth
- AB – Abrasion (tooth/object)
- AT – Attrition (tooth/tooth)
- OM – Oral mass
- RAD – Radiograph



PERMANENT DENTITION RECORD: DOG



Client:.....

Animal:.....

Sex:.....

Clinician:.....

Date:.....

ID:.....

Breed:.....

Age:.....

Assistant:.....

[illegible]

R

L

Dental Radiography for Veterinary Nurses

- Why we use intra-oral radiography in veterinary dentistry.
- RVN's and dentistry
- What are the benefits to the patient and the practice.
- Techniques for diagnostic images.
- Interpreting dental radiographs and pathology.





Why do we need and use dental radiography?

- To allow us to complete a full oral assessment on our dentistry patients.
- To discover pathology that is not visible clinically.
- To help ensure dental procedure (i.e. tooth, extraction/oral surgery) is performed safely and correctly.



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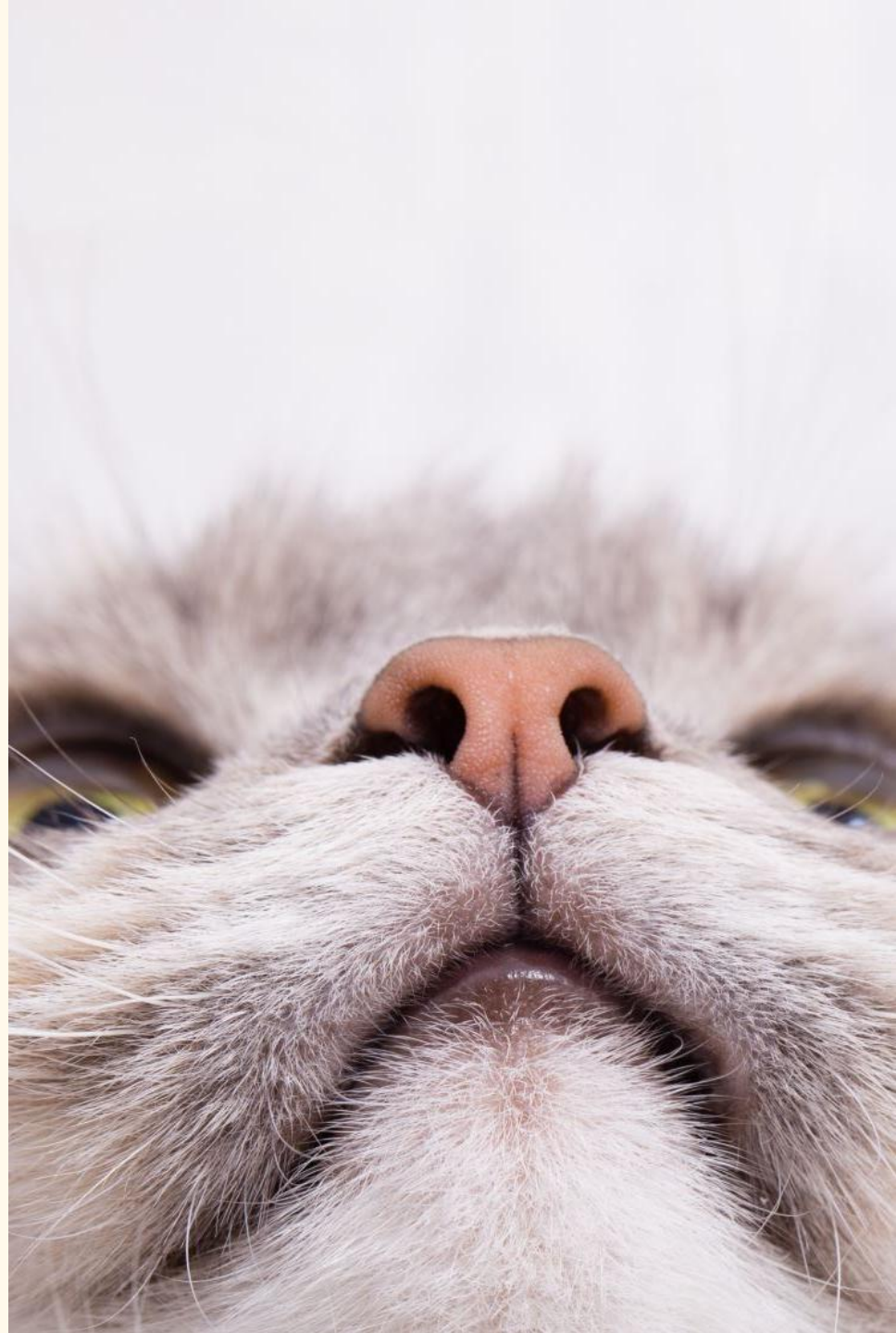


The benefits of full mouth radiography

- The percentage of canine and feline with additional dental pathology is high. 50% dogs, 54% cats
- Identifies pathology in 28% of dogs and 42% of cats with 'healthy mouths' on oral assessment.
- Cannot provide your veterinary patients with a comprehensive dentistry service without it.
- Verstraete et al 1998 Am J Vet Res:
- Kim et al 2013 J Am Anim Hosp Assoc



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Dental Radiography Equipment

- Standard dental radiography units most common choice.
- Wall mount and mobile units available.





Dental Radiography Equipment



Health & Safety for Dental Radiography



- Stand at least 2 meters from tube head during exposure, behind beam.
- Lead apron for hand held units.
- Annual service required.
- RPA and RPS- Local rules



Health and Safety: Installation



Image Processing



- Options for digital system.
- CR System
- DR System



Image Processing



Chairside Developer



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Can we use standard radiography instead?

- Not convenient for dental procedures
- More difficult to position
- Skull xrays = superimposition
- Multiple images, increased radiation exposure.



When should radiographs be taken?

- Full mouth radiographs taken during initial assessment under GA (COHAT, CORE).
- Post op images prior to suturing.



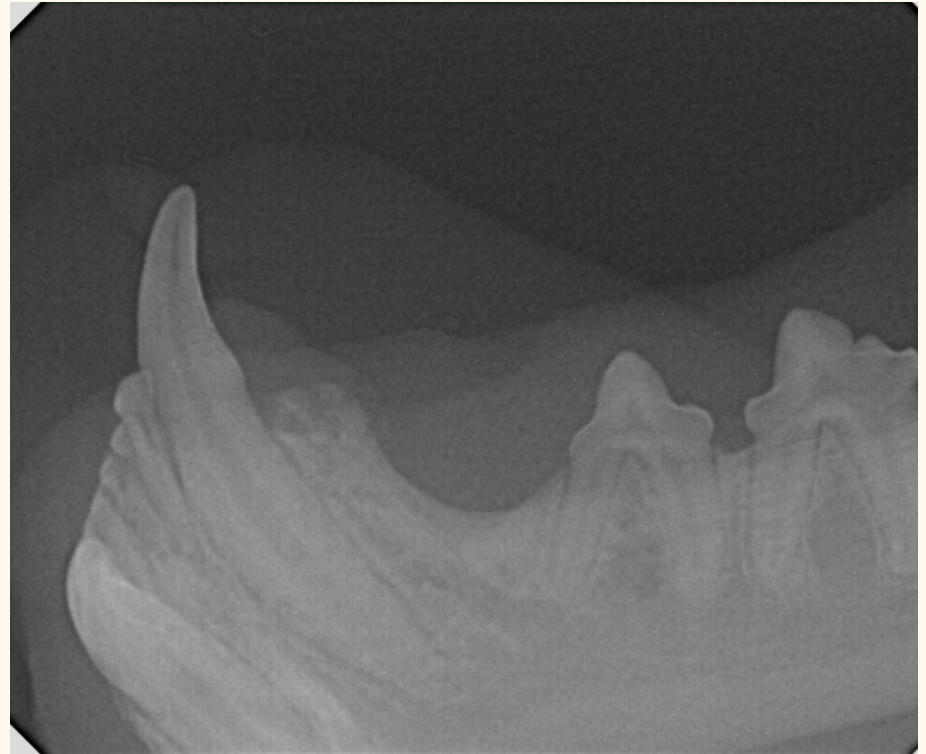
Basic Protocol

- Cats- All teeth due to incidence of Feline Tooth Resorption
- All missing teeth
- Extra teeth
- Damaged/fractured teeth
- Periodontitis



Positioning Techniques- Simplified!

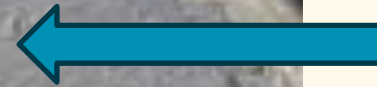
- Diagnostic dental radiograph:
- Target in centre
- Correct angulation
- No superimposition
- At least 3mm around the root apicies.



Patient positioning

- Make sure positioning convenient for angling radiographic beam.
- Lateral, Dorsal or Sternal.
- Tube head directed over dental arch.

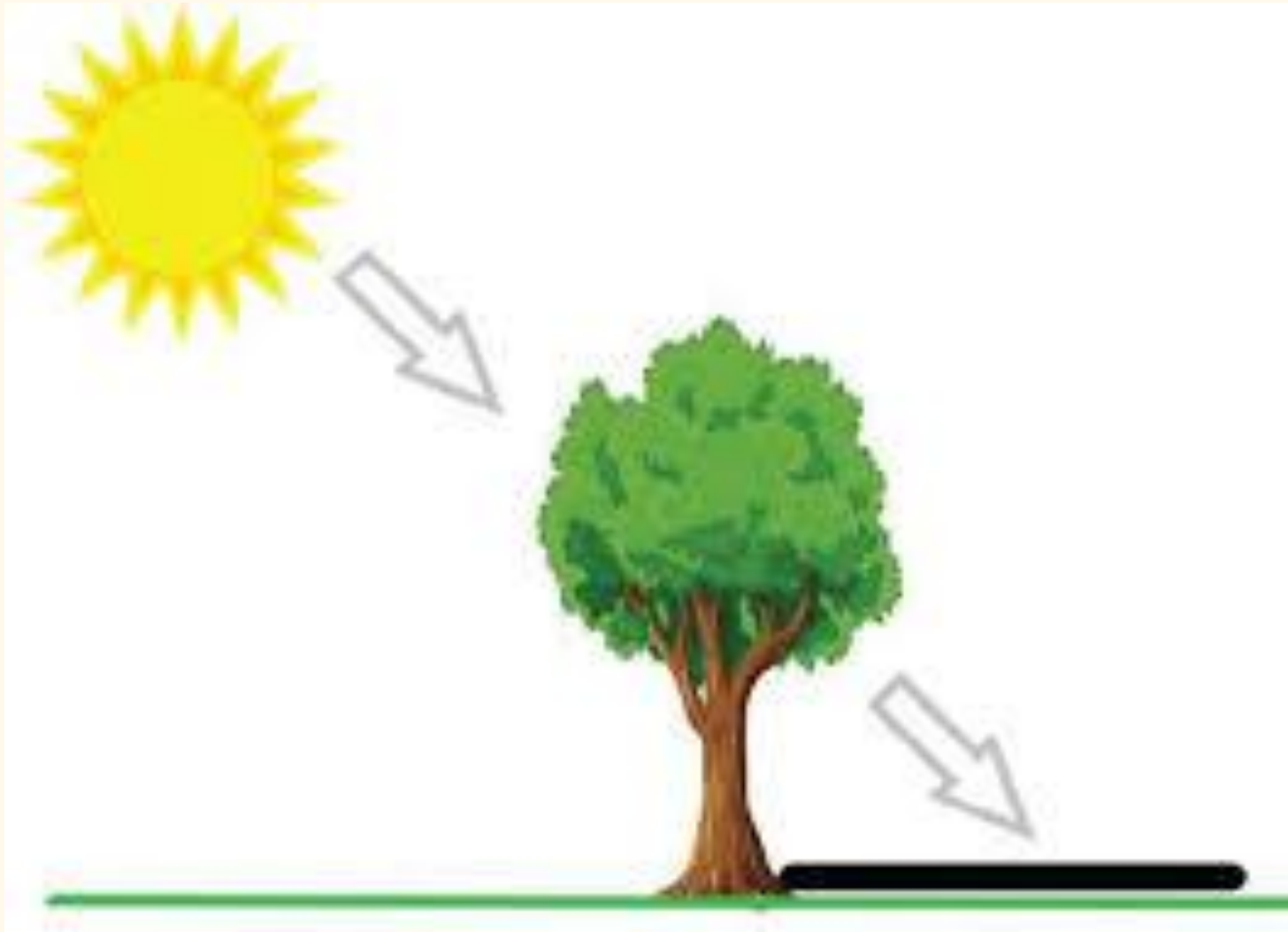






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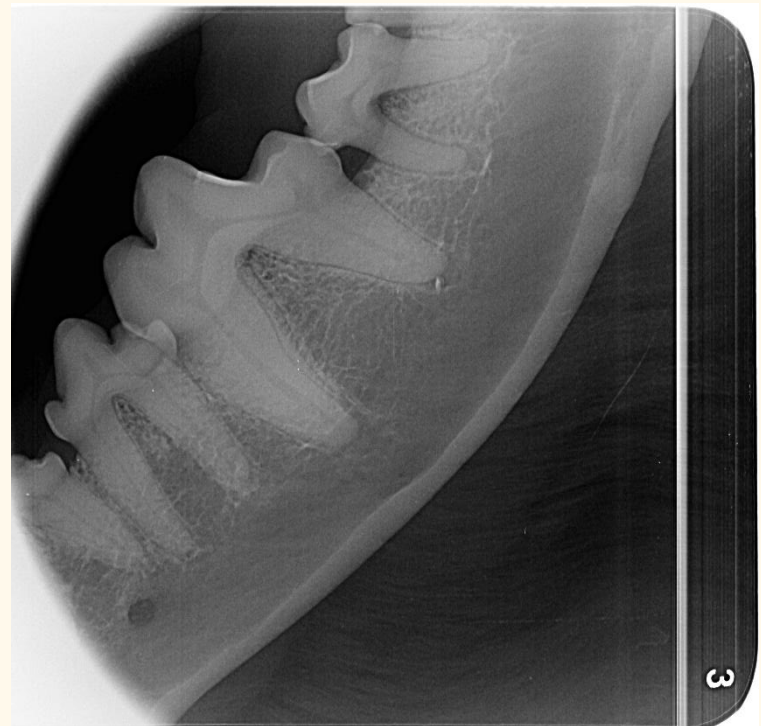




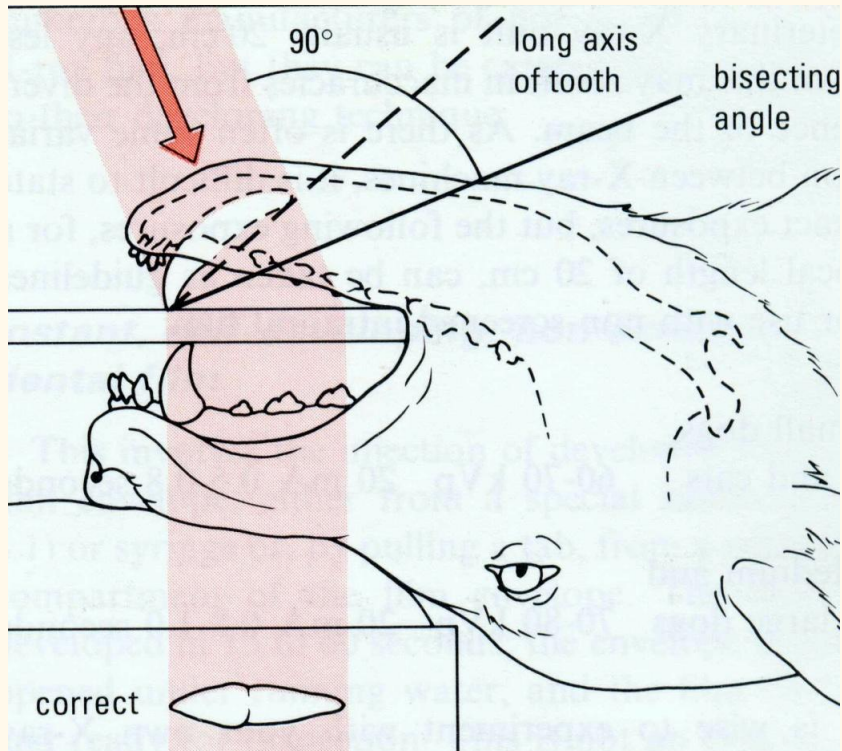
Parallel Technique

- Suitable for mandibular premolars and molars in dogs and cats
- Sensor placed directly behind teeth/roots.
- Bring beam 90° to the teeth and sensor.



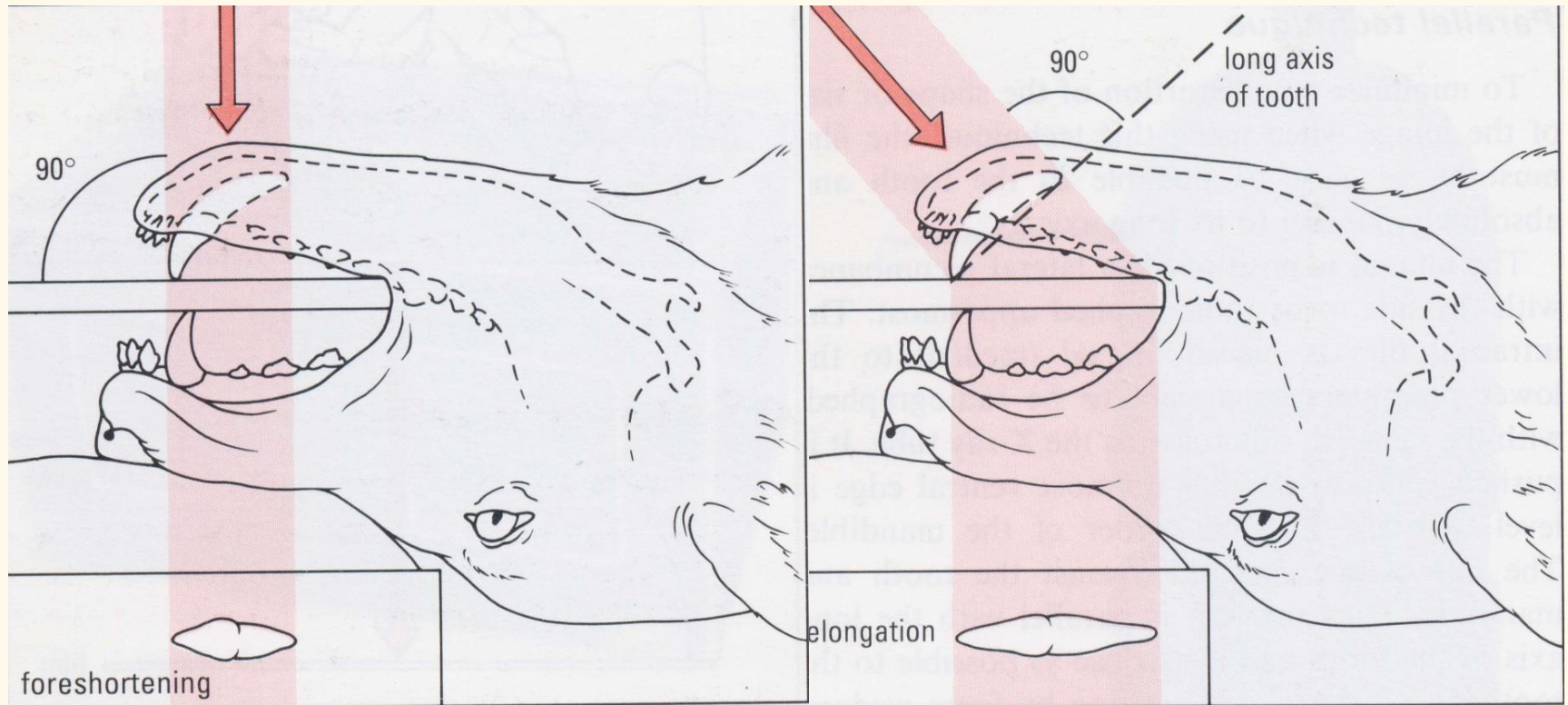


Bisecting Angle Technique



- Is the 45o angulation between the long axis of the tooth and the sensor?

Forshortening and Elongation



Other Positioning Errors

- Cone cut/missing target or roots.
- Misplacement of sensor
- Artefacts on sensor.





Artefacts on Sensor



Positioning Guides



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Angle positioning



- Take a note of the starting angle.

Simplified Intra-oral Radiology

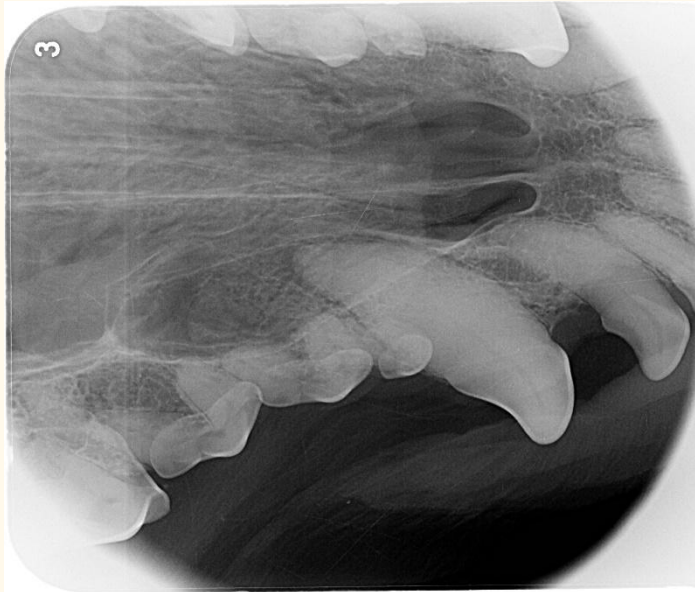
- Use the midline of patient as start point. Nasal philtrum, mandibular symphysis.
- Check degree angle on unit.
- Remember- 20°, 30°, 45°, 90°



Maxillary Incisor View



Maxillary Canine Teeth



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Maxillary Premolars and Molars



Mandibular Incisor Teeth



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Mandibular Canine Teeth



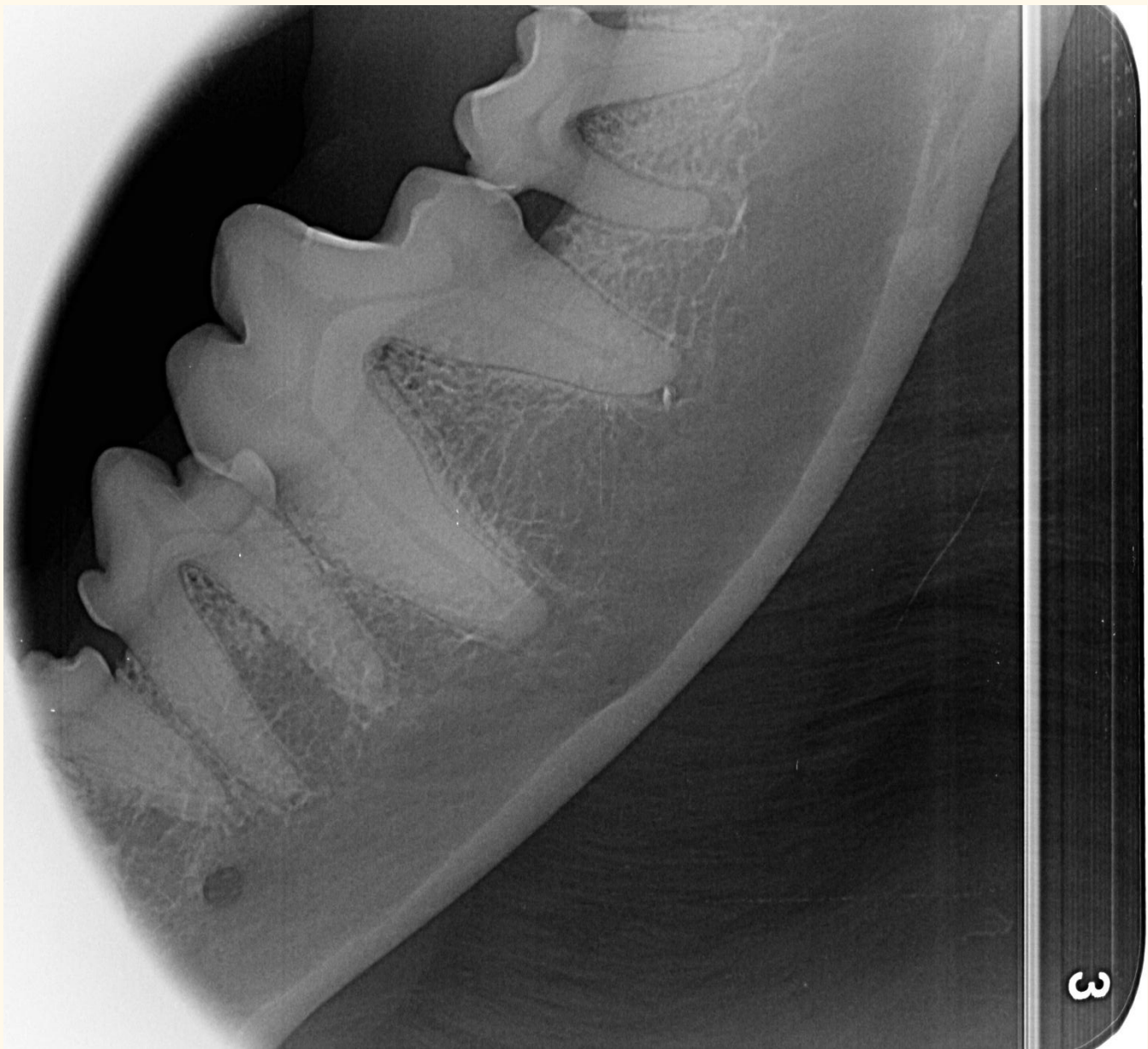
Lateral View



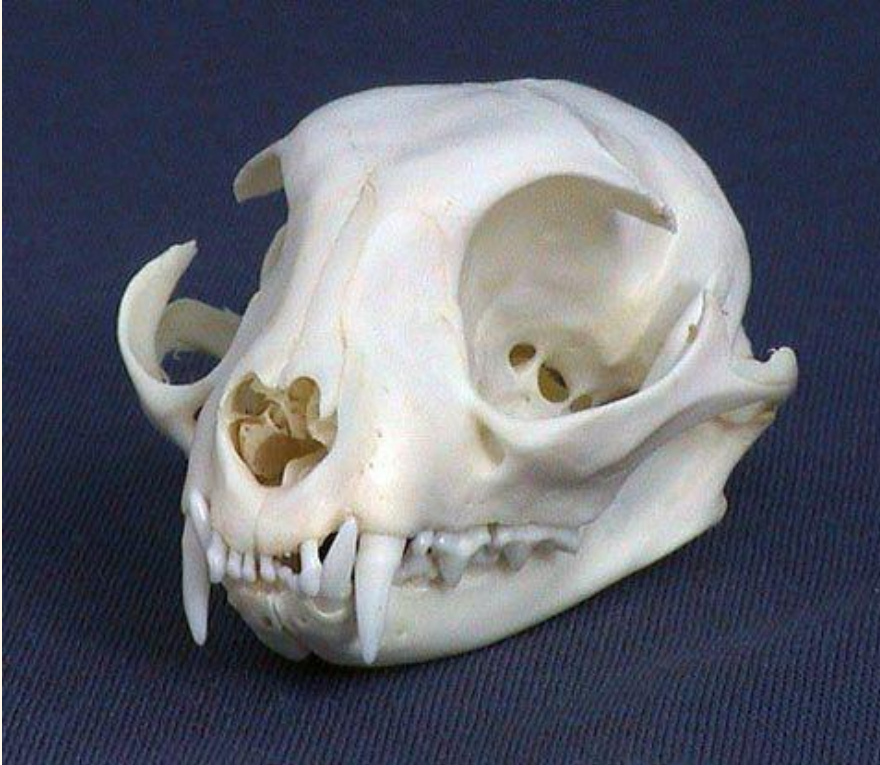
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Mandibular Premolars and Molars



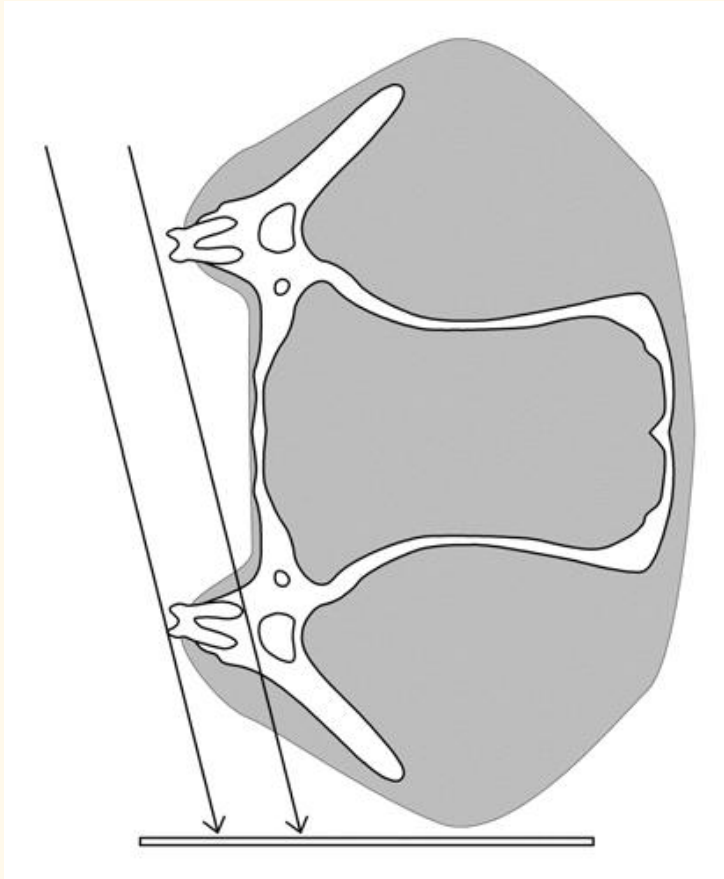


Cats- Maxillary Cheek Teeth



- Prominent zygomatic arch.
- Intraoral- lower beam- slight elongation.

Extraoral View





Intraoral Near Parallel Technique



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Film Orientation



Full Mouth Survey

- Cats- 6-8 views
- Small dogs- 6-8 views
- Medium dogs- 8-10
- Large dogs- 10-12



Full Mouth Survey- Timings

- Cats- 10 mins
- Small dogs- 10 mins
- Large dogs- 20-30 mins
- DR= quicker processing
- Allow time for additional images

