



# Veterinary Dental Nomenclature

## Recommendations from the AVDC Nomenclature Committee adopted by the AVDC Board

AVDC has adopted the following items as standard nomenclature for use in College documents.

Applicants submitting case reports are required to use these terms.

Determining and adopting nomenclature is an on-going process. Additional items will be added to this list as they are approved by the Board.

The Board appreciates the efforts of the Nomenclature Committee in finding acceptable terms in an area that has been unclear and, at times, controversial.

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## Nomenclature of Specific Teeth

The **incisors** will be referred to as: (right or left) (maxillary or mandibular) first, second, or third incisors numbered from the midline.

*Reference(s):*

Peyer B. *Comparative odontology*. 1st ed. Chicago: University of Chicago Press, 1968;1-347.  
Nickel R, Schummer A, Seiferle E, et al. Teeth, general and comparative. In: *The viscera of domestic mammals*. 1st ed. Berlin: Verlag Paul Parey, 1973;75-99.

In the cat, the tooth immediately distal to the maxillary **canine** is the second **premolar**, the tooth immediately distal to the mandibular canine is the third premolar.

*Reference(s):*

Nickel R, Schummer A, Seiferle E, et al. Teeth, general and comparative. In: *The viscera of domestic mammals*. 1st ed. Berlin: Verlag Paul Parey, 1973;75-99.

The existence of the conventional anatomical names of teeth as well as the various tooth numbering systems is recognized. The correct anatomical names of teeth are (right or left), (maxillary or mandibular), (first, second, third or fourth), (**incisor, canine, premolar, molar**), as applicable, written out in full or abbreviated.

The **modified Triadan system** is presently considered to be the tooth numbering system of choice in veterinary dentistry; gaps are left in the numbering sequence where there are missing teeth (for example, the first premolar encountered in the feline left maxilla is numbered 206, not 205. The two lower right premolars are 407 and 408, not 405 and 406).

Both the use of anatomical names and the modified Triadan system are acceptable for recording and storing veterinary dental information. The use of anatomical names in publications is required by many leading journals and is recommended. It offers the advantage of veterinary dental publications being understandable to other health professionals and scientists with an interest in veterinary dentistry.

*Reference(s):*

Floyd MR. The modified Triadan system: nomenclature for veterinary dentistry. *J Vet Dent* 1991; 8:18-19.

*Comment(s):*

In January 1972, the International Dental Federation adopted a new, two digit, "user friendly" nomenclature system for use in the human dental patient. This new system eliminated the plus and minus signs of the Haderup System and the brackets of the Winkel System. Following the acceptance of the new system for human dental nomenclature, Professor DrMedDent H. Triadan, a dentist at the University of Bern, Switzerland, introduced a similar system for animals. Due to the fact that many animals, including his canine model, have more than nine teeth in a quadrant, the Triadan system for animals utilizes three digits instead of two digits.

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## Surfaces of Teeth and Directions in the Mouth

### Vestibular/Buccal/Labial

**Vestibular** is the correct term referring to the surface of the tooth facing the vestibule or lips; **buccal** and **labial** are acceptable alternatives.

*Reference(s):*

Anonymous. *Nomina Anatomica Veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

*Comment(s):*

The term "facial" specifically refers to the surfaces of the rostral teeth visible from the front. According to Dr. A.J. Bezuidenhout, a veterinary anatomist at Cornell University, "facial" is a bit of a misnomer. Traditionally "facial" has been used in human dentistry for the aspect of teeth visible from the front, i.e. incisors and canines.

### Lingual/Palatal

**Lingual**: The surface of a mandibular or maxillary tooth facing the tongue is the **lingual** surface. **Palatal** can also be used when referring to the lingual surface of maxillary teeth.

### Mesial/Distal

**Mesial** and **distal** are terms applicable to tooth surfaces.

The **mesial** surface of the first incisor is next to the median plane; on other teeth it is directed toward the first incisor. The **distal** surface is opposite from the mesial surface.

### Rostral/Caudal

**Rostral** and **caudal** are the positional and directional anatomical terms applicable to the head in a sagittal plane in non-human vertebrates.

**Rostral** refers to a structure closer to, or a direction toward the most forward structure of the head. **Caudal** refers to a structure closer to, or a direction toward the tail.

‘Anterior’ and ‘posterior’ are the synonymous terms used in human dentistry.

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## Generations of Teeth in Diphyodont Species

**Deciduous** and **permanent** are the anatomically correct terms to denote the two generations of teeth in diphyodont species. It is acceptable to use "**primary**" instead of deciduous in communicating with clients.

*Reference(s):*

- Anonymous. *Nomina Anatomica Veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.  
Boucher CO, Zwemer TJ. *Boucher's clinical dental terminology - a glossary of accepted terms in all disciplines of dentistry*. 4th ed. St. Louis: Mosby, 1993.  
Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

*Comment(s):*

"Deciduous" is the scientific term used in biology, as well as in comparative anatomy and anthropology for both animal and plant structures which are regularly shed. As a substitute for temporary, the term "primary" appeared early in the literature and it is listed in both Anthony's and Otof's dictionaries 1922-23. The style of the Journal of the ADA requires the term deciduous in all literature designed for the profession and allows primary only in discourse for non-professional persons.

The **deciduous dentition** period is that period during which only deciduous teeth are present. The **mixed dentition** period is that period during which both deciduous and permanent teeth are present. The **permanent dentition** period is that period during which only permanent teeth are present.

*Reference(s):*

- Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.  
Boucher CO, Zwemer TJ. *Boucher's clinical dental terminology - a glossary of accepted terms in all disciplines of dentistry*. 4th ed. St. Louis: Mosby, 1993.  
Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

*Comment(s):*

The term "persistent deciduous tooth" is etymologically correct, although the term "retained deciduous tooth" is commonly used. The latter term, however, can be confused with an unerupted deciduous tooth.

*Reference(s):*

- Eisenmenger E, Zetner K. *Tierärztliche Zahnheilkunde*. 1st ed. Berlin: Verlag Paul Parey, 1982;44-50.
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## Jaws

All mammals have two maxillas (or maxillae) and two mandibles. The adjective "maxillary" is often used in a wider sense, e.g., "maxillary fractures", to include other facial bones, in addition to the maxillary bone proper.

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Evans HE. The skull. In: Evans HE, ed. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: W.B. Saunders, 1993;128-166.

Hildebrand M. *Analysis of vertebrate structure*. 4th ed. New York: John Wiley & Sons, 1995.

Nickel R, Schummer A, Seiferle E, et al. Teeth, general and comparative. In: *The viscera of domestic mammals*. 1st ed. Berlin: Verlag Paul Parey, 1973;75-99.

Verstraete FJM. Maxillofacial fractures. In: Slatter DH, ed. *Textbook of small animal surgery*. 3<sup>rd</sup> ed. Philadelphia: WB Saunders Co, 2003;2190-2207.

### **Comprehensive List of Clinically Relevant Terms Related to the Mandible and Temporomandibular Joint:**

NAV term	Anglicized version	Comments
Mandibula	<b>Mandible</b>	All animals have two mandibles, not one -- removing one entire mandible therefore is a "mandibulectomy", not a "hemimandibulectomy"
Corpus mandibulae	<b>Body of the mandible</b>	The part that carries the teeth - often incorrectly referred to as "horizontal ramus"
Pars incisiva	<b>Incisive part</b>	The part that carries the incisors
Pars molaris	<b>Molar part</b>	The part that carries the premolars and molars – "premolar-molar part" would probably have been more accurate
Margo alveolaris	<b>Alveolar margin</b>	Often incorrectly referred to as "alveolar crest"
Margo ventralis	<b>Ventral margin</b>	
Canalis mandibulae	<b>Mandibular canal</b>	Contains only the neurovascular bundle – often incorrectly referred to as the "medullary cavity" of the mandible
Foramina mentalia	<b>Mental foramens or foramina</b>	Rostral, middle or caudal mental foramina in the dog and cat

Ramus mandibulae	<b>Ramus of the mandible</b>	The part that carries the 3 processes – often incorrectly referred to as the “vertical ramus”
Processus angularis / angulus mandibulae	<b>Angular process / angle of the mandible</b>	
Processus coronoideus	<b>Coronoid process</b>	
Processus condylaris	<b>Condylar process</b>	Often incorrectly referred to as “condyloid process”
Caput mandibulae	<b>Head of the mandible</b>	The articulating part of the condylar process
Incisura mandibulae	<b>Mandibular notch</b>	The notch on the caudal aspect, between the coronoid and condylar processes - not to be confused with the facial vascular notch
Incisura vasorum facialium	<b>Facial vascular notch</b>	Shallow indentation on the ventral aspect of the mandible, rostral to the angular process - poorly defined in carnivores
Foramen mandibulae	<b>Mandibular foramen</b>	The entrance to the mandibular canal
Articulatio temporomandibularis	<b>Temporomandibular joint</b>	
Discus articularis	<b>Articular disk</b>	Often incorrectly referred to as “meniscus”
Articulatio intermandibularis	<b>Intermandibular joint</b>	
Synchondrosis intermandibularis	<b>Mandibular symphysis</b>	Scapino RP. The third joint of the canine jaw. <i>Journal of Morphology</i> 1965;116:23-50.
Collum mandibulae	<b>Neck of the mandible</b>	The narrow part of the condylar process supporting the head

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Scapino RP. The third joint of the canine jaw. *J Morphol* 1965;116:23-50.

In domestic animals, the correct name for the paired bones that carry the maxillary incisors, located rostral to the maxillary bones, is the **incisive bones**, not the “premaxilla”.

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Domestic animals have a “**mandibular gland**” (or “mandibular salivary gland”) and a “**mandibular lymph node**”. The term "submandibular," as used in humans, is incorrect due the difference in topography of these structures.

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

The “**fauces**” are defined as the lateral walls of the oropharynx that are located medial to the palatoglossal folds. **The areas lateral to the palatoglossal fold, commonly involved in feline stomatitis, are not the fauces.**

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

The **midline of the hard palate** is not a symphysis but is formed by the interincisive suture, the median palatine suture of the palatine processes of the maxillary bones, and the median suture of the palatine bones.

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

The “**alveolar jugum**” (plural “alveolar juga”) is the palpable convexity of the buccal alveolar bone overlying a large tooth root.

*Reference(s):*

Anonymous. *Nomina anatomica veterinaria*. 4th ed. Zurich and Ithaca: World Association of Veterinary Anatomists, 1994.

Evans HE. *Miller's anatomy of the dog*. 3rd ed. Philadelphia: WB Saunders Co, 1993.

## Definitions of Stage, Grade and Index

**Stage:** The assessment of the extent of pathological lesions in the course of a disease that is likely to be progressive. E.g., stages of periodontal disease, staging of oral tumors, etc.

**Grade:** The quantitative assessment of the degree of severity of a disease or abnormal condition at the time of diagnosis, irrespective of whether the disease is progressive e.g., a grade 2 mast cell tumor (based on mitotic figures)

**Index:** A quantitative expression of predefined diagnostic criteria whereby the presence and/or severity of pathological conditions are recorded by assessing a numerical value e.g., gingival index, plaque index, etc.

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## Periodontal Disease

### Periodontal Disease Classification

The degree of severity of periodontal disease relates to a single tooth; a patient may have teeth that have different stages of periodontal disease.

**Normal** (PD 0): Clinically normal - no gingival inflammation or periodontitis clinically evident.

**Stage 1** (PD 1): Gingivitis only without attachment loss. The height and architecture of the alveolar margin are normal.

**Stage 2** (PD 2): Early periodontitis - less than 25% of attachment loss or at most, there is a stage 1 furcation involvement in multirooted teeth. There are early radiologic signs of periodontitis. The loss of periodontal attachment is less than 25% as measured either by probing of the clinical attachment level, or radiographic determination of the distance of the alveolar margin from the cemento-enamel junction relative to the length of the root.

**Stage 3** (PD 3): Moderate periodontitis - 25-50% of attachment loss as measured either by probing of the clinical attachment level, radiographic determination of the distance of the alveolar margin from the cemento-enamel junction relative to the length of the root, or there is a stage 2 furcation involvement in multirooted teeth.

**Stage 4** (PD 4): Advanced periodontitis - more than 50% of attachment loss as measured either by probing of the clinical attachment level, or radiographic determination of



the distance of the alveolar margin from the cemento-enamel junction relative to the length of the root, or there is a stage 3 furcation involvement in multirooted teeth.

*Reference:*

Wolf HF, Rateitschak EM, Rateitschak KH et al. Color atlas of dental medicine: periodontology, 3rd ed. Stuttgart: Georg Thieme Verlag, 2005.

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### **Furcation Involvement/Exposure**

**Stage 1** (F1, furcation 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 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.

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### **Tooth Mobility**

**Stage 0** (M0) Physiologic mobility up to 0.2 mm.

**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.

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## Dental Fracture Classification

**Enamel infraction (EI):** An incomplete fracture (crack) of the enamel without loss of tooth substance.

**Enamel fracture (EF):** A fracture with loss of crown substance confined to the enamel.

**Uncomplicated crown fracture (UCF):** A fracture of the crown<sup>1</sup> that does not expose the pulp.

**Complicated crown fracture (CCF):** A fracture of the crown<sup>1</sup> that exposes the pulp.

**Uncomplicated crown-root fracture (UCRF):** A fracture of the crown and root that does not expose the pulp.

**Complicated crown-root fracture (CCRF):** A fracture of the crown and root that exposes the pulp.

**Root fracture (RF):** A fracture involving the root.

When used in AVDC case log entries, the tooth fracture abbreviations noted above are to be stated as *T/FX/{specific abbreviation}*

<sup>1</sup> This classification can be applied for brachydont and hypsodont teeth, which covers domesticated species and many wild species. Fractures of teeth in some wild species may not fit into this classification because of differences in the tissues present in the teeth.

For brachydont teeth, the following definitions of crown, crown-root and root apply:

Crown: Enamel and dentin  
 Crown-root: Enamel, dentin and cementum  
 Root: Dentin and cementum

For most hypsodont teeth, the following definitions of crown, crown-root and root apply:

Crown: Clinical crown  
 Crown-root: Clinical crown and reserve crown  
 Root: Reserve crown and/or root

## Classification of Tooth Resorption

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

**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).

**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.

**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.

**(TR4a)** Crown and root are equally affected;

**(TR4b)** Crown is more severely affected than the root;

**(TR4c)** Root is more severely affected than the crown.

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

This classification is based on the assumption that tooth resorption is a progressive condition.

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## Classification of Dental Occlusion in Dogs

An ideal occlusion can be described as perfect interdigitation of the upper and lower teeth. In the dog, the ideal tooth positions in the arches are defined by the occlusal, inter-arch and interdental relationships of the teeth of the archetypal dog (i.e. wolf). This ideal relationship with the mouth closed can be defined by the following:

- The maxillary incisor teeth are all positioned rostral to the corresponding mandibular incisor teeth. The crown cusps of the mandibular incisor teeth contact the cingulum of the maxillary incisor teeth.
- The mandibular canine tooth is inclined labially and bisects the interproximal (interdental) space between the opposing maxillary third incisor tooth and canine tooth.
- The maxillary premolar teeth do not contact the mandibular premolar teeth. The crown cusps of the mandibular premolar teeth are positioned lingual to the arch of the maxillary premolar teeth. The crown cusps of the mandibular premolar teeth bisect the interproximal (interdental) spaces rostral to the corresponding maxillary premolar teeth.
- The mesial crown cusp of the maxillary fourth premolar tooth is positioned lateral to the space between the mandibular fourth premolar tooth and the mandibular first molar tooth.

A **malocclusion** is any deviation from normal occlusion described above.

**Terms of malocclusion:**

**Neuroclusion (Class 1 malocclusion; MAL/1):** A normal rostral-caudal relationship of the maxillary and mandibular dental arches with malposition of one or more individual teeth.

**Mandibular distocclusion (Class 2 malocclusion; MAL/2):** An abnormal rostral-caudal relationship between the dental arches in which the mandibular arch occludes caudal to its normal position relative to the maxillary arch.

**Mandibular mesiocclusion (Class 3 malocclusion; MAL/3):** An abnormal rostral-caudal relationship between the dental arches in which the mandibular arch occludes rostral to its normal position relative to the maxillary arch.