

Malocclusions and Dental Diseases in Privately Owned Horses in the Mazovia Region of Poland

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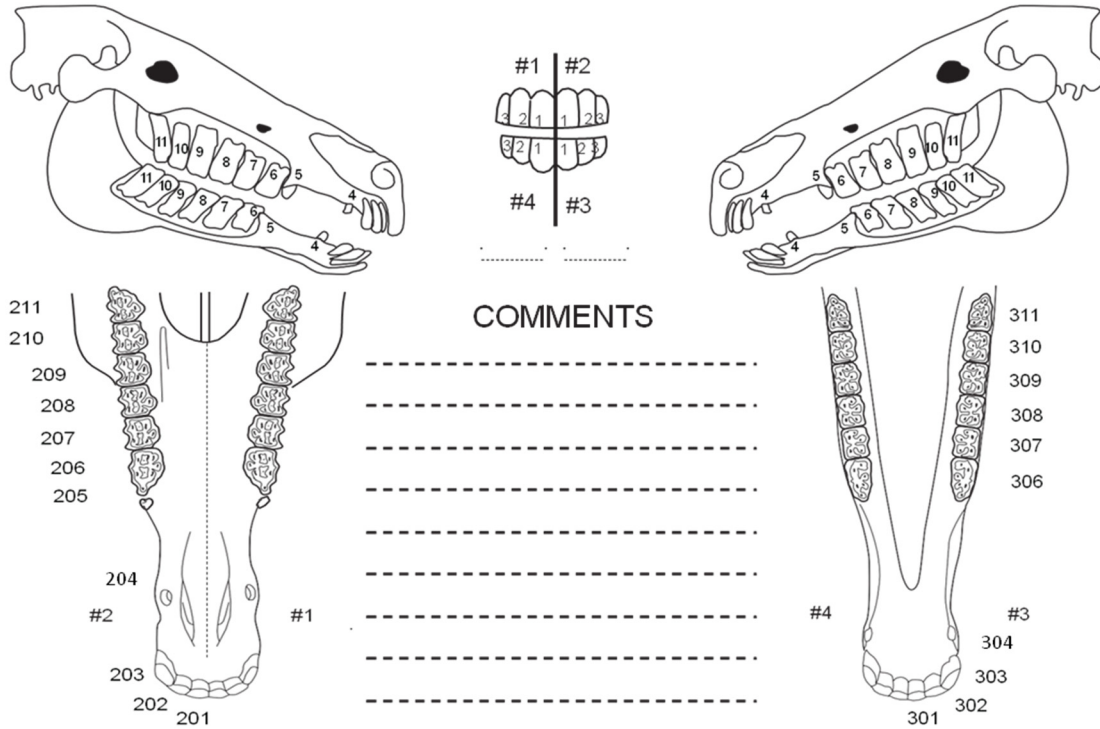
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EQUINE DENTAL CHART

Date	Name	Age	Sex	Breed
Color	Use	Last examination		
Owner		History		
Address			Phone	



INCISORS	CANINES	WOLF TEETH	PREMOLARS/ MOLARS	
<input type="checkbox"/> Underbite/Underjet <input type="checkbox"/> Overbite/Overjet <input type="checkbox"/> Ventral curvature <input type="checkbox"/> Dorsal curvature <input type="checkbox"/> Slant curvature <input type="checkbox"/> Irregular curvature <input type="checkbox"/> Fracture <input type="checkbox"/> Supernumerary <input type="checkbox"/> Missing <input type="checkbox"/> Calculus <input type="checkbox"/> Periodontitis <input type="checkbox"/> Other	<input type="checkbox"/> Normal <input type="checkbox"/> Missing <input type="checkbox"/> Shortened <input type="checkbox"/> Rounded <input type="checkbox"/> Calculus <input type="checkbox"/> Fracture <input type="checkbox"/> Blind <input type="checkbox"/> Periodontitis <input type="checkbox"/> Other	<input type="checkbox"/> Present <input type="checkbox"/> Missing <input type="checkbox"/> Blind <input type="checkbox"/> Extract <input type="checkbox"/> Other	<input type="checkbox"/> Normal <input type="checkbox"/> Sharp points <input type="checkbox"/> Wave <input type="checkbox"/> Stepped <input type="checkbox"/> Shear <input type="checkbox"/> Hooks <input type="checkbox"/> ETR <input type="checkbox"/> Erosion / Ulcers <input type="checkbox"/> Periodontitis	<input type="checkbox"/> Cap <input type="checkbox"/> Cap fragments <input type="checkbox"/> Angled <input type="checkbox"/> Mobile <input type="checkbox"/> Protuberant <input type="checkbox"/> Supernumerary <input type="checkbox"/> Missing <input type="checkbox"/> Fracture <input type="checkbox"/> Other Stage 1 2 3 4

Sedation:

Re-examination recommended:

Figure S1. An equine dental chart used during the detailed dental examination.

Table S1. The definitions of selected disorder (malocclusions and dental diseases) of the incisor teeth.

Name	Definition
<i>Malocclusions</i>	
underbite	an occlusal aspects of the mandibular incisors lie rostral to the occlusal aspects of the maxillary incisors, with contact between teeth [45];
overbite	an occlusal aspects of the maxillary incisors lie rostral to the occlusal aspects of the mandibular incisors, with contact between teeth [45]. Protrusion of the maxillary incisor teeth rostrally and horizontally beyond the limits of the mandibular incisor teeth from centric occlusion [42];
curvature	an irregularities of the occlusal surface of the incisors: the occlusal line formed by the maxillary and mandibular incisors should lie in a horizontal plane, parallel to the ground. All other configurations, i.e. ventral, dorsal, diagonal, and irregular curvature are considered as abnormal [43,44];
diastema	a diastema is defined as a detectable abnormal interdental (interproximal) space between 2 adjacent teeth [57] with or without food impaction and may be the cause of painful dental disease in horses [57];
oligodontia	a reduced number of teeth. Can be developmental, as a result of an inappropriate differentiation of dental lamina and tooth germ, or may occur during the animal's lifetime, due to traumatic causes, age, or secondary to other dental disorders [45];
polydontia	a presence of teeth in excess of the normal dental formula, as a result of an inappropriate differentiation of dental germinal tissue during gestational development, with external trauma also acting as an initiating factor, when teeth germs are affected [45];
RDT	a tooth remaining in the oral cavity longer than physiologically appropriate. After this period, the milk tooth (incisor, premolar) remaining in the oral cavity is considered to be persistent [57];
EOTRH	a teeth-damaging and pain-causing, mainly affecting a horse's incisors and less frequently their canines, premolars, and molars. The etiopathogenesis of the illness has not been fully recognized [53];
hooks	a protuberant crown longer than it is wide [50].
<i>Dental diseases</i>	
supernumerary	a presence of an extra incisor tooth in excess of the normal number for horses [46];
loose teeth	a very pronounced, excessive tooth mobility, most often associated with the presence of diastema, advanced periodontitis, and accumulation of food contents [46,50];
fractures	a typically caused by traumatic injuries, affecting some or all of the tooth fragments (clinical crown, reserve crown, root) [57];
caries	a destruction of infundibular calcified dental tissues, due to demineralization and bacterial infection (erosions and dark discolouration) of its cementum with or without extension of caries to the enamel and dentine [57];
calculus	an accumulation of tartar; occurs as a result of the mineralization of the bacterial plaque flora on the teeth [50].

RDT - retained deciduous teeth; EOTRH - Equine Odontoclastic Tooth Resorption and Hypercementosis syndrome.

Table S2. The definitions of selected disorder (malocclusion and dental diseases) of the canine teeth.

Name	Definition
<i>Malocclusion</i>	
non-erupted canines	a tooth which has not protruded above the gingival surface and the horse is 6 years old [57].
<i>Dental diseases</i>	
fractures	a typically caused by traumatic injuries, affecting some or all of the tooth fragments (clinical crown, reserve crown, root) [57];
calculus	an accumulation of tartar; occurs as a result of the mineralization of the bacterial plaque flora on the teeth [50].

Table S3. The definitions of selected disorder (malocclusion and dental disease) of the wolf teeth.

Name	Definition
<i>Malocclusion</i>	
blind wolf tooth	a hidden wolf tooth, first premolar referred to as a brachydont tooth and considered vestigial, as it failed to molarize during evolution [46].
<i>Dental disease</i>	
fractures	a typically caused by traumatic injuries, affecting some or all of the tooth fragments (clinical crown, reserve crown, root) [57].

Table S4. The definitions of selected disorder (malocclusions and dental diseases) of the cheek (premolar and molar) teeth.

Name	Definition
<i>Malocclusions</i>	
sharp enamel points	a presence of protruding enamel points on the buccal edges of maxillary teeth and lingual edges of the mandibular teeth, which develop as a result of anisognathism and the equid's masticatory action [57];
overgrow tooth	a tooth that has not been exposed to normal wear, most commonly secondary to loss or excessive wear of the opposing tooth; involves individual teeth [55,57];
wave mouth	an unequal or corrugated appearance of the occlusal surface in a rostrocaudal direction or more than one tooth with excess crown in a single arcade [46,50];
step mouth	a supra-eruption, classically rectangular shape of individual teeth, usually opposite to a missing teeth [14];
displaced teeth	a variation of the physiological position inside the teeth arch. Tooth displaced in a buccal (premolars and molars) or distal (incisors) direction [22,46];
diastema	a diastema is defined as a detectable abnormal interdental (interproximal) space between 2 adjacent teeth [57] with or without food impaction and may be the cause of painful dental disease in horses [57];
oligodontia	a reduced number of teeth. Can be developmental, as a result of an inappropriate differentiation of dental lamina and tooth germ, or may occur during the animal's lifetime, due to traumatic causes, age, or secondary to other dental disorders [45];
polydontia	a presence of teeth in excess of the normal dental formula, as a result of an inappropriate differentiation of dental germinal tissue during gestational development, with external trauma also acting as an initiating factor, when teeth germs are affected [45];
RDT	a tooth remaining in the oral cavity longer than physiologically appropriate. After this period, the milk tooth (incisor, premolar) remaining in the oral cavity is considered to be persistent [55,57];
ETR	a transverse edges on the rubbing surface of the tooth which are at least 3 mm in height [50]. ETR may lead to more severe dental diseases such as diastema and periodontal disease because of the ridges forcing feed interproximally in

hooks	the opposing arcade during mastication [55]; a protuberant crown longer than it is wide [50]; it is most commonly found on teeth 06 or 11 and is often associated with a mismatch between the length of the occlusal surfaces of the maxilla and mandible (undershot or overshot bite) [46].
<i>Dental diseases</i>	
loose teeth	a very pronounced, excessive tooth mobility, most often associated with the presence of diastema, advanced periodontitis, and accumulation of food contents [46,50];
fractures	a typically caused by traumatic injuries, affecting some or all of the tooth fragments (clinical crown, reserve crown, root) [57];
caries	a destruction of infundibular calcified dental tissues, due to demineralization and bacterial infection (erosions and dark discolouration) of its cementum with or without extension of caries to the enamel and dentine [57];
calculus	an accumulation of tartar; occurs as a result of the mineralization of the bacterial plaque flora on the teeth [50].
RDT - retained deciduous teeth; ETR - excessive transverse ridges.	