

CANADIAN INTERNATIONAL ASSOCIATION OF EQUINE DENTISTRY

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Standard of Practice and related definitions

The equine dental practitioner must have a solid understanding of the equine masticatory system including but not limited to; hypsodont anatomy, physiology, biomechanics, and pathology combined with a sound knowledge of instrumentation and also possess the practical skills required.

The goal of equilibration is to distribute the pressure and wear of mastication onto as many viable teeth as possible in order to maximize the longevity and integrity of the equine dentition while maintaining or correcting functional balance and occlusion of the arcades.

This is achieved through the reduction of ONLY the protuberant portion of the tooth or teeth relieving pressure/wear from the opposing compromised dentition. This will ensure an approximately even rate of wear on dentition thus extending its viability and longevity.

During the process of equilibration, it is assumed that sharp points that may abrade soft tissue will be removed in a manner that results in minimum loss of the functional occlusal surface of the teeth.

The practitioner must demonstrate that they understand all the anatomical landmarks and variations that must be considered for each animal. This will be documented through charting of the equine following a thorough oral exam.

Abnormal pathology must be well documented.

Definitions and or explanations of terms and acronyms used in this document

AG- Anatomical Guideline

- The secondary dentin should maintain some brown coloration and not be taken so far that white dentine is visible. Exposure of any pink material/coloration reflecting vital tooth/pulp is termed an iatrogenic complication and should be treated appropriately.
- All corrections made to the teeth are to be done within the AG (Anatomical Guideline) of the teeth.

Occlusion

- For the purpose of this document, “occlusion” is when teeth are in contact.

LETS- Lateral Excursion to Strike, measured in millimeters (mm)

- To assess LETS the mandible is placed in a medial/central position and specific points immediately opposed to each other should be noted on the upper and lower incisor arcades, the mandible is then moved laterally from this position to the point that the cheek teeth come into occlusion in opposing arcades (at this point the incisors should still be in occlusion) The distance is now measured between medial/central position and first point of cheek tooth occlusion.
- This is the measurement of LETS, related to those quadrants, i.e., 100/400 (right) and 200/300 (left).

- Ideally, these measurements will be similar on both left and right sides in an equine with regular dentition.

Full lateral excursion

- For the purposes of this document, a full lateral excursion is when the most lateral point of a maxillary cheek teeth arcade (generally the buccal aspect of the upper #9's) is vertical to the lateral edge of the opposing mandibular arcade.

In-occlusion Excursion measured in millimeters (mm)

- The distance from LETS to a full lateral excursion.

TMJ

- Temporomandibular Joint

Primary Strike (incisors)

- Is a single tooth or area of the tooth causing separation of the remaining incisors for the duration of LETS?

Secondary Strike (incisors)

- Is a single tooth or area of the tooth causing separation of the incisor arcades for a portion of LETS?

Primary Strike (cheek teeth)

- Is a single tooth or area of the tooth causing the separation of cheek teeth arcades for more than half of the in-occlusion excursion?

Secondary Strike (cheek teeth)

- Is a single tooth or area of the tooth causing the separation of cheek teeth arcades for less than half of the in-occlusion excursion?

Incisors

- The most anterior/rostral arcades of teeth in a normal equine mouth.

Canines

- The teeth in the interdental space, between the incisors and cheek teeth; (most prevalent in male equines)

Wolf Teeth

- A small vestigial tooth, the first premolar.

Cheek Teeth

- The most posterior/caudal arcades of teeth in a normal equine mouth; the grinding teeth.
- Cheek teeth arcades included premolars and molars.

Pre-Assessment of the Equine

An overall assessment including, but not limited to, the masticatory system should be conducted prior to any treatment to ascertain the equine's suitability for continuing with treatment. If there are any limiting factors observed they are to be considered in relation to the overall welfare and safety of the equine.

Any abnormal pathology such as developmental defects, EOTRH, necrotic pulp horns, caries of the infundibulum, fractures, periodontal disease, peripheral cemental caries, etc. must be documented on the dental chart and referred if necessary for further assessment and treatment by an appropriate practitioner.

For the purpose of ensuring consistent assessments:

- The sedated equine
 - Must have an oral cavity free of all and any material/food/bolus, etc.
 - Should be positioned in a balanced stance
 - Should have their head supported appropriately with support being placed under the mandible ventral to the lower 10s/11s
 - Should be supported to a height where the incisors are at the approximate height of the wither.
- The practitioner
 - Should use an appropriate light source that enables them to visualize the oral cavity easily
 - Should be positioned in front of the equine. Their eyes should be at a level/same plane as the incisor/TMJ plane.
- The process (in normal circumstances assessing a normal masticatory system)
 - Using an appropriate light source the practitioner should assess and determine the neutral point of the mandible, i.e., TMJ and cheek teeth are in a balanced position
 - Retracting the cheek the practitioner should make an initial observation of the function of the cheek teeth arcades
 - Measure and note LETS
 - Fit speculum, flush mouth, and assess oral cavity and dentition noting abnormal pathology
 - Make note of malocclusions and formulate a plan for addressing them.

Proper technique and instrumentation must be used to minimize the generation of heat or create unnecessary soft tissue trauma. This means using a precise approach to reducing protuberances to obtain desired corrections. (See note on Thermal Damage later in the document).

Instruments must be clean, sharp, and in good/safe working condition.

When reducing larger protuberances, the practitioner is to continually assess the color of the secondary dentine of all pulp horns and make sure that some brown coloration is maintained throughout the procedure to reduce the risk of exposing vital tooth tissue. This includes the use of sharp, clean instrumentation and appropriate cooling of the dental tissues and instruments while working within the AG of the individual tooth/teeth. (See note on Thermal Damage later in the document).

The equine should be given regular breaks with a complete closing of the speculum at about 5-minute intervals. The mouth should remain closed for at least 10-15 seconds and be rinsed during breaks.

Incisors – the incisors should be evaluated prior to placement of the speculum, this assessment will include recording pre-dental LETS.

- LETS will be reassessed at the completion of the dental treatment to assist in the assessment of overall dental equilibration. No more than ½ tooth LETS is permitted.
- When dental work is completed, the incisors should not be placing lateral pressure on the mandible.
- The incisors should be in occlusion on as many viable teeth as possible.
- The incisor table angles should be close to aligning with the TMJ.
- It is understood that portions of a tooth or teeth that have been excessively worn may be left out of occlusion following the correction of the protuberant opposing tooth/teeth. However, in cases where the incisors are well aligned, the pressure should be distributed onto as many viable teeth as possible.
- The practitioner must use the AG of the individual tooth to determine how much correction of the protuberant tooth/teeth can be achieved during a single treatment.
- Primary strikes are not acceptable and should be corrected.
- Secondary strikes are not ideal and should be reassessed.
- The incisors should feel free of mechanical restrictions during a lateral excursion.
- Incisor table angles should not be so steep that rostral movement of the mandible is restricted, also complete flattening of the incisor table angle is not acceptable.
- Reducing the protuberant tooth/teeth so much that the secondary dentin remaining is white is an unacceptable practice. Light brown secondary dentin should be used as the gauge/limiting factor indicating when to stop correction. If a diagonal bite is present, it is expected that the practitioner will realign the incisors as much as possible WITHOUT compromising vital tooth tissue.

Canines – the canines should be smooth and rounded but not overly reduced.

- The AG must be followed.
- Pulp exposure or exposure of vital tooth tissue is not acceptable.
- Any tartar present should be removed. The presence of gingivitis should be charted accordingly.

- Unerupted canines should be well-documented.

Rostral profiling – the rostral aspect of the #6 teeth (second premolars) should be smoothed while removing minimal occlusal surface.

- The rostral margins should be uniform and smooth. Proper technique must be used so that no iatrogenic soft tissue damage occurs within the oral cavity.

Cheek Teeth —the buccal and palatal/lingual margins should be radiused/beveled in a manner that results in minimum loss of functional occlusal surface and width.

- The tooth opposing a protuberant tooth should maintain a naturally rough occlusal surface.
- Only the protuberant portion of a tooth or teeth may be reduced, not the compromised opposing area.
- Excessive transverse ridging and transitions may be blended in the case when it is seen to be causing restriction to lateral excursion and or rostral/caudal movement. In general, correction to and or smoothing of the entire arcade is not acceptable.
- No tooth should be reduced so much that only white secondary dentine is visible. Over-reduction is not acceptable.
- The occlusal surfaces should be balanced to the extent possible. Only protuberant areas should be corrected.
- During equilibration, the practitioner must not eliminate the natural Curvature of Spee when present in the cheek teeth arcades.
- During the lateral excursion, the occluding quadrants (100/400 and 200/300) should have simultaneous occlusion of as many viable cheek teeth as possible.
- The lateral excursion should be free and unrestricted.
- Primary strikes are not acceptable and should be corrected.
- Secondary strikes are not ideal and should be re-assessed.
- Compromised portions of teeth that were excessively worn from protuberances may remain out of occlusion during the lateral excursion.
- Transitions between protuberant and compromised teeth should be blended to allow for rostral/caudal movement of the mandible during mastication.
- Elimination of functional natural occlusal surface that is not a protuberance by excessive reduction of cheek teeth arcades, followed by incisor reductions to compensate is unacceptable.

The cheek teeth should have enough occlusion that separation of the incisors occurs during the lateral excursion – the only exception would be cases where extremely poor cheek teeth occlusion is present prior to equilibration as seen in some geriatrics and equines with severely compromised dentition. If this happens, the practitioner must carefully document the lack of cheek tooth occlusion and distance of

LET'S both left and right PRIOR to equilibration and use that as a limiting factor for corrections to be performed in an effort to rehabilitate the function of the cheek teeth.

Thermal Damage

The friction of grinding protuberant areas of teeth results in the production of heat that radiates throughout the dental & surrounding tissues. If this heat is not mitigated the vital pulp tissues and nerves within the tooth will likely coagulate and are irreversibly damaged in this section of the tooth. This may cause pulp necrosis due to ischemia and can result in abscessation of the tooth. Or the compromised pulp may become physiologically "dead" tissue and the production of secondary and or tertiary dentine within the pulp chamber will cease. As the tooth continues to wear over time the compromised pulp chamber/chambers will eventually be exposed to the oral cavity and be seen as an opening in the occlusal surface/developmental defect in the secondary dentin. This developmental defect of secondary dentin will allow bacteria & feed to become impacted into the compromised pulp chamber/chambers and surrounding tissues and may result in a fracture and or tooth root abscess. Also, despite being in a moist environment, devitalized teeth dry out over time & are more prone to fracture. The use of power tools without concurrent or intermittent cooling may result in iatrogenic thermal damage. It is widely accepted that developmental defects of the teeth in general and specifically the secondary dentin occur naturally for various possible reasons and these should be documented before any treatment occurs. Furthermore, it is recognized that teeth and the vital pulp have reparative properties and the ability to produce secondary and tertiary dentine within the pulp chamber. However, trauma to vital tooth tissue directly related to dental treatment is well documented and all practitioners need to consider these limiting factors in their treatment plan to reduce risk.