Dental Anatomy

A. Terminology:
Over the past few years there have been several acronyms introduced into the equine dentistry industry. These terms should help you describe and understand equine dental malady.

1. **Anterior-posterior movement of the mandible (APM):**

When the horse raises and lowers the head there is a small amount of anterior-posterior (forward and backward) movement of the mandible. This movement is extremely important to the horse. As the horse lowers the head the forward movement of the mandible allows for alignment of the front teeth enabling the horse to incise the grass correctly and efficiently. This movement also frees the temporomandibular joint (TMJ) so the individual can perform any necessary activities without pain. Nipping, chewing and swallowing of grass and roughage is done more efficiently when the head is in a lower position.

2. **Accentuated transverse ridging (ATR):**

ATR is commonly called washboard tables or stepped tables. ATR is common in stalled horses or horses fed processed feeds. It is less common on horses foraging on dry grass or rough tucker.

   a. The gap between the upper and the lower premolars and molars increases as the incisors lengthen form lack of wear.
   b. The harder part of the premolar and molar tooth table surface is accentuated from lack of wear or abrasion.
   c. It is the excessive abrasion of the cementum in the softer areas of the tooth and lack of abrasion to the enamel in the harder areas of the tooth which creates the onset of accentuated transverse ridging. The cementum is worn from food abrasion laterally near the anterior and posterior margins in the mesial area of each tooth.

3. **Axial flow of food through the tables of the premolars and molars (AF):**

Horses chew or grind their food on one side of the dental batteries at a time. The free flow of food through the battery makes for greater chewing comfort and more efficient mastication. As the food bolus flows through the battery it spins around an imaginary axis (somewhat like twisting a rope) in a direction opposite in that of the mandible.
Near the middle of the arcade the bolus is injected with saliva, upon which it starts to break up into smaller particles. By the time the bolus reaches the rear of the arcade the particles are very small and properly prepared for further dijestion.

Mandible chewing motion is
  1. Down
  2. Out
  3. Up
  4. In

4. Bio:

A combining form meaning “life”

5. Biomechanics:

The application of mechanical laws to living structures. The study of the action of external and internal forces on the living body, especially on the skeletal system.

6. Caudal:

At or near the tail. In equine dentistry we use it to describe the posterior region (back) of the mouth or batteries of the cheeks.

7. Clinical crown:

1. The part of the tooth above the gum line.
2. The part of the tooth which is filed, floated or abraded during equilibration and general prophylaxis of the tooth or dental batteries.

8. Commissure:

A site of union of corresponding parts, as the angle of the lips or eyelids.

9. Condoyle:

A rounded projection of bone, usually for articulation with another bone.

10. Coronoid process:
Apart of the mandible that projects into the temporal fossa and provides attachment for temporal muscle.

11. **Curve of Spee:**

The gentle curve of the mandible and dental batteries from their anterior portion through their posterior position. The curve of Spee is generally greater in the smaller headed horse.

12. **Dentary bone:**

In mammals the bone which makes up the jaw.

13. **Diastema:**

Often called the interdental space, the diastema is the area between the caudal margins of the incisors and the anterior margins of the first cheek teeth. The length and height of the diastema can be important when bitting.

14. **Distal:**

Farther than any point of reference.

15. **Dysplasia:**

Subluxation with open-mouth jaw locking and mastication problems related to and caused by developmental abnormalities in the condyle of the mandibular fossa of the temporal bone. Also called temporal mandibular joint (TMJ) syndrome.

16. **Eqidae:**

The family of mammals that have a single functional digit. The second and third digits persist as splint bones. This family includes horses, donkeys and zebras. This family includes mules which are a sterile offspring of mating between a male donkey and a mare.

17. **Equilibrate:**

To balance equally.
18. **Equilibrium:**

A state of rest or balance due to the equal action of opposing forces. Equality of effect.

19. **Frenulum:**

A fold of membrane that checks or restrains the motion of a part, as the fold which anchors the underside of the tongue.

20. **Floating:**

The general maintenance of horses teeth through balancing and equilibrating, by cutting, filing and burring, thus reducing protuberant blocking and restricting teeth to give full lateral excursion of the mandible, a more perfect occlusion of the cheek teeth and incisors, while maintaining incisor and molar table angles and restoring anterior-posterior movement of the mandible thus relieving pain, increasing tooth life, enhancing performance and improving overall balance and condition.

21. **Fossa:**

A pit, cavity or depression in a bone.

22. **Gingiva:**

Gum.

23. **Gingival:**

Of or pertaining to the gums.

24. **Gingivitis:**

Inflammation of the gums.

25. **Glenoid:**

A shallow or slightly cupped area of bone as is present in the skull to form the upper surface of the temporomandibular joint.

26. **Inferior:**
Basic meaning; below. In dentistry, the mandible is the inferior jaw.

27. Larynx:

A muscular and cartilaginous structure located at the upper part of the trachea and supported by the hyoid bones. It is lined with mucous membrane and houses vocal cords.

28. Lateral excursion:

Outward movement of the mandible (dentary bone). Any teeth blocking lateral excursion in the horse are problem teeth.

29. Masticate:

To reduce to a pulp by crushing. The act of chewing and preparing food for digestion by grinding or crushing.

30. Occlusion:

In dentistry, the act of fitting together of the teeth of the jaw.

31. Palatal drape:

A long extension of the soft palate in horses which aids in isolation of the food stream from the air stream.

32. Paradigm:

An example serving as a model or pattern. A set of ideas which allow accurate predictions to be made, and within which any given science proceeds.

33. Periodontal disease:

Any of various mixed bacterial infections that affect the soft tissues and bones supporting the teeth.

34. Pharynx:

The tube or cavity, with its surrounding membrane and muscles, that connects the mouth and the nasal passages with the esophagus and larynx.
35. **Prophylaxis:**

   a. The prevention of a specific disease, as by studying the biological behavior, transmission, etc., of its causative agent and applying a series of measures against it.
   b. Prophylactic treatment, as the filing or cleaning of the teeth by an equine dentist or equine dental practitioner.
   c. The incisors.

36. **Protuberant:**

   Something bulging out or higher than the surrounding surface. In equine dentistry it is usually the high area of the erupting hypsodont tooth.

37. **Reserve crown:**

   In hypsodont teeth, that which is below the gum line yet to erupt. The height of the reserve crown determines the usable life of the tooth. In horses all teeth but the canines and some of their wolf teeth are hypsodont.

38. **Root:**

   The part of the hypsodont tooth where the reserve crown ends. This is the portion where the enamel folds (lophs) end and the surface of the tooth is formed only of dentine and cementum. In old horses (approximately twenty-five years) it appears to be a cupped or slick surface on the tooth.

39. **Sagittal:**

   A body plane corresponding with or parallel to the vertebral column. The median sagittal plane subdivides the body into right and left halves.

40. **Simultaneous centric occlusion;** commonly called *(SCO)* by equine dentists.
The meeting of the mandibular cheek teeth and incisors with maxillary cheek teeth and incisors when the mandible is closed and centered mouth.

41. **Subluxation:**

A partial dislocation, as of a joint.

42. Superior:

Basic meaning; above. In equine dentistry, the maxilla and premaxilla bones form the superior jaw.

43. Symphysis:

   a. The growing together, or the fixed or nearly fixed union, of bones, as that of the two halves of the lower jaw.
   b. A line of junction.

44. Temporomandibular joint (TMJ):

   a. Pertaining to the temporal bone and mandible.
   b. The area of the skull where the condyle of the mandible meets the glenoid fossa of the maxilla.

45. Three point balance:

The sharing of pressure by three things. In horses, these are:

   a. The TMJ, temporomandibular joint.
   b. The cheek teeth.
   c. The incisors.