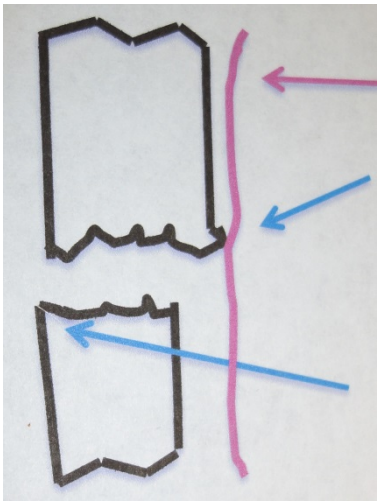
Performance Dentistry and Bit Seats in horses:

By Dr Rach – Moore Equine

Thumb Rules: As a rule of thumb, performance horses under 8-10 years of age that are eating grain or pellets will develop sharp points on the edges of cheek teeth within 5-8 months of floating. Most performance horses of this age need a dental procedure every 5-9 months. If horses are eating a more natural diet such as grass or hay, then 9-12 months will usually suffice. Horses in their teens to mid-teens do not tend to develop sharp points quite as quickly and many of them can go up to a year before sharp enamel points begin to produce significant erosions and cuts on the insides of the cheek and tongue.

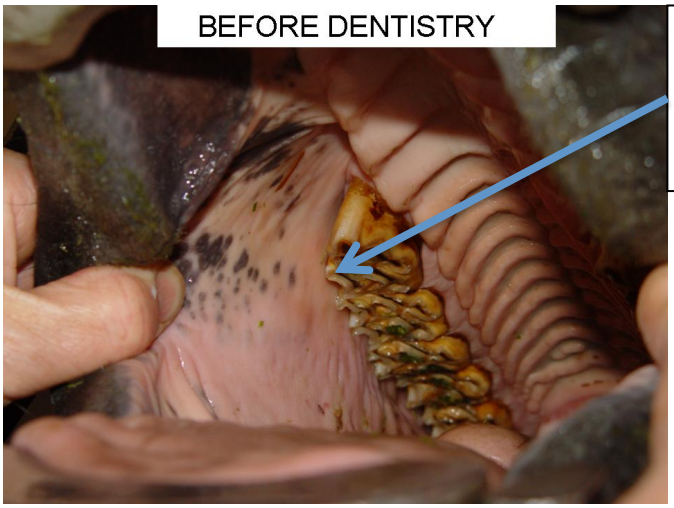
Formation of sharp enamel points: The development of sharp points along the edge of the rows of cheek teeth is a normal result of the natural eruption and wear of equine teeth, and normal mastication dynamics. During the chewing cycle, opposing occlusal surfaces repeatedly grind against each other at a rate of approximately 11 strokes every 10 seconds. Sharp enamel points are the most common cause of altered chewing (pain avoidance). After approximately 20 million chews per year, altered wear patterns appear. Over time, this action causes the gradual wearing down of the occlusal surface of teeth at a rate of 1 to 3 mm (1/8 inch) annually. Normal mastication, however, does not necessarily wear the entire tooth surface evenly, with greater wear occurring in the center of the occlusal surface than at the edges. This results in significantly less wear taking place on the outside (cheek side) edges of the upper cheek teeth and the inside edges of the lower teeth. Due to the lack of wear, sharp points on these edges accumulate and increase in height at roughly the same rate as normal occlusal wear: between 1 to 3mm annually.



Red line represents a section of the horse's left cheek pressing against the upper molar teeth

Sharp enamel point on the cheek side of the upper molar teeth

Sharp enamel point on the tongue side of the lower molar teeth



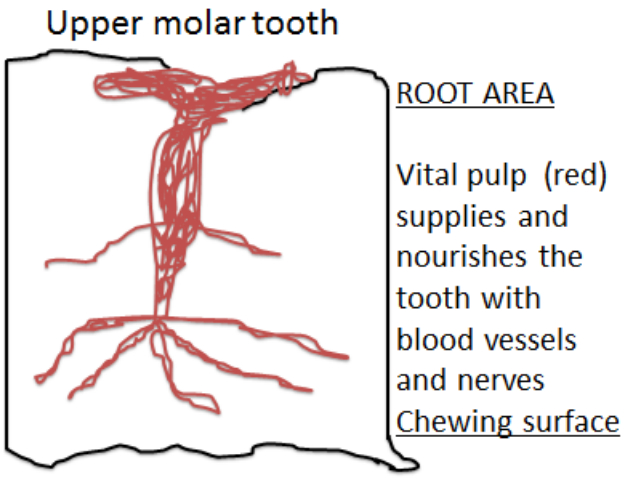
Sharp enamel points which form on the edge of all the upper molar teeth and cause cuts in the cheek which result in discomfort to the horse.

What is performance floating?

"Performance floating" is a term used to describe smoothing the edges of a horse's teeth to maximize performance of that horse – both in mastication and when ridden. The purpose of the term is to help differentiate from the practice of the simple removal of sharp points (simple floating of teeth). Removal of sharp enamel points is a routine procedure. It involves floating the dominant edges of the entire row of upper and lower molar teeth (cheek teeth) in order to remove prominent or sharp points from these areas.

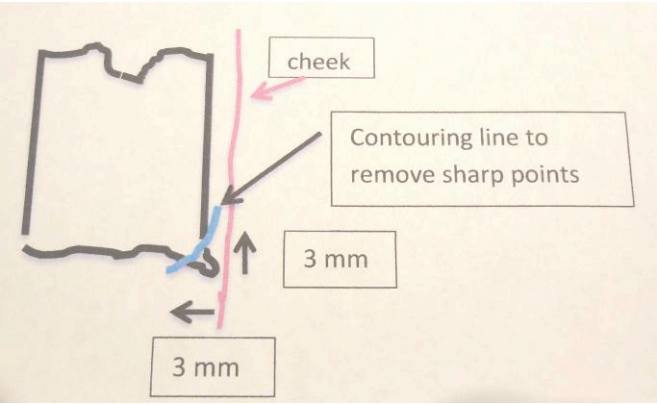
Performance dentistry is floating plus the shaping of the front cheek teeth to prevent pain on adjacent soft tissue. Performance dentistry also involves the evaluation of the function, symmetry and balance of the molars and incisors with corrections to abnormal dental wear as indicated. However, floating can be over-done. Too much removal of tooth material can result in harm to the horse's dentition and cause oral pain. **Please note:** The chewing surface of teeth is rough and irregular, so that the horse can grind and chop food material. This grinding process is necessary for digestion.

As shown in the following diagram, all of the teeth have a pulp cavity with branch-like extensions.The pulp originates at the tooth root and nourishes the entire tooth. The main pulp chamber sends out 5 to 7 branches (pulp horns) towards the chewing surface of the tooth. Veins, arteries, and nerves are contained in the vital pulp

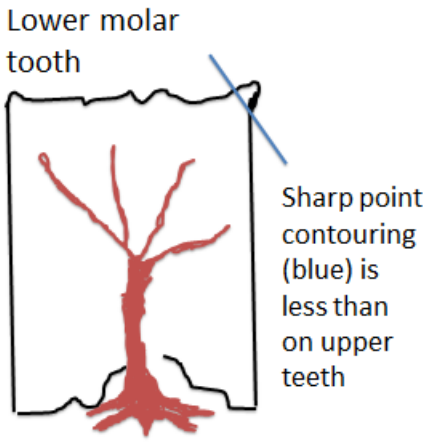


Over-floating: The chewing surface of teeth are normally rough just like the chewing surface of human teeth. If the surface is floated too smooth the horse cannot grind and chop food properly. Over-floating is defined as the excessive removal of normal tooth material from the occlusal surface and from the over- contouring of sharp tooth edges. With over-floating, there is a strong potential for direct pulp exposure by inadvertently opening a pulp horn or pulp chamber in the tooth, or indirect pulp exposure when the dentinal tubules are opened close to sensitive pulp. Bacteria may enter the pulp via the opened tubules, which may lead to the development of inflammation, infection, and eventual death of the tooth.

Sharp point reduction and smoothing: The general rule for the amount of rounding of the outside of the upper cheek teeth is 3 mm round. This degree of contouring is similar to the radius of a pencil eraser. The contour should be placed so that minimal tooth material is removed from the occlusal surface. With regards to the upper cheek teeth a 3 mm round contouring of the enamel edge of the tooth means that the veterinarian would estimate a contouring distance of 3 mm extending from the cheek side edge of the tooth extending towards the chewing surface.

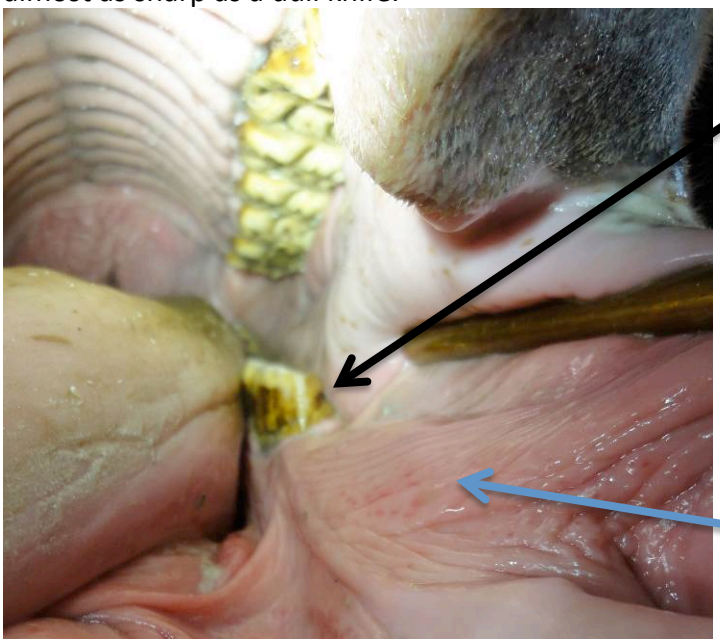


The lower cheek teeth tend to get sharp points on the inside edges, against the tongue. These sharp points require even less reduction and smoothing than is needed on the upper teeth.



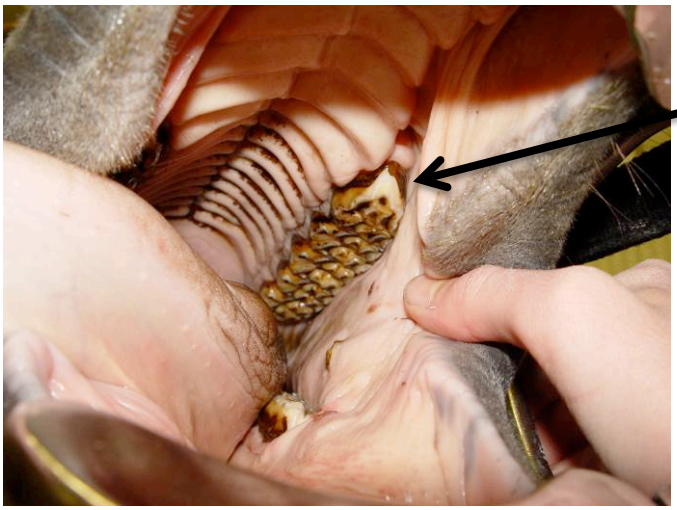
Bit Seats:

As shown, the front edge of first upper and lower cheek teeth form an apex, some almost as sharp as a dull knife.



Black arrow pointing to the sharp, knife-edge like apex of the front lower cheek tooth which can cut the cheek if the bit of the bridle pushes the cheek against the tooth.

Mandibular frenulum: The fold of cheek tissue that can get pinched up against the apex of the first lower cheek tooth.



Mild Bit Seat:

The upper front cheek tooth is gently smoothed to prevent it from cutting into the cheek when the bridle and bit push the cheek against the front teeth. This procedure is called a bit seat or contouring the tooth.

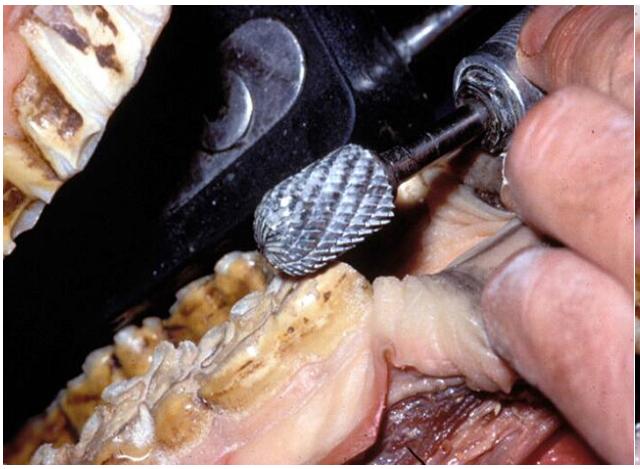


Figure A **Figure B**

Excessive Bit Seat and potential harm:

Figure **A** demonstrates how aggressive tooth reduction, while doing a "bit seat" can be harmful. In figure **B** the front upper and lower front cheek teeth have been floated excessively, to the point where the front ½ of the teeth are no longer touching in occlusion. This type of a bit seat can expose the vital pulp inside the teeth and cause pain and eventual infection and death to the affected teeth.