

Dentistry in Hypselodont Small Animals: Guinea-pigs, Degus and Chinchillas

Why do we talk about dentistry so much in small mammals?

Dental disease can have far-reaching effects on the overall health of small mammals. Toothache is intensely painful and, in these species can cause ileus, a life-threatening disease, as a consequence. Eye sight and the health of both the eyes and the nose can be affected, causing pain and stress. Stress itself may either cause dental disease or result from it, and again can cause ileus, allow infections to take hold, and may reduce the lifespan of your pet.

There is a wide range of dental disease within the small mammal populace. Broadly speaking, these can be divided into congenital (from birth) and acquired diseases (with the latter forming the majority of problems), and into incisor (the front teeth) and molar (the cheek teeth) problems. A brief overview of some of these problems can be found below.

What causes dental disease?

It is important to realize that these species are prey animals, which means that they are naturally at the bottom of the food chain and are hunted by a variety of species. Animals will follow their instincts to a large degree, so even a domestic dog or cat that has been around small mammals for a long time may suddenly try to hunt them – this is a normal behaviour and it is unfair to expect these predatory species to relinquish all instinct purely through training. Similarly, small mammals do not wish to be friends with predatory species! Our small pets may also find loud noises or strong smells overwhelming, or may become too hot or too cold depending on the environment they are kept in. All of these things cause mental and physiological stress.

Stress reduces the strength of the periodontal ligaments, which hold the teeth in their sockets. The quality of the ligaments and gums is also affected, with injury occurring more readily in stressed individuals. Chinchillas are often immunosuppressed as a result of stress, and the lack of immunity can be profound. They are therefore more likely to develop severe dental disease as a result of this stress.

Perhaps the largest factor in dental disease alongside stress is the quality of the diet. Many of the smaller mammals, particularly the hind-gut fermenters such as rabbits, guinea-pigs, degus and chinchillas, have continuously erupting teeth. It is essential that the teeth continue to be worn down by the rough fibres in the diet so that the natural wearing (occlusal) surfaces of the teeth continue to align correctly. In the wild, the natural diet of these species ensures that the teeth are always worn, but in captivity or as domestic pets, it can be more challenging to provide the correct diet and environment to best promote dental health.

In most cases, the diet should be almost exclusively comprised of grasses (or hay) and fibrous weeds. These animals may roam very large distances to find food, so exercise is also essential! The best way to mimic the natural world in our homes is to provide as large a space as possible for your small pet to roam in, and to hide food in a variety of places to encourage natural foraging behaviours. Gnawing is an essential part of the daily routine of these animals – especially for guinea-pigs and chinchillas whose teeth grow during periods of rest, so practical solutions must be found to provide opportunities in the home. Never allow your pet to gnaw on bars or metal meshwork because this can cause dental fractures that are not apparent. Never allow your pet to ingest wallpaper or furniture, which could be toxic or cause obstruction. Never allow your pet to gnaw on any wires that could result in electric shock. Ideally, gnawing materials should include hay provided *ad libitum*, and natural woods such as branches from fruit trees. Treats may be hidden in wooden tubes to encourage gnawing, or hay may be tied up in knots to provide a rougher material for your pet to chew through.

Guinea-pigs have an absolute requirement for vitamin C, and if this is not met, the teeth and their ligaments will become weak, allowing the teeth to tilt more and predisposing the animal to fractures and infections of the teeth. This can cause the teeth to bridge over the tongue and trap it (see later). A lack of vitamins may also result in bleeding of the central cavity of the tooth, causing considerable pain and stress, further weakening the tooth.

Another factor, albeit a small one, to consider is the quality of our drinking water. Water piped to our homes is treated with fluoride to increase our own dental health by giving us stronger teeth. Whilst this is unquestionably a good thing, it does also affect our pets. By increasing the strength of the enamel in our pets, we make it harder for them to wear down their teeth. This effect is minor so is not the first consideration in any dental case, but does play a part in dental health. However, fluoride is readily degraded simply by leaving water to stand for 24 hours, so leaving a bowl of water for this time before offering it to our pets may help to combat this effect. It will also taste better to them!

Clinical signs (symptoms)

The teeth of chinchillas and guinea-pigs curve towards each other in the lower jaw and away from each other in the upper jaw. If the teeth are too long or develop spurs (sharp ridges on the teeth), damage to the cheeks may occur and the tongue may become trapped in guinea-pigs. If the tongue is trapped, the affected animal is unable to swallow, despite all efforts to eat. These patients always look like they are eating and are frequently seen with food in their mouths, but they are actually starving.

The pain associated with toothache may cause affected individuals to grind their teeth or dribble more than usual, and they may have difficulty grooming so may present with a matted area of fur, or for no longer keeping themselves clean.

Abnormal tooth growth may also cause obstruction of the tear ducts, causing excessively watery eyes to develop or recurrent eye infections. In severe cases where a tooth root abscess grows into the eye socket, one eye may appear to bulge out from the face.

Common dental problems in guinea-pigs, degus and chinchillas

- ❖ Fractures, which can affect the jaw as well as the incisors. Fractures may commonly be caused by animals falling or being dropped from a height (e.g. hamsters, guinea-pigs), or as a result of an inadequate diet. [It is vital that no child is left unsupervised with a small pet because internal damage as well as dental fractures can result from falls.](#)
- ❖ Tooth root infections of the incisors are common in rodents, particularly in those that have chewed on cage bars through boredom or lack of other gnawing materials.
- ❖ Gingivitis and periodontitis
- ❖ Damage from incorrect burring or trimming – teeth should **never** be clipped because this can cause fractures or damage the germinal tissues, causing abnormal growth of the tooth.
- ❖ Malocclusion of the cheek teeth (see rabbit dentistry article for more about this condition) causing
 - bridging of the tongue
 - fractures
 - tooth root infections
 - stretching of the jaw
 - eye and tear duct abnormalities
- ❖ Guinea-pigs with malocclusion and stretching of the jaw often have the lower jaw extended forward, so the incisors do not meet and wear but grow outside of the lips.

- ❖ Chinchillas with malocclusion suffer their incisor growth inside the mouth, with resulting damage to the soft tissues. Spurs develop on the cheek teeth, and the hinge joint of the jaws can become dislocated if the length of the teeth is not reduced.
- ❖ Degus with malocclusion have a similar progression to rabbits (see rabbit articles)

Diagnosis of dental disease

Dental problems can be difficult to diagnose because the structure of the mouths of these small patients obstructs clear vision, even with an otoscope. They are continual eaters, so the mouth is often full of food! Diagnosis is suspected from the clinical signs and the owner's description of the problem, but cannot be confirmed without x-rays of the teeth and skull, including the sinuses and the eyes. Occasionally an ultrasound scan of an eye may also be required to ascertain whether a bulging eye has a dental origin.

Treatment

- ❖ Any fractured teeth should be removed. The tooth opposite that tooth being removed will have nothing to wear against (unless a removed incisor grows back) so should be burred on a regular basis thereafter.
- ❖ Abscesses should be treated by removing the tooth or teeth involved and exteriorizing the abscess. Facial surgery is frequently required to facilitate this, and an antibiotic course and or flushing solution will be required.
- ❖ Regular burring of deformed teeth should be performed and removal considered. **Teeth and spurs should never be clipped, but only burred with the correct equipment.** Clipping can cause fractures of the teeth and can affect the germinal layer, causing affected teeth to spiral or become deformed.
- ❖ The overall length of the cheek teeth and incisors should be reduced where appropriate, and the normal architecture of the dental arcades restored.
- ❖ The diet should be corrected.
- ❖ Stress factors should be removed.

How to prevent malocclusion

The most common cause of tooth elongation is poor dental wear because of cereal based, high energy mixed foods being fed, particularly to indoor pets lacking constant access to highly fibrous gnawing materials. It is interesting to note that outdoor rabbits and guinea-pigs left grazing rarely have malocclusions! However, certain breeds are more likely to be affected than others, and environmental conditions are likely to be involved.

The best way to prevent malocclusion from occurring is to feed your pet a diet high in rough fibre. Gnawing materials should be made available at all times and should be of natural substances. Most rabbits, guinea-pigs and chinchillas do not need pellets or cereal feeds at all – they are designed to live on grass and weeds alone! If commercial diets are to be used, they should form no more than 20% of the diet, and ideally less than this: the usual rule is 25g food per 1kg pet (around 1 eggcup of food for every kilo your pet weighs) per day as an absolute maximum. However, in order to need this much energy supplementation in the UK, your pet would probably have to be outdoors in wintery conditions with little bedding for some time!