

# WOODVALE PARK

## VETERINARY HOSPITAL



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# Malocclusion

## (Involving the Teeth and Skeleton)

### Basics

#### OVERVIEW

- “Occlusion” is the relationship or contact between the biting (known as “incising”) and chewing (known as “masticatory”) surfaces of the upper and lower teeth; “malocclusion” is any deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth
- Various types of malocclusion have been identified, including the jaws are of correct length, but specific teeth are positioned abnormally (known as “dental malocclusion”)—anterior crossbite; lance tooth; base-narrow canine teeth; and posterior crossbite; the lower jaw (mandible) is short in relation to upper jaw (maxilla) (a type of “skeletal malocclusion”)—tooth inclination or location may be improper (overshot); the lower jaw (mandible) is long in relation to upper jaw (maxilla) (another type of “skeletal malocclusion”)—tooth inclination or location may be improper (undershot); type of “wry bite” in which one quadrant of the jaw is elongated and one quadrant is shortened (another type of “skeletal malocclusion”)
- Accurate assessment of abnormalities of occlusion will help determine if treatment is warranted and what treatment is appropriate
- Deciduous teeth are the “baby teeth” that are the first set of teeth to erupt in the immature pet; these teeth normally “fall out” when the permanent teeth erupt
- Permanent teeth are the second set of teeth to erupt and are the teeth of the adult pet

#### SIGNALMENT/DESCRIPTION OF PET

##### Species

- Dogs
- Cats

##### Breed Predispositions

- Breed predisposition for certain malocclusions (such as lance teeth in Shetland sheepdogs)

##### Mean Age and Range

- No age predisposition, though malocclusion usually is apparent after eruption of teeth (deciduous or permanent)

#### SIGNS/OBSERVED CHANGES IN THE PET

- Vary greatly according to type, extent, and consequent injuries caused by the malocclusion
- May be associated with open or closed bites or overcrowding of the teeth
- Disease of the gums and supporting tissues of the teeth (known as “periodontal disease”)—may result from crowding or misalignment of teeth

- Soft-tissue defects—from traumatic tooth contact; may be seen in the floor of the mouth and palate; palatal trauma may eventually result in oronasal fistula formation; an oronasal fistula is an abnormal opening between the mouth and the nose
- Fractures or abnormal wear (attrition) of teeth—may result from improper tooth contact

## CAUSES

- Congenital (present at birth) or hereditary factors—skeletal malocclusions and breed predilection
- Impediment to tooth eruption—operculum (the flap of tissue covering the unerupted tooth); retention of soft-tissue covering
- Delayed eruption of deciduous or permanent teeth
- Retention or delayed loss of deciduous teeth
- Traumatic injury affecting the jaws or teeth

## RISK FACTORS

- Genetic factors

# Treatment

## HEALTH CARE

- Not every malocclusion needs correction
- If the bite is functional and non-traumatic to the pet, treatment may not be necessary
- Extraction of the tooth or decreasing the height of the crown of the tooth (known as “crown reduction”) with pulp capping of offending teeth often can be effective treatment
- Orthodontic treatment usually is based on prevention of improper contact trauma, wear, or injury to hard or soft tissues; orthodontic treatment should only be performed by a veterinarian trained in the procedure

## DIET

- Prevent chewing of items and provide a soft diet until the orthodontic appliance is removed, if orthodontic treatment is used

## SURGERY

- Careful and gentle extraction of the maloccluded deciduous tooth to remove inappropriate physical impediment (known as “interceptive orthodontics”) in hopes that the permanent tooth will erupt in the appropriate position; when performed at least 4 weeks prior to permanent tooth eruption, success rate greater than 80% is not uncommon
- Careful and gentle extraction of the maloccluded deciduous tooth in hopes that the short jaw will be released from the bite interlock, allowing it to grow (if the genetic potential is present), prior to eruption of permanent teeth and reestablishment of bite interlock; performed at least 6 weeks prior to permanent tooth eruption, success rate less than 20% is common
- Other surgical, dental, or orthodontic procedures based on type of malocclusion

# Follow-Up Care

- Examine the orthodontic appliance twice daily, if orthodontic treatment is used
- Flush the mouth with an oral hygiene solution or gel, if orthodontic treatment is used
- Professional and dental home care to promote healthy gums and teeth, as directed by your pet's veterinarian

## PATIENT MONITORING

- For the orthodontically corrected occlusion to be stable, it needs to be self-retaining or it may tend to revert to malocclusion; examine at 2 weeks, 2 months, and 6 months after the treatment is complete to see if desired outcome is stable
- It is advisable at around 6 months following orthodontic therapy for x-rays (radiographs) to be taken and compared to pretreatment x-rays (radiographs), to determine if all teeth still appear vital (alive) and to evaluate any root changes that may have occurred due to the pressures of tooth and root movement during orthodontics

## PREVENTIONS AND AVOIDANCE

- Careful selection of puppies, with oral and general examination, as well as examination and history of sire and dame, prior to purchase
- Selective breeding, based on preferred breed characteristics
- Careful monitoring of deciduous and permanent tooth eruption for early detection and treatment, if required

## **POSSIBLE COMPLICATIONS**

- Selective extraction of deciduous tooth prior to permanent tooth eruption—potential for injury to underlying permanent tooth buds, either by direct injury with extraction instruments or subsequent traumatic inflammation affecting tooth growth and maturity; injuries may result in tooth buds dying, teeth becoming non-vital (dead) as they erupt, roots developing improperly, lack of proper formation of the crown of the tooth or abnormal mineralization of the crown of the tooth
- Orthodontic movement of permanent teeth—several conditions involving abnormal roots or non-vitality of the tooth may result; these conditions are uncommon in properly managed orthodontic procedures

## **EXPECTED COURSE AND PROGNOSIS**

- Course of treatment may vary with the type of malocclusion and the pet's nature and habits (such as inappropriate chewing).
- Generally, most orthodontic cases take 1–7 months for movement and retention phase, depending on severity and if extrusion of tooth/teeth is required for stabilization of the bite; prognosis is good to excellent in most treated pets
- Prognosis is fair to good in most untreated malocclusions
- Complications in untreated cases—disease of the gums and supporting tissues of the teeth (periodontal disease); abnormal wear (attrition) or fractures of teeth; trauma to soft tissues; oronasal fistula (abnormal opening between the mouth and the nose) formation; drying or desiccation of exposed tooth surfaces, resulting in beige to brown discoloration
- Some cases DO NOT need or require orthodontic intervention; only routine observation for early detection and treatment of any secondary complications (such as periodontal disease, worn or chipped teeth) are advised

## **Key Points**

- “Occlusion” is the relationship or contact between the biting (known as “incising”) and chewing (known as “masticatory”) surfaces of the upper and lower teeth; “malocclusion” is any deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth
- Accurate assessment of abnormalities of occlusion will help determine if treatment is warranted and what treatment appropriate
- Not every malocclusion needs correction
- Orthodontic treatment usually is based on prevention of improper contact trauma, wear, or injury to hard or soft tissues

# Notes

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