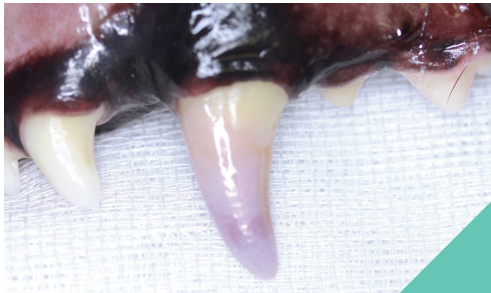


# TOOTH INJURY

## TOOTH INJURIES ARE OFTEN SEEN IN DOGS AND CATS AND KNOWLEDGE OF THE STRUCTURE OF TEETH IS REQUIRED TO UNDERSTAND THE EFFECT OF THESE INJURIES.

Teeth are comprised of 3 separate layers - enamel, dentine and pulp - with the crown of the tooth above the gum and the root below the gum. The root of the tooth is significantly longer than the crown, often twice as long in adult teeth; this is even more marked in baby teeth.

Enamel is the hardest substance produced by the body and forms a thin covering and the outermost layer of the crown of the tooth, forming an impervious (protective) barrier.



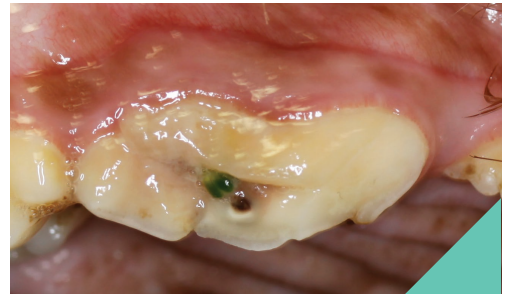
**LEFT MAXILLARY CANINE TOOTH WITH PINK DISCOLOURATION INDICATIVE OF CONCUSSIVE TRAUMA AND BLEEDING INSIDE THE TOOTH.**

The layer immediately below the enamel is the dentine. Dentine is similar, in hardness and composition, to bone and has small tubules running through it, making it porous. These tubules connect to the pulp chamber, the hollow centre of the tooth, which is filled with nerves, blood vessels and the cells that deposit dentine onto the inner surface of the pulp chamber.

Dentine is secreted continuously through life at a low rate, but can speed up in response to injury or may stop if the tooth dies. The development of dentine is used as a marker for the vitality of a tooth.

Injuries to the different layers of the tooth have different consequences for the tooth as does the speed and type of injury.

Slow and progressive injury, tooth wearing, is commonly seen in dogs that chew tennis balls. The enamel and dentine is worn away although more dentine will be deposited on the inside of the pulp chamber. As long as the speed of wear does not exceed the speed the tooth can deposit new dentine, the pulp will not be exposed and the tooth will remain vital, even if the crown is almost completely worn away.



**UPPER 4<sup>TH</sup> PREMOLAR TOOTH WITH FRACTURE EXPOSING THE PULP WITH PLANT MATERIAL TRAPPED IN FRACTURE.**

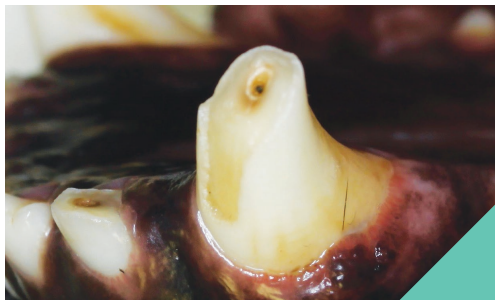
If the pulp is exposed, either by a sudden traumatic fracture or rapid wearing of the tooth, the bacteria of the oral cavity will rapidly infect and overwhelm the natural defences killing the pulp.

During the death of the pulp there will be considerable pain, and this may continue for more than a month after pulp exposure. Once bacteria have infected the hollow pulp chamber, these bacteria will leak out from the tip of the root and will result in the development of inflammation and eventually abscess formation in the bone of the jaw.

# TOOTH INJURY

All teeth that have exposure of the pulp must be treated, either by extraction of the tooth or by root canal treatment. Fracture of the enamel and dentine without exposure of the pulp may not result in death of the pulp, but this cannot be discerned from a simple examination of the tooth.

Bacteria can enter the pulp chamber via the dentine tubules. This is more likely if the fracture exposes a large amount of dentine, if the dentine that remains is thin, or in younger dogs where the tubules are wider. Dental x-rays are required to assess teeth which have large fractures to the enamel and dentine.



**FRACTURED LOWER CANINE TOOTH WITH PULP EXPOSURE.**

The dentine and enamel surrounding the pulp is solid and can't expand. Following trauma the pulp may bleed and become inflamed. As the soft tissues are enclosed they cannot swell and there will be an increase in pressure inside the tooth, which may stop blood flow into it. This can result in the death of the pulp even when the tooth is not fractured.

Discolouration of the tooth is a common result of bleeding associated with concussion, and teeth that are completely discoloured have a 92% likelihood of being dead. Dead teeth have a high potential for the development of infection, inflammation or cysts, and treatment by extraction or root canal management is indicated.

Fracture of baby teeth, especially the canine teeth, is common in dogs, and they are similarly painful to fractures of adult teeth. However they have the added complication that injury to the developing adult tooth underneath the baby tooth may also result. Extraction of fractured baby teeth is indicated.



**FRESHLY FRACTURED UPPER CANINE TOOTH WITH PULP CONTAINING HIGHLY SENSITIVE NERVE EXPOSED.**

You have been given this information sheet as your vet is concerned your pet has injured a tooth. It is common for pets to exhibit minimal, subtle or no clinical signs of tooth injury but still may have significant pain and pathology present.

Detailed evaluation combined with x-rays are important to ensure your pet is not suffering in silence. Treatment options include extraction, root canal treatment and repair of the tooth with a restoration or a crown.



**LOWER CANINE TOOTH WITH ABRASIVE WEAR TO TIP OF TOOTH RESULTING IN PULP EXPOSURE AND SUBSEQUENT DEATH OF THE TOOTH.**