

## AVULSION AND LUXATION OF TEETH

Avulsion refers to the situation in which the entire tooth is completely displaced from the socket (the socket is empty and the client hands you the entire tooth).

Luxation refers to the situation in which the tooth is dislocated within the socket but maintains some attachment. Luxations may be intrusive (the tooth looks shorter as it has been jammed through the end of the socket and deeper into the face), extrusive (the tooth looks longer as the tooth has been partially pulled from the socket along the long axis of the root) or lateral (the tooth is a normal length but is pointing in an abnormal direction as the walls of the alveolus have been fractured).

In avulsion, the entire periodontal ligament is severed as is the vascular and neural supply to the pulp of the tooth. In luxation, all or part of the periodontal ligament has been severed and so has the vascular and neural supply to the pulp. In both cases, there may be bone fractures as well. All of these must be addressed.

When presented with an avulsion or luxation, the first thing to determine whether the tooth is



This tooth is luxated laterally, with complete separation of the periodontal ligament on the palatal side and fracture of the buccal alveolar plate mesially and distally and tears in the gingival mesially and distally. Though the tooth is at an odd angle and very mobile, it maintained its gingival and periodontal ligament attachment on the buccal side.

to be saved or discarded. This hinges on a number of factors including the relative value of the tooth to the patient, the time span between injury and treatment, the patient's general health and lifestyle, the owners' expectations and limitations. To make that judgment, you must know what is involved in treatment.

With both avulsion and luxation, the pulp in the tooth is going to become necrotic and so the tooth **needs** root canal therapy, but not yet; we deal with that a bit later on. The more immediate concern is getting the bone fractures, gingival tears and periodontal ligament to heal. This involves replacing the tooth in proper anatomical alignment, suturing the soft tissues and stabilizing it with a semi-rigid splint for 4 to 6 weeks. While the splint is in place, the animal must be restricted from eating hard foods or treats, chewing on hard toys or objects and playing roughly with anyone. The owner must also flush around the splint twice daily to keep it clean. If the owner cannot or will not consent to all of these conditions, then extract the tooth, debride the socket and suture it closed. Do not forget to radiograph to look for other problems that might need to be addressed.

With avulsion, the entire periodontal ligament has been severed with portions of the ligament remaining attached to the alveolar bone and other fibers attached to the cementum of the root. If the tooth has been out of the mouth long enough to become desiccated on the surface, if the root surface is heavily contaminated with debris or if the root surface has been mechanically or chemically traumatized (by attempts to clean it), the chances of success are not good. The very best thing to do in the case of avulsion is to *gently* rinse (do not scrub) the tooth with saline, a balanced salt solution (Save-A-Tooth™) or milk and then stick it back in the socket ASAP to protect the delicate periodontal ligament fibers. Another option is to have the owner hold the tooth in their own mouth under their tongue to keep it clean and hydrated until it can be properly implanted.

With luxation, the tooth has remained in the socket and likely the entire root is surrounded by attachment or a blood clot, so desiccation is less likely. There may still be contamination with food, hair and other debris. Manually reposition

the tooth as well as possible and keep everything (food, water, oral rinses...) out of the mouth until the tooth has been stabilized.

With the tooth in the socket or a suitable liquid medium refer the case to the veterinary dentist of your choice *immediately* for stabilization.

Our goal is to have healing of the periodontal ligament. We do not want fusion of the root to bone as such ankylosis will often be followed by external root resorption and a few years later the tooth falls out because it has no root left. In order to get ligamentous healing, we want some slight movement of the tooth during healing. This is why we look for semi-rigid stabilization. We want to hold the tooth in place while allowing micro-movements. This is achieved various ways depending on the tooth involved. For maxillary canine teeth, I wrap vetafil or nylon fishing line in a figure-o-eight around both upper canines across the palate. I glue the line to the buccal sides of the teeth with bonded composite and protect the line across the palate by covering it with acrylic. The elasticity of the vetafil or nylon allows the tooth to wiggle a tiny bit, but holds it firmly enough in place that the alveolar bone fractures and soft tissue tears can heal.

The splint is kept in place for about four weeks at which time it is removed and the root canal treatment is done. Then the tooth should be re-



A vetafil and acrylic splint bonded to the canines on the buccal side. The arrangement holds the luxated canine firmly in place while allowing sufficient micro-movement to increase the chance of periodontal ligament healing rather than ankylosis.

examined and radiographed in a year or so to assess response to the injury and treatment.

**Dos and Don'ts for the owner before they get to your hospital:**

If possible and safe, have the owners stick the tooth back in the socket or realign it and then muzzle the pet to keep it from working the tooth back out. They can use an old pair of pantyhose to fashion a temporary muzzle.

If the tooth cannot be replaced in the socket, have the owners place the tooth under their own tongue or in a tooth transport medium or a glass of tepid milk.

Have the owners arrange the visit to the veterinary dentist *immediately*.

Tell the owners that they should not touch the root at all or use any antiseptics.

**Dos and Don't's for you:**

If the owner calls your office about this injury, do not lose time getting the patient to a veterinary dentist by having them visit your office first. Send the owners directly to the dentist.

If the patient is presented to your clinic with this problem, gently rinse the root in saline – do not scrub – do not use chlorhexidine. Try to replace the tooth in the proper position in the socket and muzzle the patient until it can get to the dentist. While you are doing this, have your receptionist make the call to the dentist and get the appointment there set up.

Do not delay the referral by anesthetizing the animal for radiographs. In most cases the dentist will want to take their own films anyway. Do not waste time suturing the wounds, as this can all be done when the splint is being applied.

Do not reposition the tooth and splint it in place unless you are absolutely certain that the owner will return for the root canal treatment 4 weeks later. If there is any doubt about this, extract the tooth, debride the wound and suture it closed.