ACRYLIC SPLINTS FOR MANDIBULAR FRACTURE REPAIRS

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Traumatic oral fractures are a fairly common occurrence in veterinary dentistry. There are numerous options for therapy and all have advantages and disadvantages as well as indications and contraindications.

Acrylic splints (Figure 1) are the treatment of choice for most veterinary dentists for the vast majority of oral fractures. The main reasons for its popularity are the fact that it is highly successful and non-invasive. Since there are no metal implants in the bone, there is no chance of damaging the tooth roots or nerves/blood vessels. (Figure 2) Further, they provide immediate return to function and is well tolerated by the patient. (Figure 3) Finally, a second surgery is not necessary for removal. To remove the splint, the acrylic is cut into pieces and removed from the teeth. Finally, the teeth are cleaned and a bonded sealant applied to the areas included in the splint. (Figure 4)

1) Post-operative picture of the splint showing no tissue trauma
2) Post-operative radiograph showing excellent fixation with no bone trauma
3) 2 week recheck picture of the patient. The client reported the pet to acts normal.
4) Immediate post-removal picture showing normal tissues.
KE Apparatus are the fixation of choice among veterinary surgeons. They are very effective in treating long bone fractures. They are most valuable in significantly comminuted fractures as they have the ability to easily provide a rigid fixation in a convoluted and complex environment. In addition, they are a good choice for patients with no teeth. (Figure 5) However, veterinary dentists rarely if ever make use of this technique. This is for several reasons. First, it is very challenging to miss the tooth roots and mandibular canal during placement. (Figure 6) In addition, the bulkiness of the buttress plate makes the appliance unwieldy. (Figure 7) There is also a decent chance of infection since the appliance provides a direct pathway for the oral bacteria to the affected bone. Finally, a somewhat invasive second surgery is necessary for their removal.

Bone plates are rarely used in oral fracture repair as the inflexibility of their screw placement and difficulty in adapting them to the mandible make them a less than ideal choice. (Figure 8) In addition, a fairly invasive second surgery is necessary for their removal. Therefore, the vast majority of veterinary dentists still prefer the atraumatic acrylic splints for the vast majority of oral fractures. Mini plates are best used for distal mandibular (behind the teeth) and ramus fractures, as well as edentulous patients where acrylic splints are not an option. They can be used anywhere, but their significant invasiveness makes them a less than ideal treatment choice.

More invasive means of fracture fixation
5) External fixator in a edentulous patient.
6) External fixator in the rostral mandible, note the tooth damage
7) Post-operative picture of an external fixator.
   The patient must wear a e-collar to avoid damaging the fixator.
8) A bone plate with the screws through the tooth roots of the first molar.
   Note that the fracture is not healing in spite of rigid fixation.
**Conclusion:**

There are numerous options for repair of oral fractures. In general, the least invasive method is best. Intraoral acrylic splints are the treatment of choice for the majority of veterinary dentists because they

- provide appropriate fixation
- are non-invasive
- provide immediate return to function
- do not require a second surgery to remove

Pathologic or comminuted fractures, as well as fractures of the ramus, and edentulous patients may be best treated with mini plates or external fixators. Regardless, veterinarians who are treating oral fractures should be comfortable with a variety of fixation modalities and use the correct one for each presentation.