HORIZONTAL (ENVELOPE) SURGICAL FLAPS FOR EXTRACTIONS

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Difficult extractions are best performed via a surgical approach. This is typically utilized for the canine and carnassial (maxillary fourth premolar and mandibular first molar) teeth, but is also beneficial for teeth with root malformations or pathology and for retained roots. Surgical extractions are initiated by creating a gingival flap. Two options include a horizontal flap made with an incision along the arcade to create an envelope flap or alternatively making vertical releasing incisions to create a full flap.

We very rarely make vertical incisions any more, with the exception of canine teeth as well as the maxillary fourth premolar of medium to large dogs. In this situation we generally only make one vertical releasing incision. The advantages to envelope flaps include:

- Lower chance of dehisance
- Less traumatic to the tissues
- Maintains blood supply
- Faster

I have had many veterinarians report that switching to envelope flaps following an extractions lab has cut their extraction time almost in half!

An envelope flap is made by releasing the gingival attachment with a periosteal elevator along the arcade, including one to several teeth on either side of the tooth or teeth to be extracted. The flap is initiated by incising the interdental gingiva along the arcade and then releasing the tissue to or below the level of the mucogingival junction (MGJ). It is critical to avoid tearing the gingiva over the teeth which are not going to be extracted.

Below is an example of a envelope flap used to extract the mandibular first molar. Note that only 5 sutures are necessary to properly close this large extraction site. (Figure 1)

Figure 1: Creation of an envelope flap for extraction of a mandibular first molar.
   a) Incising the interdental papilla between M1 and M2 (carried across M2).
   b) Incising the interdental papilla between P4 and M1 (carried across P4).
c) Elevating the flap with a periosteal elevator.

d) Flap is created, and then held with a stay suture.

e) Fenetrating the periosteum (blindly) with La Grange scissors.

f) Closure with 5 simple interrupted sutures.

The more commonly used full flap includes one or two vertical releasing incisions. (Figure 2) This method allows for a much larger flap to be created, which (if handled properly) means larger defects can be covered. The vertical incisions for a full flap should be made slightly apically divergent, meaning wider at the base than at the gingival margin. It is important to make full thickness incisions in one single motion. A full thickness incision is created by incising all the way to the bone, thus keeping the periosteum with the flap. Once created, the entire flap is gently reflected with a periosteal elevator.
Figure 2: Creation of a full flap.

a) Making the distal releasing incision.
b) Creating the mesial releasing incision.
c) The slightly divergent releasing incisions.

d) Flap released over a maxillary fourth premolar on a clinical case.
e) Full flap closed with 14 simple interrupted sutures

Conclusion: Envelope (Horizontal) flaps are faster, less traumatic, and in general have a lower chance of dehiscence. They are taught at the San Diego Vet Dental training Center.

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