

## THE ENVELOP FLAP

I wrote about this subject some time ago (<http://www.toothvet.ca/PDFfiles/suture.pdf>) but it is time to revisit. Part of the problem (as I perceive it) is that there are well qualified speakers (friends of mine) who are recommending the use of vertical releasing incisions when doing dental extractions. Many textbook and journal articles also advocate the use of vertical releasing incisions. Therefore many general practitioners are creating flaps with these incisions as the first step when extracting a tooth. I was taught to avoid vertical releasing incisions and I find I am able to do that in (almost) every case.

I recently had to manage a few cases of post-extraction dehiscence in which I feel the creation of the vertical releasing incisions were both a contributor to the wound breakdown and added considerably to the challenges I faced in closing the wounds.

To be fair, any time you create a wound there is always a chance of dehiscence. I have had extraction sites break open, requiring a second surgery to debride and reclose. Anyone who claims to never have post-extraction dehiscence is not doing any follow-up examination, is not doing any extractions or is lying. However, avoiding vertical releasing incisions is, in my opinion, a good way to not only reduce the risk of dehiscence, but also preserves more tissue should a second wound closure be required.

Mucoperiosteal flaps are usually required in order to allow for tension-free closure of extraction sites and to allow access for periodontal surgeries such as open root planing. In creating these flaps, there are certain principles that must be respected and rules that must be followed to increase the chances of optimal healing as well as decreasing collateral damage. They include:

- the flap should be 1.5 to 2 times as wide as it is long,
- all attempts should be made to conserve the integrity of the blood supply to the flap (a devascularized flap is a dead flap),
- handle the soft tissues delicately,
- avoid desiccation of the flap and underlying tissues,
- place the suture line over supporting connective tissue, not over a void,
- ensure tension-free closure,
- preserve or re-establish a complete collar of gingival tissue around the teeth on either side of the surgical field (oral mucosa is not sufficient).

Now, consider the abdominal incision created when you are spaying a dog or cat. It is a straight line

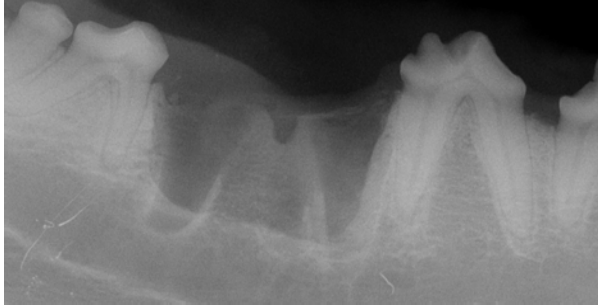
incision. You do not make perpendicular incisions at either end of the midline cut and create a pair of barn-door flaps to open the abdominal wall. For one thing, there is no need to do this. For another, it would create real problems if you found you had to extend the length of the incision (to find a dropped pedicle). Once you make a releasing incision perpendicular to the primary one you cannot extend the primary incision beyond that point or you end up with multiple, long, thin flaps and that is not acceptable. The same is true in the mouth.

Remembering that *extractions can be awfully simple or simply awful*, sometimes there is no need for a flap at all. Sometimes a small envelop flap is sufficient. Sometimes a large flap is required. You will probably not know at the start of the procedure how large your flap may need to be but as soon as you make your vertical releasing incisions, you have drawn lines that cannot be crossed. If a problem arises and you need more exposure, you can make your flap longer by elevating under it further, but you cannot make it wider and soon your flap is longer than it is wide and that is a recipe for failure.

Let's look at an example. This dog was kicked in the face by a horse and had several fractured teeth. Without going into details, the rDVM removed the right lower canine and first molar and then I saw the dog the next day. Here is what the molar site looked like less than 24 hours post-op:



The suture lines are already falling apart. While I do not have a clinical photo of the wound after opening it, this radiograph indicates that the entire buccal wall of the socket was removed. It also shows that the fourth premolar has a crown fracture with pulp exposure and needs root canal treatment or extraction.



Among the problems I see here are that the flap is basically a square (as long as it is wide), the vertical suture lines are right over the sharp margins of the cuts in the bone, the horizontal suture line is over the void dorsal to the alveoli and there was so much bone removed that the flap is stretched across a large void with no support. In managing this I was also faced with having to remove the fourth premolar and closing that site (endodontic treatment was not in the budget).

In the end, I amputated much of the loose flap, freshened all margins (cut back to bleeding tissue), elevated an envelope flap off the fourth premolar, smoothed the bone and debrided/flushed the wounds and reclosed.



By contrast, here is a lower first molar extraction I did with no releasing incisions at all.



There are some challenging extractions and oral surgeries that demand a vertical release and extensive bone removal, but since that can interfere with healing, I would like you to try your best to avoid them both whenever possible.