Management of a Mandibular Fracture in a Labrador Puppy

Management of any mandibular fracture presents a number of difficult challenges:

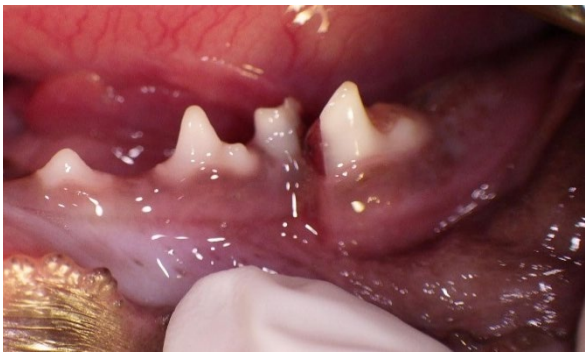
- They are almost all compound fractures
- There are typically teeth in the fracture line
- There needs to be a rapid return to function so the animal can eat, drink and pant
- Great attention needs to be paid to accurate anatomic reduction to re-establish proper occlusion

I wrote on this several years ago, citing various examples and strategies:

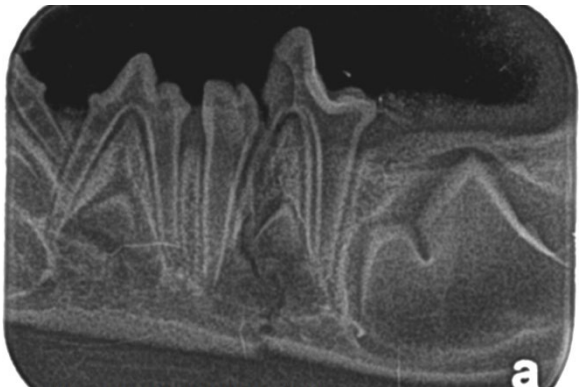
http://www.toothvet.ca/PDFfiles/MandFx.pdf.

In the following pages, I will follow a single case of a young lab.

On January 22, I was presented with an 8-week-old, intact female Labrador weighing 4.8 kgs. She had been bitten in the head the day before by an adult Labrador in the household. As a result, there was a compound fracture of the left mandible through the primary 4th premolar.



The referring veterinarian had taken (and provided to me) a collection of skull radiographs, but as is typical of skull rads, they were of no diagnostic value. After assessing the patient to determine that she was stable, we proceeded to get her under general anesthesia for a detailed examination including whole-mouth intra-oral dental radiographs. Most of the images showed no abnormalities. The one of the left mandible showed this.



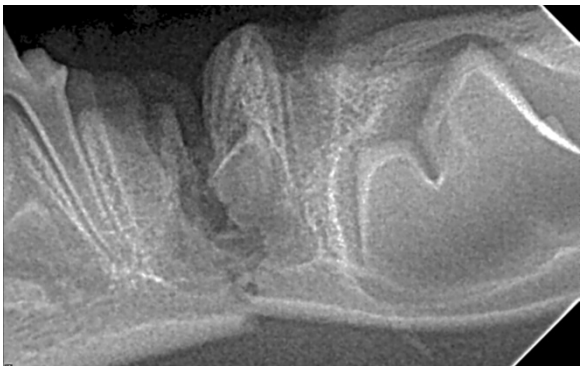
There was a top-to-bottom, minimally displaced fracture through the mandible, the primary 4th premolar tooth and through the developing adult 4th premolar tooth.

Dealing with mandibular fractures in growing animals have all the challenges listed previously as well as:

- Any stabilization needs to allow for rapid growth of the patient during healing
- There is insufficient coronal structure to act as anchors for an intra-oral acrylic splint
- The mandible is mostly primary teeth and developing adult teeth with very little bone into which hardware can be placed without causing damage to the dental structures
- Puppies are active, oral, goofy and clumsy.

The good news is that puppies are in the business of building bone and so fractures have the potential to heal rapidly.

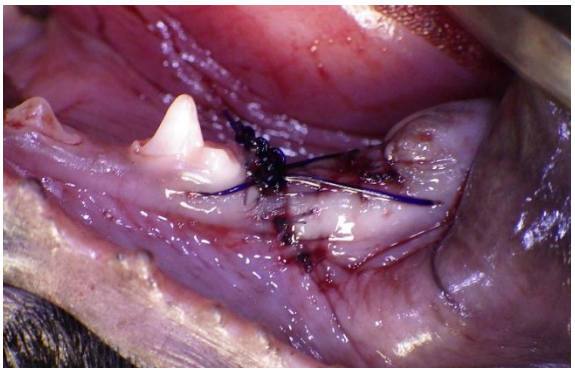
Treatment started with removal of the fractured primary 4th premolar. This resulted in some increase in the displacement of the fracture.

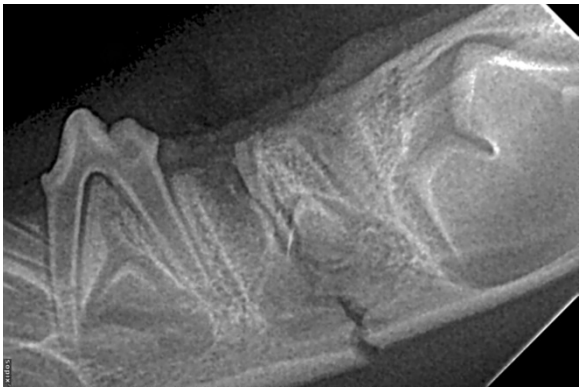


To avoid disrupting the fracture further and to avoid the possibility of damaging the mandibular

neurovascular bundle, I opted to leave the developing adult 4th premolar in place for the time being. I closed the torn soft tissue on the lingual and labial aspects of the fracture site with 5-0 Monocryl™.

In mandibular fractures, the dorsal border of the mandible is the tension side of the fracture with gravity and muscle activity acting to open the fracture dorsally while they act to compress the fracture ventrally. Therefore, it is most important to pull the fracture together dorsally. To achieve this, I ran a loop of 2-0 PDS (figure-8 fashion) through the bone just above the mesial cusp of the lower left 1st adult molar and through the furcation of the lower left primary 3rd premolar. In an 8-week old pup, the bone is quite soft and so I was able to push a 20-gauge needle through the soft tissue and bone and then threaded the PDS through the needle.





Now we needed something to hold this all stable during healing that would allow the dog to grow, eat, drink and breathe. We went with a series of nylon muzzles.

Tape muzzles have been around for a long time for management of mandibular fractures and they can certainly work well.

However, there are now commercially available nylon muzzles in a wide variety of sizes that can be easier to work with and are likely more comfortable.

We sent the pup home wearing a nylon muzzle that was of a size that would allow her to open her mouth wide enough to lap up water and gruel and to pant a little bit but not wide enough to chew on things. Also, the long bottom of this muzzle design supports the mandible for most of its length so there is no fulcrum point as there might be with a tape muzzle. She was also sent home with five days of meloxicam and tramadol for pain management. Written instructions on the discharge statement included the following:

Feeding Instructions: feed very soft food – canned food mixed with water to a soupy consistence that she can just lap up from a plate.

Nothing to pass [pup's] lips but air, water and very soft food for 8 weeks

Rechecks: Here in two weeks. There will be more follow-up but let's start with that.

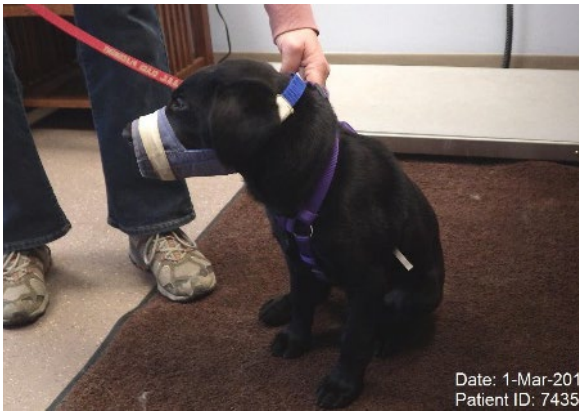
Special Comments & Instructions: Keep a nylon muzzle on at all times (even meal times if possible), to support her jaw during healing. As [pup] grows, you will have to get larger muzzles for her.

Try to restrict activity so that she is not bashing her head off things.

DO NOT handle [pup's] mouth at all for 14 days as any attempt to do so could cause pain and disrupt healing.

The pup's owner is a fabulous client who trains labs for field work. She understood and followed all instructions to the letter. At two-weeks post-op (Feb. 1), she brought the pup in for follow-up. She had grown to 5.9 kg and she was outgrowing the first muzzle, so I took it back and dispensed the next size up. Visually, the intra-oral wounds looked to be healing well and I could palpate a good callus at the fracture site. The pup was happy, eating well and by all accounts thriving. Instructions were to carry on as before and for me to see the pup when she was getting too big for the current muzzle.

The next visit was on March 1st, (5.5 weeks along). At this point she was 8.9 kg and 13 weeks old. The tape on the muzzle (below) was to tighten it up a bit as this size was too large. This is a modification that the owner had made to this muzzle that she had purchased when the pup outgrew the second one I had dispensed.



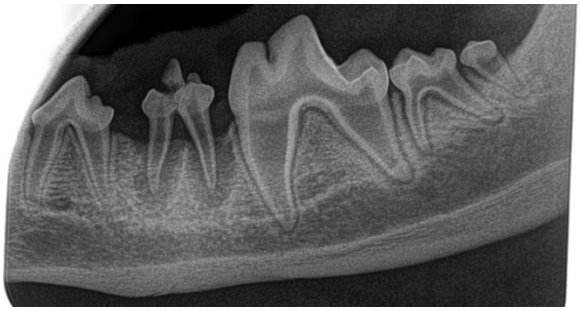
I anesthetized for follow-up radiographs and detailed examination. Her occlusion was fabulous and the soft tissues looked very happy (that is just some debris caught in the remnants of the PDS in the last photo).

Radiographically, there appeared to be complete healing of the fracture. The developing adult 4th premolar was looking deformed (as expected) but all else looked very good.

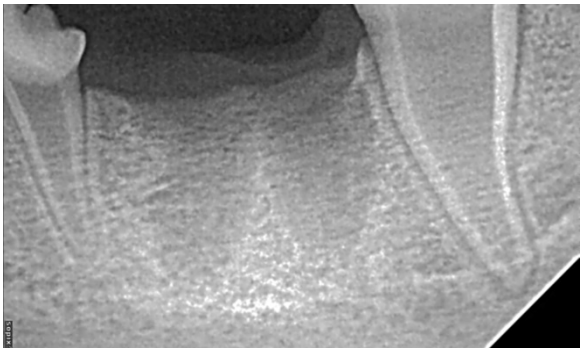
At this point instruction were to leave the muzzle off and to allow gradual return to normal activity over a period of four weeks. Again, this is an excellent owner with lots of experience raising and training dogs. Then we planned to get together when the pup was seven-months old for probable extraction of the deformed 4th premolar and evaluation for any other problems.

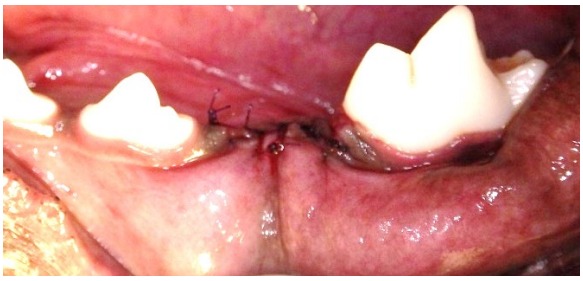
Next visit was on June 28th, when the pup was precisely 7-months old. All primary teeth were gone, all adult teeth had erupted and the only clinically visible concern was the obviously deformed crown of the lower left 4th premolar tooth.

The whole-mouth intra-oral dental radiographs revealed no abnormalities other than with this deformed tooth.



It was pretty apparent from this that the 4th premolar has suffered septic pulp necrosis and as a result there was significant apical periodontitis that had extended coronally to encompass the entirety of both roots. I removed this deformed/diseased tooth and curetted the inflamed soft tissue from the socket before suturing the wound closed.





It is always upsetting when any animal suffers a mandibular fracture. When it happens to a growing, energetic, goofy puppy with a mouth full of primary teeth and a jaw full of developing adult teeth the management challenges are quite significant. In this case, a conservative approach using a set of nylon muzzles and severe activity restrictions worked very well.

Note, this approach would not be likely to work in a brachycephalic breed as a dog without a snout cannot be fitted with a muzzle that will allow it to function. Another reason to Stop Brachycephalism, Now.