

MANDIBULAR FRACTURES

Associated Terms:

Jaw Fractures, Symphyseal Separation, Broken Jaw, Fractured Jaw



OVERVIEW

In healthy cats & dogs, a large force (trauma) is required to fracture the mandible (lower jaw). A fracture is a break in the bone & can range in severity from a greenstick (incomplete crack) fracture to severe comminution (many pieces). Vehicular trauma is the most common cause of mandibular fractures. Due to the intensity of trauma associated with mandibular (lower jaw), maxillary (upper jaw), or skull fractures, the injuries may not be limited to the facial region & pets often require treatment for other injuries before the fracture is definitively addressed.

Your primary care veterinarian may recommend radiographs of other parts of the body before focusing on the mandible.

Thoracic (chest) injuries often occur concomitantly & may manifest as pulmonary contusions (bruising of the lungs), pneumothorax (punctured lung), diaphragmatic hernia & traumatic myocarditis (bruising of the heart causing arrhythmias). It is very important to assess the whole body first as these other injuries could be life threatening.

Occasionally, there is no history of trauma.

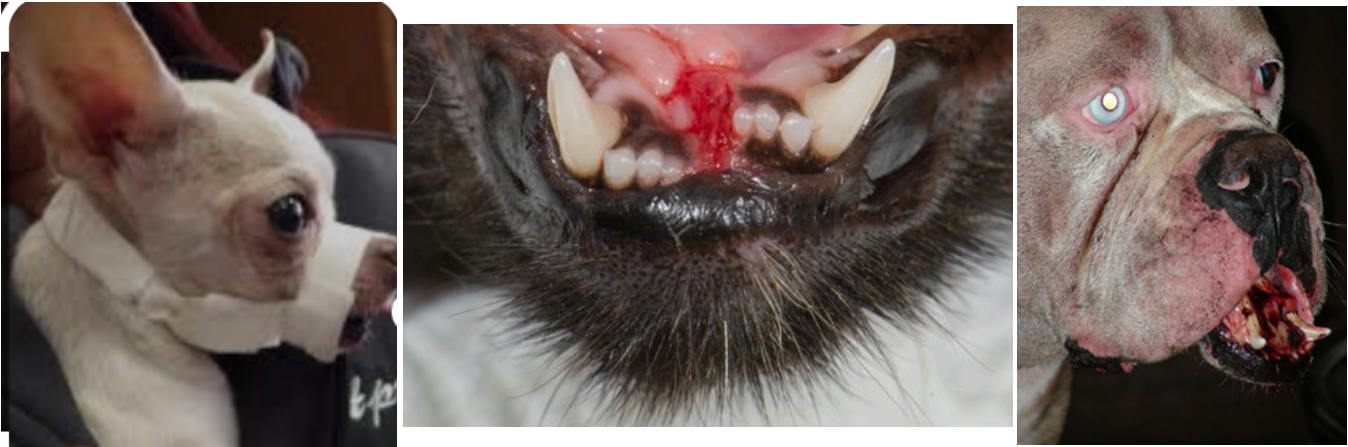
In these cases a pathologic fracture (fracture caused by disease) must be considered. Disease such as severe tooth/jaw bone decay & cancer, can weaken the bone & predispose it to fracture. Pathologic fractures tend to affect older animals more commonly than younger animals.

The mandible & maxilla have unique features compared to the rest of the skeleton that complicate fracture management. The mandible is comprised of two bones joined on midline by a symphysis (non-moveable joint). The tooth roots, nerves, blood vessels & salivary ducts are located within & adjacent to the mandible. These structures are frequently traumatized along with a mandibular fracture.

SIGNS & SYMPTOMS

Symptoms of mandibular fractures include:

- Bleeding from the mouth
- Excessive salivation that may be blood-tinged
- Reluctance to eat
- Malalignment of the jaw
- Wounds around the mouth, pain & swelling in the region, a persistently open mouth

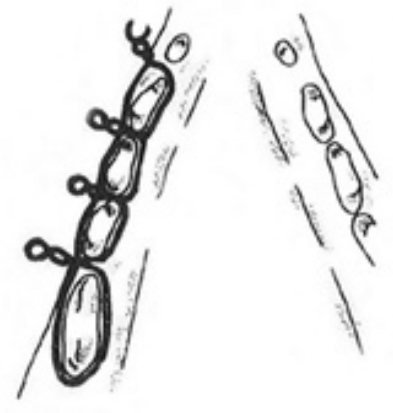
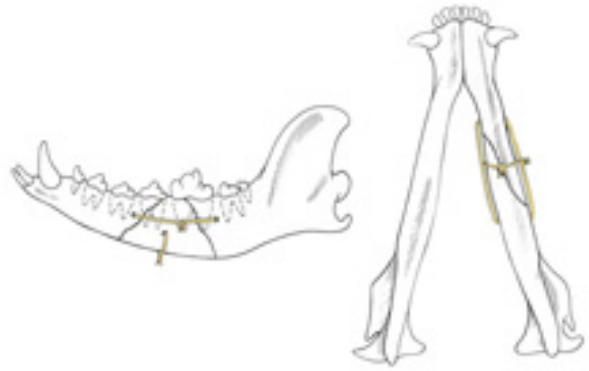
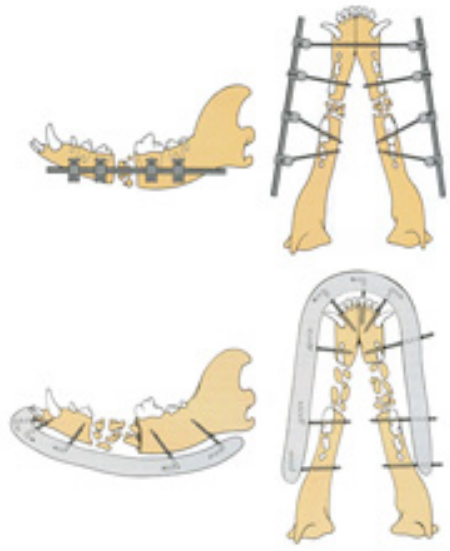
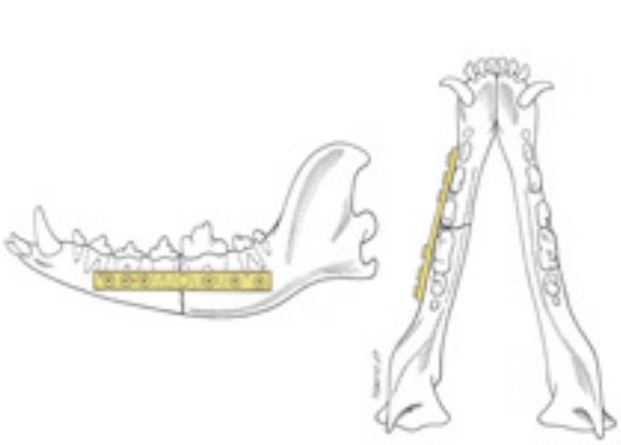


DIAGNOSTICS

Due to the discomfort associated with this injury your veterinarian may recommend sedation or anesthesia for your pet prior to palpating the injured area & performing further testing. Due to the minimal amount of soft tissue that covers the mandible, it is common for these fractures to be open. An open fracture is a fracture that has resulted in loss of integrity of the protective layer of soft tissue around the bone, exposing the disrupted bone edges to the external environment.

After your veterinarian determines that your **pet is stable enough to focus on tests for & treatment** of the mandibular injury, **X-rays of the mandible will be recommended** to confirm the presence of a fracture & to guide treatment recommendations. Due to the complex anatomy of the mandible, teeth & skull, radiographs are usually performed under heavy sedation or general anesthesia. This will decrease stress on your pet & allow for optimal positioning to interpret the complicated images. In some cases, a CT (computed tomography or “CAT”) scan may be recommended to gain more information regarding the complex anatomy to allow for an optimal surgical plan.





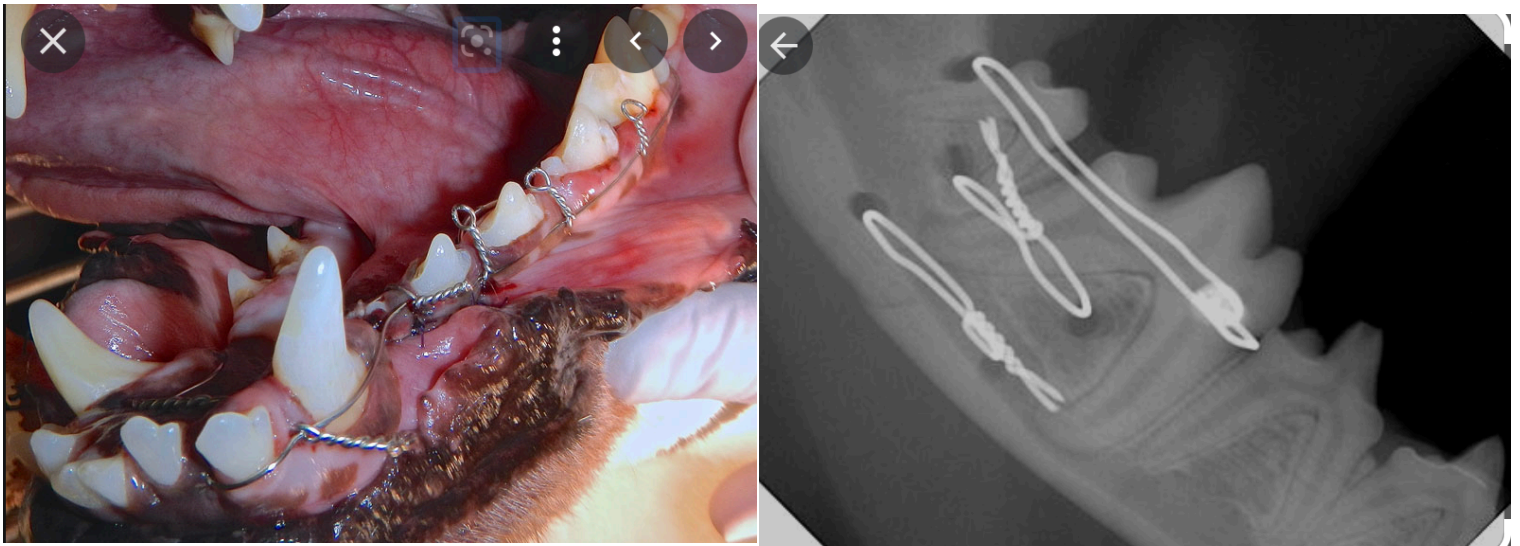
TREATMENT

External immobilization may be placed. Reduction entails manipulating the bone fragments into alignment to minimize discomfort. External immobilization is usually some form of a muzzle, either custom made from medical tape or a commercial muzzle. In some cases, external immobilization is all that is required for treatment.

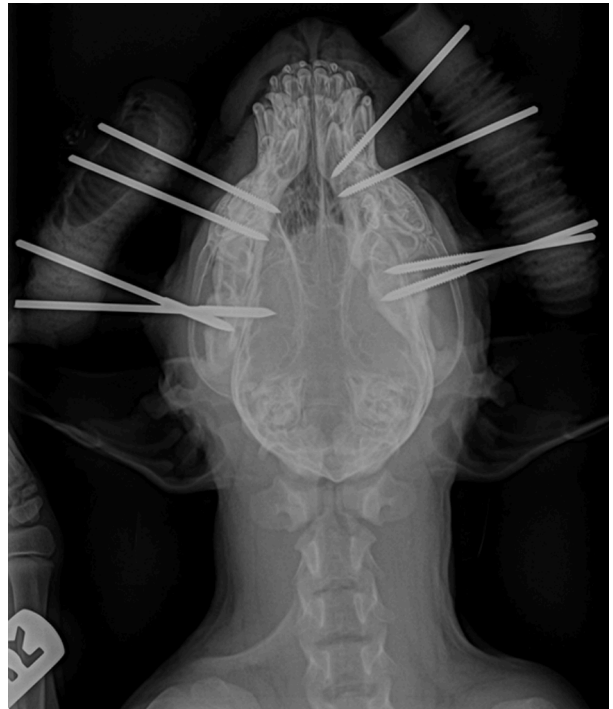
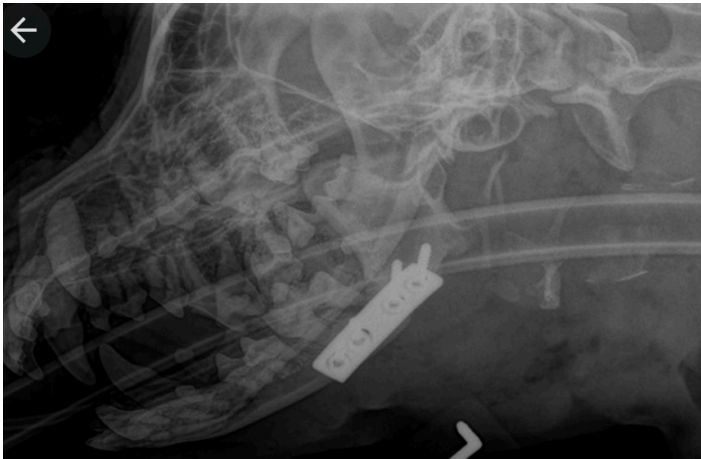
Surgical treatment of mandibular fractures is recommended when the fracture is unstable, multiple fractures/ pieces are present, and/or both sides of the mandible are affected.

Surgery is performed to restore proper occlusion (normal scissor-like interaction of the teeth) of the teeth, improve comfort & cosmetic appearance & provide early return to function.

Multiple methods of treating mandibular fractures are available & your surgeon will determine which method is most appropriate for your pet. Internal reduction & stabilization with bone plates & screws is a widely utilized surgical treatment. This entails making an incision in the region of the fracture, reducing (re-aligning) the fracture segments & then stabilizing the fragments with a surgical bone plate & screws. Advantages include early return to function & the minimal postoperative care required compared to other techniques.



Another common surgical treatment involves the use of external skeletal fixation (ESF). ESF involves placing pins through the skin into the bone fragments & then connecting these pins to a connecting rod that provides stability so that proper healing can occur. The majority of the ESF construct is on the outside of the animal & some postoperative care is required. Advantages of ESF are that the construct may be placed in a less invasive fashion & once the fracture is healed, the implants are completely removed. Other accepted surgical treatments include use of intraoral splints, interosseous or interfragmentary wiring, interdental wiring, or interarcade wiring. In some cases, placement of a feeding tube may be recommended for nutritional support while the fracture is healing.



AFTERCARE & OUTCOME

Potential complications include:

- Delayed/incomplete bone healing
- Failure of bone healing
- Infection
- Tooth malocclusion

Malocclusion of teeth is the most commonly reported complication & can lead to jaw joint dysfunction, excessive wear of teeth, injury to the surrounding oral tissues, periodontal disease, pain & difficulty eating. Once malocclusion occurs, it is challenging to treat.

Pain medications are routinely prescribed following treatment of a mandibular fracture. Many veterinary surgeons will also recommend a non-steroidal anti-inflammatory (NSAID) that has been formulated specifically for dogs or cats. In most cases antibiotics will be prescribed due to the high incidence of open mandibular fractures.

Pets should be discouraged from playing with toys or other animals, chewing on bones, or engaging in any activity that may place stress on the fracture site & compromise healing of the fracture. If external immobilization is utilized, it may be recommended to inspect the site of the muzzle for irritation or accumulation of food debris, as dermatitis is common. In pets treated by immobilization or with fixation that limits opening or closing of the mouth, care must be taken to avoid excessive activity & to restrict outdoor activity to the cooler parts of the day. Dogs regulate body temperature by panting & if panting is impeded by the muzzle or a closed mouth surgery technique, body temperature can rise rapidly.

Diet change during their recovery. If your pet eats a dry kibble diet, switching to a soft diet or soaking the dry diet in warm water to soften the kibble prior to serving may be recommended. This will minimize stress on the healing bones & minimize trauma to the healing soft tissues within the mouth. In cases that have had feeding tubes placed, instructions on how to care for the tube & how to feed through the tube will be provided.

Food debris may accumulate if intraoral splints, interdental wires, or interarcade wires are utilized. You may be instructed to gently flush the mouth on a regular basis to keep the site free of debris. If external skeletal fixators are used to stabilize the fracture, the apparatus may need to be cleaned regularly & in some cases the fixators are bandaged & may require regular bandage changes.

Prognosis is generally good if complications are avoided. As previously mentioned, malocclusion can result in additional procedures (i.e. tooth reconstruction) being necessary.

If you have any questions, please feel free to ask your primary veterinarian &/or veterinary surgeon.

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