

MAXILLARY AND MANDIBULAR FRACTURES

(UPPER AND LOWER JAW FRACTURES)

BASICS

OVERVIEW

- Fractures of the upper jaw (known as the “maxilla”), the lower jaw (known as the “mandible”), and associated structures are classified as to location, severity (that is, tooth involvement, soft-tissue tears, and type of bone fracture), and effects of the chewing muscles (known as “muscles of mastication”) on restoring the bones and teeth to their normal anatomic positions (known as “reduction”)
- “Occlusion” is the relationship or contact between the biting (known as “incising”) and chewing (known as “masticatory”) surfaces of the upper and lower teeth; “malocclusion” is any deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs and cats

SIGNS/OBSERVED CHANGES in the ANIMAL

- Vary greatly according to the location, type, extent, cause of the fracture and underlying risk factors resulting in the injury
- Facial deformity; deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth (malocclusion); fractured teeth or teeth in abnormal positions; bleeding from the mouth or nose; and inability to properly close the mouth may be seen

CAUSES

- Injury, trauma, and predisposing factors, such as infections of the mouth and cancer

RISK FACTORS

- High-risk environment or temperament
- Oral infections (such as infection of the gums and supporting tissues of the teeth [known as “periodontal disease”] or infection/inflammation of the bone [known as “osteomyelitis”]); tumors or cancer; and certain metabolic diseases—may result in weaker jaws that are more prone to injury
- Traumatic injury affecting the jaws or teeth
- Congenital (present at birth) or hereditary factors resulting in weakened or deformed jaw bone

TREATMENT

HEALTH CARE

- Determined by the type of fracture, available equipment, supplies, and the veterinarian’s knowledge, experience, and comfort level
- Treatment selection is based on four major points: (1) reduction of the fracture to restore the bones and teeth (if possible) to their normal anatomic positions and reasonable contact of fracture ends; (2) re-establishment of the natural relationship or contact between the biting (incising) and chewing (masticatory) surfaces of the upper and lower teeth (occlusion), if possible; (3) stabilization sufficient for proper healing; (4) salvage condition (that is, the fracture cannot be repaired or stabilized sufficiently to allow for proper healing; therefore, treatment is designed to allow the animal to be functional, without restoring the bones and teeth to their normal positions)

HOME CARE

- Orthodontic wax—soft, pliable wax sent with owner to periodically cover any potentially irritating wires, which are used in repair of the fractured jaw
- Oral irrigation/hygiene products—use twice daily for oral hygiene and to reduce bacteria; chlorhexidine solutions help reduce bacteria; zinc and ascorbic acid solutions help reduce bacteria and stimulate soft-tissue healing

ACTIVITY

- Avoid hard chew items during healing process

DIET

- Soft food or gruel may be required during healing
- Nutritional and fluid maintenance required

SURGERY

- Treatment may involve a variety of methods to repair and/or stabilize the fractures; examples include use of a tape muzzle; wiring the jaws (maxilla and mandible) together; use of surgical pins to hold the fractured bone together; use of acrylic or composite splint; wiring around or between teeth; use of bone plates and screws
- Surgical procedures, such as removal of a portion of the jaw (examples are condylectomy and mandibulectomy), may be necessary for cases in which the fracture cannot be repaired or if massive injury is present—these are generally salvage procedures

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

Pain Management

- Local anesthesia—nerve blocks to specific areas in the mouth (known as “intraoral local blocks”); regional nerve blocks: mental nerve, mandibular nerve, infraorbital nerve, and maxillary nerve
- Injectable pain relievers (analgesics)—butorphanol tartrate (Torbugesic®; Fort Dodge Animal Health); buprenorphine; nalbuphine
- Patches for pain relief—fentanyl (Duragesic®; Janssen)
- Oral pain relief medication (analgesics)—carprofen (Rimadyl®; Pfizer Animal Health); butorphanol tartrate (Torbugesic®); hydrocodone

Antibiotics

- Broad spectrum based on history, health, and chemical profile

FOLLOW-UP CARE

PATIENT MONITORING

- Physical examination—recheck 2 weeks after surgical repair
- X-rays—recheck 4 to 6 weeks after surgical repair, then every 2 weeks until fracture is healed and/or stabilizing appliance is removed
- Fracture site may temporarily (1 to 2 weeks) be more at risk to refracture after the support of the appliance is removed
- Once the fracture line is stable, compromised teeth may need additional treatment (such as a root canal) or careful extraction
- If the fracture healing process results in a deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth (malocclusion)—orthodontics, root canal or pulp capping, and/or selective extraction may be required
- Other considerations—stability of fracture and appliance; oral hygiene; oral intake of food and water; maintenance of weight; appropriate urination and defecation; indications of pain or swelling

PREVENTIONS AND AVOIDANCE

- Keep pet in an environment (such as a fenced yard, indoors) to minimize likelihood of trauma (such as being hit by a car)

POSSIBLE COMPLICATIONS

- Deviation in the relationship or contact between the biting and chewing surfaces of the upper and lower teeth (malocclusion)
- Disease involving the pulp, the tissue inside the hard portion of the tooth (known as “endodontic disease”)
- Inflammation/infection of the bone (osteomyelitis)
- Fractured bone does not heal (known as “nonunion” of the bone)
- A piece of bone that has separated from healthy tissue or does not have blood supply and dies (known as a “sequestrum”)
- Suture line splits open (known as a “dehiscence”)
- Nerve defects
- Facial pain
- Impaired chewing (mastication)
- Temporary weight loss
- Trauma to the soft tissues of the mouth (such as gums, tongue), due to appliance or wires

EXPECTED COURSE AND PROGNOSIS

- Generally good; however, predisposing factors, initiating force, location, type of fracture, quality of home care, and selection of treatment affect the healing outcome
- Usually takes 4 to 12 weeks to achieve bony union (that is, healing of the fracture)

KEY POINTS

- Fractures of the upper jaw (maxilla), the lower jaw (mandible), and associated structures are classified as to location, severity (that is, tooth involvement, soft-tissue tears, and type of bone fracture), and effects of the chewing muscles (muscles of mastication) on restoring the bones and teeth to their normal anatomic positions (reduction)

- Signs vary greatly according to the location, type, extent, cause of the fracture and underlying risk factors resulting in the injury
- Soft food or gruel may be required during healing
- Avoid hard chew items during healing process

