

Prevent Chronic Pain: Treat Acute Pain First

An acute episode of pain may be self-limiting and resolve without treatment, but it can also lead to a chronic state of pain if untreated.



Total ear canal ablation in a German shepherd

P PROFILE

Definition

- In recent years, the importance of chronic pain has been highlighted in veterinary medicine.
- Treatment of diseases such as osteoarthritis is now a major part of general practice.
- No data are available regarding the incidence of chronic pain following an acute experience in veterinary patients.
 - It is reasonable to assume that animals experience chronic pain that is comparable to the pain experienced by humans who have similar medical conditions and undergo similar surgical procedures.

Systems

- Disruption of any body system may cause acute pain if nociceptors are stimulated or nerves are damaged.

Incidence/Prevalence

- The incidence of chronic pain in the veterinary population is unknown.¹

Signalment

- Dogs and cats present with numerous conditions that may lead to acute pain.
 - Some conditions may have a breed predilection (eg, disk protrusion in a dachshund).
- Young animals may undergo potentially painful “standard husbandry” procedures, including spaying/neutering, declawing, and tail or ear docking (Table 1).

Table 1. Possible Causes of Acute Pain & Chronic Signs

Trauma	Motor vehicle collision; fall from height
Orthopedic conditions	Spinal disk protrusion; hip dysplasia; patella luxation; elbow dysplasia; osteochondrosis
Elective husbandry procedures	Spaying/neutering; declawing (cats); tail or ear docking (dogs)
Emergency surgery	Gastric dilatation–volvulus; cesarean delivery
Elective surgery	Mammary strip; hip replacement
Medical conditions	Cystitis; pancreatitis; dermatitis
Dental	Gingivitis; caries

CONTINUES

Risk Factors

- The risks for pain associated with surgery may be divided into pre-, intra-, and postoperative factors (Table 2).
 - These factors may also be implicated in chronic pain of nonsurgical origin.



Some signs, such as a hunched posture following abdominal surgery, are indicative of pain.

- This in turn leads to *central sensitization*, in which the entire nervous system becomes more sensitive.
- The processes of peripheral and central sensitization can lead to increased sensitivity to stimuli at the site of the injury (primary hyperalgesia) and distant to the site of injury (secondary hyperalgesia).

Clinical Signs

- Animals in pain typically exhibit abnormal posture, abnormal gait, abnormal general movement, vocalization, and licking or chewing a particular area.³⁻⁵
- An animal in poor general health may have restlessness or agitation, poor response to caregiver, and lack of grooming.³⁻⁵
- Increased anxiety commonly manifests as restlessness, hiding, slowness to rise, attempts to bite caregiver, barking, growling, or hissing.³⁻⁵

Pathophysiology

- The initial nociceptive stimulus (eg, surgical trauma) is converted to an electrical signal (transduced) at the receptor.
 - This signal is transmitted from the peripheral nerve via the spinal cord to the brain, where it is perceived as pain.
- The stimulus also produces a secondary inflammatory response called *peripheral sensitization*.
 - A sensitizing combination of inflammatory mediators (eg, prostaglandin, bradykinin) decreases the nociceptive threshold at the site of the injury.
- *Windup* occurs if nociceptive input does not stop and repeated signals to the dorsal horn of the spinal cord summate, causing the spinal neurons to become more excitable.



TREATMENT

- Where possible, pain management protocols should be initiated early to prevent the risk for long-term CNS changes that can lead to chronic pain (Table 3).
 - When pain becomes chronic, treatment may be challenging.

Client Education

- Clients and veterinary professionals should not accept pain as inevitable following surgery or certain medical treatments.
- Benefits of proper analgesia should be explained to clients.

▶ Table 2. Predictive Factors for Chronic Pain Extrapolated from Humans²		
Preoperative Factors	Intraoperative Factors	Postoperative Factors
Moderate to severe pain lasting >1 month Repeat surgery Psychological vulnerability	Surgical approach with risk for nerve damage	Acute, moderate, severe pain Radiation therapy Neurotoxic chemotherapy Depression Anxiety



Table 3. What, When, & Why of Analgesia

	What	When	Why
Preemptive analgesia	Administration of analgesic before a painful stimulus	Before surgery and continuing into the peri- and postoperative periods	Experimental evidence suggests prevention of the up-regulation of CNS response to pain
Multimodal analgesia	Use of more than one class of analgesic agent (eg, opioid and NSAID +/- local anesthetic)	Commonly associated with surgery; may be used for all types of pain	Using drugs that act at multiple receptors will increase overall analgesic efficacy and may allow decreased dose of individual agents

Alternative Therapy

- Alternative neuromodulation therapies may be helpful in cases of chronic pain either alone or as an adjunct to drug treatment.^{6,7}
 - These include acupuncture, electroacupuncture, percutaneous acupoint electrical stimulation, transcutaneous electrical nerve stimulation, percutaneous electrical nerve stimulation, laser therapy, and pulsed magnetic field therapy.
- Physical therapies (eg, physiotherapy, chiropractic, osteopathy) can be used for acute and chronic pain.



IN GENERAL

- The nervous system has a large degree of plasticity.
- Good surgical technique minimizes tissue damage.
- Prolonged nociceptive input can lead to permanent alterations in the CNS, including death of inhibitory neurons, replacement with new afferent neurons, and establishment of aberrant excitatory synaptic connections.
 - These alterations may lead to intractable pain that is unresponsive to analgesics.

Relative Cost

- Relative cost of main analgesic agents: \$

Prognosis

- Untreated pain may have serious consequences for the animal's quality of life.

Prevention

- Pain routinely assessed as the fifth vital sign.
- Planned analgesia that is also responsive to patients requiring other than a "standard" protocol.
- Good nursing care (ie, dry and comfortable bed, bladder and bowels emptied, food, water, comfortable dressings, attention from humans).
- Regular assessments of in-patients.

Future Considerations

- In veterinary medicine, understanding of pain mechanisms and pain prevention is growing.
- Newer classes of drugs targeting chronic pain are being introduced in human medicine.
- More analgesics are being licensed for veterinary species.

See **Aids & Resources**, back page, for references & suggested reading.

Cost Key

- \$ = up to \$100
- \$\$ = \$101–\$250
- \$\$\$ = \$251–\$500
- \$\$\$\$ = \$501–\$1000
- \$\$\$\$\$ = more than \$1000



Untreated pain may have serious consequences on a patient's quality of life.