

## Lessons on Compartment Syndrome

Compartment syndrome (CS) is a complex condition in which increased pressure in a compartment limits blood supply, resulting in reduced or absent tissue perfusion. Two theories exist as to its pathophysiology: The arteriovenous (AV) pressure gradient theory proposes that increased tissue pressure results in increased pressure of veins in the compartment, decreasing the AV pressure gradient and resulting in decreased oxygen delivery. The ischemia-reperfusion theory states that as the compartmental pressure increases, interstitial fluid pressure rises above the capillary pressure, resulting in perfusion impairment. The subsequent ischemia and reperfusion can cause edema and cellular damage.

Skeletal muscle CS, or extremity compartment syndrome (ECS), is the most widely recognized CS. Surgical decompression, usually by fasciotomy, is the definitive

treatment. In abdominal compartment syndrome (ACS), increased intraabdominal pressure can result in progressive intraabdominal organ dysfunction and detrimental effects on cardiovascular, respiratory, and central nervous systems. When ACS is suspected or confirmed and medical management is unsuccessful, surgical decompression should be considered. Treatment for thoracic compartment syndrome (TCS), the dysfunction of intrathoracic organs and tissues secondary to increased intrathoracic pressure, entails decompression and is achieved via thoracotomy; delayed sternal closure following decompression is advocated. Risk factors can include anything causing significant chest trauma. All forms of CS are associated with significant morbidity and mortality.

### Commentary

This article offered several take-away

points. (1) CS is a possible sequela to any injury or disease process, including common ones (eg, fractures, gastric dilatation-volvulus, ascites); (2) measurement of intraabdominal pressure is achievable with material readily available; (3) pain management is the cornerstone of therapy; (4) some simple therapies, including gastric decompression and changing body position, can reduce compartment pressure; (5) fervent fluid therapy should be avoided; (6) awareness can lead to avoidance of CS—or at least further progression—reducing morbidity and mortality.—*Franciszek von Esse, VMD, DABVP*

### Source

Compartment syndrome: Pathophysiology, clinical presentations, treatment, and prevention in human and veterinary medicine. Nielsen LK, Whelan M. *JVECC* 22:291-302, 2012.

## Better Outcomes for Canine Oral Fibrosarcoma

Canine oral fibrosarcoma (FSA), a common tumor, is reported to be locally aggressive with a low rate of metastasis. This study reported the outcome of 29 dogs with oral FSA. Twenty-one were managed with surgical resection and 8 had both surgical excision and radiation therapy. Ten were classified with stage 1 disease, 11 with stage 2, and 8 with stage 3. Median survival time was 743 days (range, 569-1598). Seven dogs experienced local recurrence with median time to recurrence of 282 days; 2 of these dogs received curative-intent radiation therapy after incomplete surgical excision. Golden retrievers or golden retriever mixed-breed dogs were more likely to experience recurrence. Seven dogs developed metastasis to the mandibular lymph node ( $n = 3$ ), lung ( $n = 3$ ), or both ( $n = 1$ ). The 3 dogs with pulmonary metastases also developed local recurrence. Median time to metastasis was 282 days

and median survival time was 391 days in these dogs. Although sample size was small, this study suggested that local control should remain the focus of therapy for oral FSA. Some dogs may experience prolonged survival times even when surgical excision is narrow.

### Commentary

Canine oral FSA has a different biologic behavior than FSA in SC tissues. Oral FSA is more locally invasive, often destroying adjacent bone (bony lysis was identified in 96% of the dogs that underwent imaging). It has a higher metastatic potential (24% vs 10% for low- and intermediate-grade SC FSA). In addition, the spread pattern is different. Oral FSA can metastasize to regional lymph nodes and lungs with approximately equal frequency, whereas SC FSA metastasizes commonly to the lungs. Lastly, histologic grading is

not prognostic for oral FSA but is predictive of metastasis and survival for SC FSA. Complete surgical excision is associated with significantly longer disease-free interval. Early intervention with aggressive surgery can provide the best opportunity for long-term local control of the tumor. When an oral tumor is identified, a small incisional biopsy is indicated to reach definitive diagnosis. If FSA is confirmed, referral to an experienced surgeon with expertise in oral surgery is strongly recommended.—*Dennis Bailey, DVM, DACVIM (Oncology)*

### Source

Outcome in dogs with surgically resected oral fibrosarcoma (1997-2008). Frazier SA, Johns SM, Ortega J, et al. *VET COMP ONCOL* 10:33-43, 2012.

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