Vacuum-assisted closure therapy for the management of multiple wounds in an Eastern Ratsnake (*Pantherophis alleghaniensis*)

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**Abstract**

Vacuum-assisted closure (VAC) therapy has been shown to accelerate wound healing in humans and has been described in a few veterinary case reports on mammals and chelonians. An Eastern Ratsnake (*Pantherophis alleghaniensis*) was presented with three severe wounds and despite the limited literature about the use of VAC system on snakes, this technique was used in an attempt to manage this patient's wounds. This method resulted in a fast healing rate, healthy granulation tissue, and good contraction of the wounds. However, the overall health of the patient deteriorated and after a few weeks of treatments, the VAC system was removed.

**Methods**

Steps to install the VAC system for multiple wounds:
1. Cut appropriate size of foam dressing and place it on the wounds.
2. Apply the drape over the foam dressing and cut holes in drape centered over each dressing.
3. Create a bridge between the wounds with an additional piece of foam.
4. Apply drape over bridge foam, cut a hole in upper drape and fix the pad application on it.

**Background**

The healing rate of wounds in reptiles is slow compared to mammals and birds. Vacuum-assisted wound closure (VAC) therapy is a technique that is used to accelerate healing rate of wounds. This system has been used extensively in human medicine to treat a wide variety of wounds. Furthermore, several veterinary case reports describe the use of VAC system to heal wounds in different species such as horses, dogs, cats, a tiger, chelonians and two raptors. To our knowledge, the use of VAC therapy has not yet been documented in snakes.

**Case description**

An Eastern Ratsnake approximately 3 feet long was presented with:
- 3 deep wounds (one dorsal, one left ventrolateral and one right ventrolateral), at the proximal aspect of the caudal third of the patient, with necrosis, muscle and rib exposure. Treatments for the first 10 days:
  - Analgesics (morphine), antibiotics (ceftazidine), nonsteroidal anti-inflammatories (meloxicam), subcutaneous fluids and wound flush (saline).

**Discussion**

Positive aspects:
- Healthy granulation tissue formation and wound contraction were observed after only a couple of weeks of VAC therapy initiation.
- After 27 days of VAC system therapy, the right ventrolateral wound was able to be closed with sutures, the left ventrolateral wound was partially closed with sutures and the dorsal wound was covered with a bandage.

Negative aspects:
- The body condition and the overall health of the patient deteriorated significantly during the few weeks of treatment. The vibrations of the VAC system were presumably stressful for the patient, because snakes use vibration to hunt and communicate with their environment. The patient was not eating by itself and therefore, was gavaged with Emeraid® IC Carnivore.
- The foam bridge was encircling the patient’s body, so the VAC system constricted all the proximal aspect of the caudal third of the snake which can affect blood perfusion and gastrointestinal tract.
- The VAC unit and the materials (foam dressing, tubes, drapes) can be quite expensive in the long term.

**Results**

Dorsal wound Left ventrolateral wound Right ventrolateral wound

**Conclusion**

The VAC system can be an efficient technique for accelerating the healing rate of wounds of snakes and other wildlife animals. This, in turn, can reduce the amount of time a patient must remain in captivity under medical care, which is beneficial for overall patient well-being and aids in conserving resources provided by the patient’s caretakers.

**References**