Use of an Infraorbital Nerve Block in the Diagnosis of Headshaking

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The use of the infraorbital nerve block is a valuable technique in the evaluation of headshakers. This procedure, as described in this paper, is also useful for minor surgical repairs to the area supplied by the nerve. Author's address: Dept. of Physiology and Clinical Sciences, College of Veterinary Medicine, Cornell University, Ithaca, NY 14843. © 1997 AAEP.

1. Introduction
One of the most common questions I get from practitioners and clinicians alike, when discussing how to work up a headshaker, is how to do an infraorbital nerve block. This is a reasonable question, for although the procedure is, in theory, the same as any other nerve block, the questioner may not be highly familiar with the anatomy and there are some peculiarities associated with doing the block.

2. Methods
The infraorbital nerve block is just one of many tools available for evaluating headshakers; the block is also useful for minor surgical repairs to the area supplied by the nerve. When evaluating headshakers, I first determine that the animal is showing the behavior that day. I then videotape the horse in order to determine the frequency of headshaking objectively. I count the number of headshakes per unit time (1 min or 5 min, whichever seems the most reasonable), which I then compare with a videotape of the horse after the block.

First, a review of the anatomy. The infraorbital nerve is a sensory continuation of the maxillary branch of the trigeminal nerve. This nerve supplies sensory innervation to the ipsilateral upper lip, cheek, and nostril. It can be readily palpated as it exits the infraorbital canal 1 cm rostral and 3 cm dorsal to the rostral edge of the facial crest. The nasal cavities receive sensory innervation from the sphenopalatine branch of the maxillary nerve and are not affected by this block. The usual edge of delineation between sensitive and insensitive areas is near the mucocutaneous junction of the nostril. The nerve lies just below the levator nasolabialis muscle belly, which I displace dorsally when performing the block.

The nerve is quite large and I usually need to use 10-20 ml of local anesthetic, a 20-gauge 1-in. needle, and a 20-ml syringe without a Luer tip. Choose your favorite local anesthetic, but use one that will have the longest effect. Restraint is very important, as many of these horses are already headshy and may react violently to your working around the head. They may strike or rear if you inadvertently spear the nerve while doing the block. I usually rely on a nose twitch, although sometimes a lip shank is necessary. Some horses will require light sedation. I use 150 mg of xylazine hydrochloride...
intravenously. The effect of the xylazine will usually be gone by the time I evaluate the block, but if residual effects are a concern, xylazine can be reversed with yohimbine. I used to advocate trying to get the block within the infraorbital canal. If the horse is very cooperative this can be done, but a difficult horse will not allow it.

I initially place 10 ml of local anesthetic over the nerve bilaterally. This area is quite vascular, so I watch carefully for hematoma development. If a hematoma develops, a cold compress over the area usually resolves the problem. The block takes a long time to be effective, sometimes as long as 40 min. I consider the block done when hemostats applied to the nostril and the philtrum do not elicit a response from the horse. Not infrequently, I must repeat the block on one side or the other to achieve the desired effect.

3. Results
Some horses will completely cease their headshaking behavior after the nerve block. More frequently, horses that respond to the block will show a diminished frequency of headshaking episodes after the block. I consider the block effective if there is at least a 50% decrease in the frequency of headshakes after the block when compared with before. This is why I videotape; it allows me to be objective rather than subjective in my evaluation. If I am considering the horse to be a candidate for infraorbital neurectomy, I never rely on just one block. I prefer to see the horse have a positive response to at least three separate blocks before we consider neurectomy, and then only after all other remedies have been attempted. In my experience, and that of Mair and colleagues in Great Britain, three of four horses undergoing infraorbital neurectomy that have demonstrated repeated improvement following the nerve block will show improvement in their headshaking. However, the potential side effects (worsening of the behavior, neuroma formation, local infection, and failure to improve) are severe enough that the procedure should be considered a salvage procedure.

A word on some of the side effects of the block. The nerve is quite large and a large quantity of local anesthetic is used to block it. Because of this large volume, nerves other than the infraorbital may be blocked, including small branches of the facial nerve and autonomic nerves. Therefore, it is not unusual to see some evidence of partial, even complete, facial paresis–paralysis below the line of the block. This will, of course, concern owners and has to be explained. It is temporary and will resolve as the block wears off. You may need to tack the horse's nostrils open when it is ridden to evaluate the block, as some horses collapse their nostrils because of this facial paralysis. The horse may also sweat profusely below the level of the block, as a result of altered autonomic innervation. This also is temporary. Neither of these effects, facial paralysis or sweating, are observed following neurectomy, so I presume them to be caused by the large volume of local anesthetic required for the block. Following the exam, if the block has not worn off, I warn the owners to keep an eye out for self-trauma, as the horse's nose may itch as the block wears off.

4. Discussion
I have found the infraorbital nerve block to be a useful tool in evaluating headshakers and for repairing minor injuries to the affected area. A positive response to the block only indicates that the horse is being irritated in some manner in the area supplied by the nerve. It does not tell me what the irritation is, in the same way a distal limb nerve block only gives a location for the source of lameness, not a cause. However, as headshakers are diagnostic enigmas, anything that helps limit the area of my search is useful. I am careful to rule out parasites on the nose, tooth problems, and photic headshaking, among others, before even considering infraorbital neurectomy. I have used the block for 5–6 years on approximately 35 horses. This technique has been useful in my hands.