

How to irrigate the Frontal & Caudal Maxillary Sinuses for Drainage



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The paired (left & right) paranasal sinuses of the horse occupy a large proportion of the equine skull particularly in aged horses. When inflamed or when nasomaxillary drainage becomes obstructed, drugs such as antimicrobials alone are ineffective. Restoration of nasomaxillary drainage is an essential step to treat such cases successfully especially in the chronically affected horses. Creation of an osteotomy to enable access to either the frontal or caudal maxillary sinuses will enable irrigation of both sinuses on that side. In order to irrigate the rostral compartments (i.e. rostral maxillary sinus end ventral compartments) a separate osteotomy must be created or the central conchal bulla must be perforated).

In order to irrigate the sinuses an osteotomy must be trephined through the frontal or maxillary bones. This can be done with minimal complications in the standing sedated horse under local analgesia.

Step-by-step Description of the Procedure:

1. The horse should be sedated using an alpha-2 agonist and opiate (if desired)
2. The area over the target should be clipped (See **Fig. 1** for Frontal Trephination, and **Fig. 2** for Maxillary Trephination).



Figure 1. Site for trephined osteotomy into the frontal sinus.



Figure 2. Diagram showing sites for creation of a trephined osteotomy in the maxillary sinuses. The rostral portal into the rostral maxillary sinus is only used in aged horses.

3. After aseptic preparation, 2ml of local anaesthetic are injected subcutaneously to desensitise the skin and periosteum.
4. Once the skin is desensitised a 1-2cm incision is made parallel to the midline of the head, as deep as the underlying bone.
5. A Galt (or Horsley's) Trephine or a modified drill bit (see **Fig. 3** for modified drill bit) is used



to penetrate the underlying bone. The author prefers to do this by hand. Power tools can be used with care but their noise and vibrations is poorly tolerated by some horses and the consequences can be severe if the horse moves during the procedure.

Figure 3. Modified drill bit for creation of an osteotomy

6. The drill bit should be kept moist with saline to increase cutting efficiency of the bit.
Note: The mucosa of the sinuses may be sensitive so movement should be anticipated when it is penetrated.
7. For ingoing irrigation, a Foley catheter (18-26F) or a perforated Portex® tube can be inflated or sutured in place respectively.
8. Irrigation using warm plain isotonic saline or isotonic saline with 0.01% povidone- iodine solution is preferred. The infused saline should drain freely via the nose if the nasomaxillary ostia is not obstructed. In many cases irrigation for a few days is quite sufficient when nasomaxillary drainage is established.
9. After completion of the treatment the skin can be sutured or left to granulate if chronically contaminated.

Reference

Tremaine W.H. (2006) Endoscopy of the Equine Paranasal sinuses. *In Equine Respiratory Medicine*. McGorum et al. (Eds) 255-263 Elsevier.