How to Use the Transverse Facial Venous Sinus as an Alternative Location for Blood Collection in the Horse (21-Nov-2003)

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Abstract
The transverse facial vein dilates to form a venous sinus located 2 cm ventral and parallel to the facial crest. Blood collection from this sinus is safe, convenient, and yields sufficient quantities of blood to satisfy most testing requirements. The technique is ideal for horses in critical care situations in which multiple samples are drawn in a single day or for horses with thrombosis of the jugular veins.

1. Introduction
Blood collection in the horse is necessary for a variety of reasons. The most common site for blood collection in the adult horse is the jugular vein. Alternative sites for blood collection include the cephalic vein, the lateral thoracic vein, and for a brave few, the medial saphenous vein. Alternative venipuncture sites are used when the jugular vein has been damaged, e.g., hematoma, septic thrombophlebitis, focal cellulitis, or is no longer patent. Alternative blood collection sites are chosen based on accessibility and patient temperament. Many horses are tolerant of cephalic venipuncture. The dermatome associated with the venipuncture site for the lateral thoracic vein is highly sensitive. In addition, hematomas in this area could interfere with the girth and the performance for several days. The medial saphenous vein is poorly accessible, and the location puts the phlebotomist at high risk for injury from the animal. Thus, an alternative site for blood collection that is safe, is easily accessible, and can be used multiple times in one day is desirable.

There are three veins on the head of the horse that form dilations called sinuses. The first is the transverse facial vein, which runs parallel to the facial crest and anastomoses with the facial vein at the end of the facial crest [1,2]. The second is the deep facial vein, which runs 2 cm ventral to the transverse facial vein and anastomoses with the facial vein at the rostral border of the masseter muscle [1,2]. The third is the buccal vein, which runs caudally between the masseter muscle and the mandible [1,2]. Of these three veins, the sinus formed by the dilation of transverse facial vein is accessible to venipuncture. The transverse facial vein sinus is located approximately 2 cm ventral to the facial crest. As much as 35 ml of blood can be taken from this sinus during a single venipuncture episode. This sinus is easily accessible and can be used multiple times per day. Additionally, venipuncture at this location is well tolerated by the patient.

2. Materials and Methods

Equipment - A 1.5-in, 20-gauge Vacutainer needle, Vacutainer sleeve, and vacuum tubes appropriate for the sample of
interest or a 1.5-in, 20-gauge needle and a syringe are needed.

**Restraint** - Most horses are remarkably tolerant of this procedure. If the animal is head shy or difficult to restrain, then adequate control can generally be achieved with a twitch or lip chain.

**Technique** - Assemble the Vacutainer needle and sleeve or place the needle onto the syringe. Stand facing the lateral aspect of the horse's head. If standing on the left side of the horse and using your left hand (use your right hand when standing on the right side), place your index finger at the medial canthus of the eye and your thumb at the lateral canthus of the eye. Bring these fingers together to a point approximately 2 cm below the facial crest; this point marks the site for venipuncture (Fig. 1).

When the site is located, insert the needle at an upward angle of 60º through the skin and muscle all the way down to the bone (Fig. 2). The needle should be aiming toward the base of the facial crest. A slight crepitans should be felt when the needle tip contacts the bone. Place the vacuum tube through the sleeve onto the Vacutainer needle or aspirate with the syringe. If no blood flows, then rotate the needle or redirect until the blood begins to fill the syringe.

![Figure 2. Insert the needle at an upward angle of 60º through the skin and muscle down to the bone, aiming toward the base of the facial crest.](www.ivis.org)

3. **Results and Discussion**

To ensure the quality of the blood samples collected from this area, blood samples were collected from the transverse facial venous sinus and the jugular vein of 25 horses. The values for packed cell volume and total plasma protein were compared. No difference was detected between the blood values obtained from the transverse facial venous sinus and those values obtained from the jugular venous (P < 0.05). Therefore, samples collected from the transverse facial vein sinus seem to provide values comparable to traditional jugular vein blood samples.

This technique yields sufficient quantities of blood to satisfy most diagnostic testing requirements. The technique is ideal for horses in critical care situations in which multiple samples are drawn in a single day. Horses are tolerant of the procedure; however, the area can become sore and slightly swollen with multiple collections. Restraint with either a twitch or a lip chain will usually overcome resistance in most patients. Horses with extreme head shyness may not be amenable to this technique. Safety of the phlebotomist is a major factor when selecting this location over the cephalic vein or medial saphenous vein. Both of these vessels place the phlebotomist in a compromised position, and these venipuncture locations are less amenable to multiple collections in a single day.

**References**


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