Cephalic and Saphenous Vein Catheterization

Any of the catheters that can be placed in the jugular vein can also be placed in peripheral veins. Short catheters sold for placement in peripheral veins such as (a) and (b), have the catheter on the outside of the needle so the hole in the vein wall made by the needle is smaller than the catheter. The catheter fills the hole in the vein wall and there is minimal leakage of blood around the catheter.

c) is a butterfly catheter (no, butterflies are not free, they cost ~$2.00). The “catheter” portion that goes in the vein is a rigid needle. Butterfly catheters are used for short term, small volume, infusions such as the administration of CaparsolateTM used to treat heartworm disease.

Because of its rigidity, it is not useful for long term fluid administration as the needle may lacerate the vein. (d) is a catheter that has the conformation of a butterfly catheter but the catheter is flexible teflon rather than metal. The catheter has a wire stylet that is removed after placement. This style of catheter is very useful for placement in peripheral veins in small dogs and cats and breeds of dogs with short, crooked legs. It can also be used to drain fluid or air from body cavities. The flexibility of the catheter after the stylet is removed, reduces the chance of organ laceration.

Have all necessary supplies ready before placing the catheter. Supplies needed in addition to the catheter include one inch tape, (2 pieces of sufficient length to encircle the limb), an injection cap and a 10-12 ml syringe filled with saline or heparinized saline. If the catheter is to be left in place for several days, a small amount of antiseptic or antibiotic ointment on a gauze pad should be placed over the catheter puncture site before bandaging the catheter in place.

The catheter placement site should be widely shaved and the skin scrubbed with antiseptic solutions, using the same technique as for preoperative skin preparation.

Notice that the holder is standing on the side of the dog opposite the leg that is being catheterized. The dog is restrained close to the body of the holder. The muzzle is held away from the face of the holder and the person placing the catheter. She is reaching over the dog to hold off the vein and can apply downward pressure over the dog's back, if needed to keep the dog in sternal recumbancy. The dog's leg is being held at the elbow to prevent her from pulling back her leg.
The individual holding the leg places the thumb of the same hand across the dorsal aspect of the limb to occlude venous blood returning from the leg, causing the vein to distend with blood. In some cases the vein will be clearly visible, in other cases you may palpate the distended vein.

The holder places her thumb firmly on the medial side of the most proximal aspect of the limb. The thumb is “dragged” to the dorsal aspect of the leg which will “roll” the cephalic vein to the dorsum of the leg. Pressure is applied with the thumb to restrict blood flow returning from the distal limb, causing the vein to engorge with blood. The catheter should be placed as distal in the vein as possible. If the catheter is too proximal, its tip will lay at the elbow. As the animal withdraws its leg, flow through the catheter may cease. You can catheterize the cephalic vein on the medial side of the limb, at a location distal to the juncture of the cephalic and accessory cephalic veins. Before making the puncture, the venipuncturist can lay the thumb of the hand that is holding the leg, adjacent to the vein to reduce vein movement when

http://courses.vetmed.wsu.edu/samdx/cephalic.asp

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Taping a cephalic catheter in place:

If the catheter you are using has a solid cap, remove it. Some catheters have "flashback" caps with holes in the center to allow air in the catheter to be displaced by blood when the venipuncture is made. "Flashback" caps may be left on the catheter when the puncture is made.

Puncture the skin and vein in one swift movement. If you are too gentle, the vein moves away from the catheter. Once the vein is punctured, blood will flow through the needle that is inside the catheter.

Move the thumb and forefinger of the hand holding the leg toward each other and grasp the needle of the catheter, still holding the leg in the same hand. By holding the needle this way, if the patient pulls his leg away from you, the catheter will not be pulled out. Using the other hand (right hand for a right handed person) gently rotate the catheter off the needle, advancing the catheter into the vein. As the needle is removed, blood will flow from the catheter. At this time the holder should remove their thumb from the dorsum of the leg (continuing to hold the leg). If the holder presses firmly over the vein just proximal to the tip of the catheter, less blood will flow from the catheter, making the taping procedure less bloody.

After the stylette is removed, an injection cap is placed and the catheter is flushed well with saline or heparinized saline, to assure patency. Dry the leg and the catheter with gauze before applying tape.

The injection cap should not be taped into the bandage so that it can be easily removed later.
Fold over the end of the tape to create a tab for easier removal.

A second piece of tape placed under the cap will allow easier removal and replacement of the cap and prevent hair from touching the tip of the catheter.

The injection cap can be removed for direct connection of a fluid administration set (a) to the IV catheter, or the cap can be left on the catheter and the fluid administration set attached using a 20 gauge hypodermic needle inserted through the cap. The administration set is "looped" and taped to the leg (b). This reduces the chance of accidental removal of the catheter if the administration set is pulled.
A hypodermic needle with plastic cover, attached to an injection cap can be taped to the IV pole or the fluid bag or bottle. When fluids are temporarily stopped, the injection cap is placed on the end of the catheter and the needle with plastic cover is placed on the end of the IV administration set to keep the tip of the tubing sterile.

Movement of the leg can occlude fluid flow through the catheter. If needed, a splint such as the pictured Mason-meta splint can be used to keep the limb extended to maintain a constant fluid flow rate. The leg and splint can then be bandaged or the splint can be taped to the leg at both ends, leaving the catheter exposed. The use of IV infusion pumps reduces the need to keep the limb extended. Fluid pumps can often overcome the resistance created by positional changes.

Saphenous Vein
To place a catheter or obtain blood from the lateral saphenous vein, the animal is positioned in lateral recumbancy. The holder is holding off the vein with her right hand. Some dogs have a prominent medial saphenous vein which can be catheterized or sampled. To access the medial saphenous vein, the animal is held in lateral recumbancy but the holder applies pressure on the medial aspect of the leg closest to the table.

The technique for placing a catheter in the lateral saphenous vein of the dog is similar to the technique for cephalic placement. Notice the venipuncturist has placed her thumb adjacent to the vein to stabilize it.