PLACEMENT OF INTRAVENOUS CATHETERS

Equipment

Electric clippers with an appropriate size blade.

Sterile lint-free gauze swabs soaked in chlorhexidine gluconate or povidone-iodine solution.

Surgical spirit soaked swabs.

Intravenous catheter of appropriate size.

Intermittent injection cap (Braun) or T-connector (Avon Medical) – pre-flushed with sterile saline.

2ml sterile saline

2.5cm zinc oxide or other appropriate tape cut to appropriate lengths to wrap around the placement site and catheter.

Sterile transparent sterile dressing (e.g. IV 3000®, Smith and Nephew)

Cellulose wadding (e.g. Soffban®, Smith and Nephew)

Cohesive bandage (e.g. Flexus®, Millpledge)

Catheter care

The main objectives are to avoid sepsis and iatrogenic infection so that the catheter can remain in place as long as possible (up to 72 hours). The catheter needs to remain patent and should be flushed approximately 4 times daily. The catheter entry site must remain clean and dry at all times. The bandage should be changed daily, or whenever it becomes wet or soiled.

Catheters may remain in place for up to 72 hours, however the catheter must be removed if inflammation, thrombophlebitis, infection or patient discomfort due to catheter displacement occurs. If the catheter is cared for adequately, once removed the same catheter site may be re-used again 72 hours later.

PLACEMENT OF INTRAVENOUS CATHETERS

Procedure

1. Select an appropriate leg or other placement site with no inflammation, wounds, fractures etc.

2. A large area should be clipped around the proposed venipuncture site to maintain asepsis. Loose hair should be removed from the site. This includes nearby long hair that may interfere with taping the catheter in place and result in contamination or loss (e.g. 'feathers' should always be clipped from the caudal aspect of the limb). Clipping should be gentle to avoid skin trauma (see surgical preparation).

3. Hands should be washed before the procedure and clean examination gloves should be worn. For high-risk (e.g. immunocompromised patients) personal should ideally wear sterile gloves or at least prepare their hands as for aseptic surgery.

4. The clipped site should be cleaned using sterile lint-free gauze swabs soaked in a dilute chlorhexidine gluconate solution (see surgical preparation) Start at the centre of the clipped area and work outwards in a circular motion to prevent contamination from the hair. Apply enough pressure to remove dirt, microorganisms and bacteria from the skin surface but avoid over-vigorous scrubbing and skin trauma. Use 70% alcohol to remove the excess wash once the site is clean. Allowing the alcohol to dry can help the tape stick to the limb.

5. An appropriate size catheter should be chosen, corresponding with the size of the vein. The insertion site should be chosen carefully so that the tip of the catheter is not too close to the elbow joint or other interference that may kink or occlude the catheter preventing accurate intravenous infusions to take place.

6. An assistant should restrain the patient and support and extend the limb (or other placement site), whilst occluding and gently rolling the vein laterally (i.e. 'raising the vein).

7. To raise the vein for saphenous catheter placement, the assistant's hand is placed behind the stifle and the leg is squeezed.

8. The operator should help stabilise the site and stretche the skin to prevent movement of the vein while venipuncture is performed.

9. The catheter should be held firmly at the junction of the stylet and the hub, and the catheter should not be allowed to separate from the stylet. The stylet should form a 30° angle with the vein. With the needle bevel up, the catheter and stylet are advanced firmly and steadily through the subcutaneous tissue and then the needle should 'pop' into the vein.

10. Entry of the catheter into the vein will be followed by the flow of blood into the hub of the stylet. The angle of the catheter should then be decreased and they should be advanced together for another 2-3mm until the catheter tip is well inside the vessel. The operator should then reposition their other hand so that it is holding the stylet stationary between the thumb and the index finger, allowing the opposite hand to advance the catheter off the stylet and into the vein. The stylet should remain stationary in relation to the vein. Once the catheter is fully inserted the stylet can be removed completely. On no account should the stylet be replaced back into the catheter once it has been inserted, as this may spear the catheter and may even result in the distal tip of the catheter being cut away and left within the circulatory system.

11. As the stylet is removed the assistant can place their thumb over the catheter and apply pressure, which stops the flow of blood back along the catheter. With the stylet removed an intermittent injection cap or T-connector should be attached to the catheter hub.

12. Care should be taken to avoid pulling the catheter out when placing caps, t-connectors and tapes.

13. Before the catheter is taped in place, the catheterisation site should be dried using a sterile gauze swab.

14. The 1st piece of tape should be placed under the hub of the catheter, encircling the limb and finishing over the top of the catheter hub and again across the limb.

15. A T-connection (pre-filled with saline) should then be attached to the catheter.

16. The catheter can then be flushed, while observing the limb for signs of extravasation or 'blowing' of the vein.

17. Another piece of tape can then by applied with a slight upward (proximal) force to prevent the displacement of the catheter.

18. The area of skin, which the assistants thumb has touched, should now be swabbed using surgical spirit, taking care not to touch the catheter or the skin-catheter interface. The venipuncture site should then be covered with a sterile transparent dressing, this will allow observation of the catheter in the vein and allow early detection of any infection.

19. If a T-connector is attached this should be curved laterally along the limb and secured using zinc oxide tape. Studies have demonstrated that flushing peripheral catheters using heparinised saline is no longer required in order to maintain the patency of the catheter, and normal (0.9% saline) is adequate for flushing of peripheral catheters. This should prevent accidental disconnection of the IV set from the catheter and displacement of the catheter.

20. Finally the whole catheter and IV set should be bandaged to prevent patient interference and contamination by soiling. A layer of bandage should be present under all tubing. If the patient is comfortable they are less likely to chew it out.

The Bella Moss Foundation