WORKSTATION - VENOUS ACCESS

EQUIPMENT YOU WILL BE WORKING WITH

4 cannulas of different sizes - 14, 16, 18G
Butterfly size 20, 22G
Rapid infusion device
Intraosseous needle
Cutdown sets

Different fluids
5% Dextrose
Normal saline
Haemoccel
Blood

Different types of IV giving sets
Blood giving sets
Burretrol
50ml syringe
Baby mannequin for intraosseous needle insertion
Chicken legs
Chocolate violet bars

GOALS

At the completion of this workstation, the participants should be familiar with different

- ☛types of IV tubing,
- ☛cannula and their flow rates
- ☛approaches to IV access.

The sites that you will demonstrate include: cubital fossa, forearm and hand, external jugular and a cutdown technique, the long saphenous at the ankle of the sheep's leg can be cannulated. The importance of rapid infusion device conversion of smaller cannulas will be demonstrated. The flow rates of different tubings and cannulas will be discussed. The value of hand pumping vs pressurised infusion will be mentioned.

Particular pitfalls will be identified that of the long narrow cannula, the long tubing, incorrect tubing, the use of a burretrol in adults, failure to secure a line adequately leading to dislodgment.

Rural Trauma Tip

1. Fluids can be kept warm by placing near a warm car radiator.
2. The most secure way of fixing an IV cannula is a role of elastoplast tape.
3. If doing a cutdown, insertion of the IV tubing itself into the large long saphenous vein in the ankle, is probably one of the most effective ways of infusing fluid.

WORKSTATION - INTRAOSSEOUS NEEDLE INSERTION

EQUIPMENT REQUIRED

Cook intraosseous needle (kindly donated)
Chicken legs
Violet bars
Methylene blue
Normal saline

AIMS OF WORKSTATION

To recap on the indications for intraosseous needle insertion and to allow the candidate the opportunity of performing this in three different models - the baby mannequin, the violet bar and the chicken leg. Identify particular problems with intraosseous needle insertion.

INTRAOSSEOUS NEEDLE INSERTION - PROCEDURE

The instructor is to perform a silent demonstration and a talk through and then ask each student to demonstrate the task taking one of his colleagues through the procedure. Firstly, one should identify the tibial tuberosity and then about 3-4 cm below this under sterile conditions insert the intraosseous needle into the tibial bone at 90^0 using a gentle cork screwing action.

Tips

1. Avoid a rocking motion as this will either break the needle or lead to extravasation through a large hole.
2. Avoid excessive force otherwise the needle will exit the far side of the tibia and lead to extravasation.
3. Should you get a through and through puncture of the tibia, use the other leg to avoid extravasation.

Remember that the participants may or may not have used intraosseous needle and in a remote location in the young child they may provide the sole source of resuscitation and may be one of the more important aspects of this rural trauma course. So it is essential that the participant is happy with the procedure.

OVERVIEW OF INTRAOSSEOUS NEEDLES

Intraosseous infusion through needles has been used for over 50 years, both in adults and in children. In adults it was not an uncommon method of performing venography but it has recently become one of the main methods of resuscitating children with difficult IV access. In general, failure to insert an IV line in a child after two or three attempts should lead to the rapid insertion of an intraosseous needle in a shocked child. Failure to opt for the intraosseous route will lead to progressive shock and possibly

death. The proximal tibial plateau is the most commonly used. However you can use the distal femur, distal tibia. There have been a couple of fatalities reported using the sternum. The humerus has also been used. An 18 or 20G cannula can be used for children less than 18 months, however, it is difficult to insert. Having inserted the needle using a corkscrew action, in a gentle rather than brisk fashion, aspiration can be used to confirm the correct position as blood and bone contents will return. These can be used to cross-match a patient. The intraosseous approach can be used to administer not only fluids but drugs.

COMPLICATIONS

Complications of intraosseous needles are rare. They include: infection, extravasation, osteomyelitis. It is important not to use the extremes of the long bones as this can cuase growth retrardation. Sternal puncture have lead to cardiac injuries and are best avoided.