INTRAVENOUS NEEDLE ASSEMBLY

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This invention relates generally to a needle assembly for intravenous use and more particularly to an improved needle assembly for intravenous administration of fluids into a scalp vein of an infant.

Herefore, needle assemblies designed for intravenous administration of fluids of the type with which the present invention is concerned have had an upwardly extending handle portion which is used to hold the needle when inserting the needle into the scalp vein or other part of the patient's body. The fabrication of the handle portion adds considerably to the cost of the needle and also frequently interferes with fastening the needle securely in position after it has been inserted into the vein.

It is therefore an object of the present invention to provide a needle hub assembly which is more economical to manufacture and more convenient to use than prior art devices of this class.

Other objects of the invention will be apparent from the detailed description and claims to follow.

In the drawing:
FIGURE 1 is a perspective view of the needle assembly and tubing adapter engaging a fluid source partially shown.
FIGURE 2 is a plan view of the needle assembly of FIGURE 1 showing the hub wings in an outwardly extending position.
FIGURE 3 is a side elevation view showing one embodiment of the needle hub assembly partially in vertical section.
FIGURE 4 is an end view of the needle assembly shown in FIGURE 3.
FIGURE 5 is a vertical sectional view of the needle assembly with wings in outwardly extended position.
FIGURE 6 is a vertical sectional view of the needle assembly showing the needle being inserted into the vein of a patient.

The intravenous needle assembly 10 of the present invention comprises a hollow needle 11, preferably of small diameter, having a beveled pointed end 12 and a shank end 13 which is inserted in the end of a length of clear, flexible plastic tubing 14, such as pharmaceutical grade polyvinylchloride tubing. The outer end of the tubing 14 has a female adapter 15 secured thereto into which a Luer tapered syringe outlet 19 is receivable. Extending across the needle 11 and over the section of the tubing which telescopes with the needle shank is a short transverse wing strip 16 of relatively flexible plastic material which is preferably integrally secured to the flexible tubing 14. A weakened portion is defined by each pair of parallel groove or area of localized reduced thickness 17, 17' are preferably formed in the upper surface of the wing strip 16, one on each side of the needle shank adjacent thereto which divides the wing strip 16 into two oppositely extending wing sections 18, 18' and permits the said wing sections 18, 18' being readily moved upwardly into a vertical position when inserting the needle or being bent downwardly to conform to a convex surface on which it is to be secured. The wing strip 16 is preferably formed of a plastic material which is semi-flexible and heat sealable to the length of flexible tubing, such as polyvinylchloride. Other heat sealable or solvent sealable flexible plastics, however, can be used to form the wing sections in place of the preferred polyvinylchloride, such as polyethylene and polypropylene.

It will be apparent that the needle assembly of the present invention can be formed by several different methods. One of the simplest methods of fabricating, however, is to insert the needle 11 into the end of a length of flexible small diameter polyvinylchloride tubing which has an interior diameter only very slightly larger than the outside diameter of the needle and over lay the juncture section of the tubing and needle with a shortening strip of flexible polyvinylchloride plastic so that it extends transversely across the needle. The parts thus positioned are then pressed between electronic dies having means on the surface of the upper die for forming the parallel grooves 17 and 17' in the wing strip when heated and pressed between the said dies. In this manner the tubing is sealed to the needle and the wing strip is integrally secured thereto and preferably also with the tubing, thereby making the tubing and wing strip a unitary structure.

Where a very small diameter needle cannula is used, a preferably clear plastic sleeve member 20 having a composition similar to the flexible tubing and having an internal diameter only slightly larger than the outside diameter of the cannula is cemented to the cannula and thereafter the flexible tubing is placed over the plastic sleeve. The wing strip is then attached integrally to the tubing in the above-described manner. This permits use of flexible tubing having an interior diameter sufficiently large to permit adequate flow of fluid therethrough.

In use, the flexible wings 18, 18' are bent upwardly to a substantially contiguous position with both wings lying substantially in the plane of the needle while at the same time indicating the direction of the bevel of the needle point and allowing the wings to be grasped by forceps or by hand for insertion of the needle into a vein as shown in FIGURE 6. After insertion of the needle, the flexible wings 18, 18' are moved downwardly with the said wings extending outwardly from the needle so that the wings conform to the shape of the body part into which the needle is inserted, as shown by the dotted lines in FIGURE 6. When thus positioned, the needle assembly can be secured to the body part by placing a strip of adhesive tape 22 directly over the wings 18, 18' and needle without obstruction from any part of the needle assembly. Another obvious advantage of the instant hub assembly is the lack of any extension of the cannula or obstructions adjacent the end of the cannula which would prevent or delay the operator seeing the flush back of the blood on insertion of the needle into the vein.

In order to protect the needle point and cannula, it is desirable to position a needle sheath 23 over the needle cannula and the point thereof as shown by the dotted lines in FIGURE 2 with the inner end of the sheath abutting the outer surface of the tubing or wing strip.

Others can readily adapt the invention for use under various conditions of service, by employing one or more
of the novel features disclosed or equivalents thereof. As at present advised with respect to the apparent scope of my invention, I claim the following subject matter.

I claim:

1. An intravenous needle assembly comprising a hollow needle having a pointed end, and a pair of oppositely extending semi-flexible wing sections connected to said hollow needle, each wing section having a weakened portion adjacent to and substantially parallel with said hollow needle.

2. An intravenous needle assembly comprising a hollow needle having a pointed end, and a pair of semi-flexible wing sections connected to said hollow needle, each wing section having a weakened portion adjacent to and parallel with said hollow needle, each weakened portion defined by a localized reduction of thickness of each wing section.

3. An intravenous needle assembly comprising a hollow needle having a pointed end, and a pair of oppositely extending semi-flexible wing sections connected to said hollow needle, each wing section having a groove adjacent to and parallel with said hollow needle, said grooves being sufficiently deep to enable said wing sections to be moved into contact with each other.

References Cited in the file of this patent

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