

The coating composition may be applied to the stylet from an organic solution by spraying, flowing, immersing or other per se known coating techniques. The preferred solvents for this purpose are ethanol and methanol.

The following examples show by way of illustration and not by way of limitation the practice of this invention.

EXAMPLE 1

Two grams of stearic acid were dissolved in eight grams of oleic acid and the resulting mixture was then dissolved in two volumes of ethanol. Phenolphthalein pH indicator was added in order to visualize the end point of neutral pH. Four molar sodium hydroxide was then added at 50°-55° C. with stirring until the end point was reached. The solution was now pink and very slightly alkaline. The stylet wire from a nasogastric intubation device as shown in the drawing was immersed in the resulting alcoholic solution while maintaining the temperature of around 50°-55° C. The wire was then removed and air dried. The resulting coated wire and tube were then assembled to provide a nasogastric intubation device as shown in the drawing and previously described.

EXAMPLE 2

Example 1 was repeated, except that one gram of stearic acid and nine grams of oleic acid were dissolved in methanol.

In both of the above examples, the coating on the stylet was appreciably harder than the coating obtainable with the oleate alone. The coatings did not flake or rub off when the stylet was inserted in the tube, as was the case with the oleate alone.

The nasogastric tube as prepared above may be employed in the manner heretofore described. In other words, prior to insertion, the device will be flushed with a small quantity of water, as previously described, to provide in effect a soap solution lubricating the wire surface in order to provide a substantial decrease in friction and, in turn, permit easy removal of the wire after intubation is completed.

It will of course be appreciated that the bolus should also be lubricated prior to insertion, which lubrication may be accomplished with the aid of a surgical lubricant, as previously described. Preferably, however, lubrication of the bolus is accomplished by providing a lubricious precursor consisting essentially of a substantially uniform mixture of an unsaturated higher fatty acid containing at least sixteen carbon atoms and a polymer such as polyurethane which is compatible therewith, in accordance with the invention described and claimed in our concurrently filed patent application, Ser. No. (P.F. 1059). As is described therein, when the bolus provided with the above composition is contacted with an aqueous alkaline medium, the surface of the bolus is rendered lubricious. When the present invention is used in conjunction with the invention described and claimed in the aforementioned copending application, it will be appreciated that in lieu of utilizing water at a neutral pH in the flushing port, a slightly alkaline aqueous solution, e.g. on the order of pH 8.5-9 will be utilized in order to convert the acid in the bolus to its soap and thereby lubricate both the wire and bolus in a single step.

To confirm the efficacy of this invention, comparative tests were run to establish the removal force for (1)

a dry uncoated stylet wire; (2) a wet uncoated stylet wire; (3) a dry stylet wire coated as in Example 2; and (4) a stylet wire coated as in Example 2 and which has been wetted with water. In these tests, an approximately 7 cm unsupported loop was made in the stylet-containing tube in order to provide some friction simulating actual removal conditions. With both the dry uncoated wire (1) and the wet uncoated wire (2), the wire could not be removed. With the dry wire coated in accordance with this invention (3) 50 grams of force was required for removal. However, when the coated wire was wetted (4) only 37 grams of force was needed, thus confirming the ability of the present invention to solve the task of the invention in a simple an elegant manner, namely to provide a lubricious coating on the stylet which materially improves the surface lubricity so as to facilitate markedly the removal of the wire from the tube following intubation.

Since certain changes may be made without departing from the scope of the invention herein involved, it is intended that all matter described in the foregoing specification and drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A flexible stylet adapted for being removably inserted within a nasogastric tube in order to assist in intubation, said stylet having a surface coating of a substantially homogeneous non-aqueous mixture consisting essentially of an alkaline earth metal salt of an unsaturated higher fatty acid having at least sixteen carbon atoms; and up to equal parts by weight of an alkaline earth metal salt of a saturated fatty acid having at least sixteen carbon atoms.

2. A stylet as defined in claim 1 wherein said unsaturated fatty acid is oleic or linoleic acid.

3. A stylet as defined in claim 2 wherein said saturated fatty acid is stearic or palmitic acid.

4. A stylet as defined in claim 3 wherein the ratio by weight of said unsaturated fatty acid salt to said saturated fatty acid salt is no less than about 4:1.

5. A stylet as defined in claim 1 wherein said mixture contains from about 80 to about 90 per cent by weight of said unsaturated fatty acid salt.

6. A nasogastric intubation device including a tube adapted to be inserted through the nose and into the stomach, said tube having a leading end for positioning in the stomach and a trailing end, said tube having at least one port adjacent its leading end for passage of fluid to or from said tube; and a flexible stylet removably insertable into said trailing end of said tube to assist in intubation, said stylet having a surface coating of a substantially homogeneous non-aqueous mixture of an alkaline earth metal salt of an unsaturated higher fatty acid having at least sixteen carbon atoms; and up to equal parts by weight of an alkaline earth metal salt of a saturated fatty acid having at least sixteen carbon atoms.

7. A device as defined in claim 6 wherein said unsaturated fatty acid is oleic or linoleic acid.

8. A device as defined in claim 7 wherein said saturated fatty acid is stearic or palmitic acid.

9. A device as defined in claim 8 wherein the ratio by weight of said unsaturated fatty acid salt to said saturated fatty acid salt is no less than about 4:1.

10. A device as defined in claim 6 wherein said mixture contains from about 80 to about 90 per cent by weight of said unsaturated fatty acid salt.

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