

formed at the distal end of tube 22, particularly because the tool occupies a large part of the internal diameter of tube 22.

In the exemplary embodiment shown, and for an adult size endotracheal tube, distal link 88 and proximal portion 50 are about 5 mm in diameter, or 0.6 to 0.75 of the internal diameter of tube 22. Distal link 88 is about 5 cm; and the U-shaped slot 144 on the distal end is about 2 mm deeper (longitudinally) than needed for clearance with narrowed end 142 of distal link 88. According to these dimensions, distal link 88 can divert endotracheal tube 22 from a neutral aligned position to a diverted position wherein the extreme end of endotracheal tube 22 is angled by substantially 90° anteriorly of the longitudinal axis of proximal portion 50.

Both of the above embodiments are very effective for inserting tube 22 through larynx 35, and are effective even for patients having potential problem anatomies or conditions, such as an unusually anterior larynx, short chin or trauma that limits freedom to tilt back the head. Of course other specific dimensions and specific articulation structures are also possible.

Proximal portion 50 and the link or links 88 define a generally smooth cylindrical outer contour. The respective parts are preferably made of a surgical stainless steel. An antifriction covering such as polytetrafluoroethylene (Teflon) can be provided as shown in FIG. 9, or the parts can be bare stainless steel as appropriate for autoclaving.

It is possible to include a spring (not shown) providing a bias tending to urge the lever handle in a direction opposite the direction that places tension on control member 55. For example, a compression spring can urge the paddle 122 of lever handle 112 outwardly from handle base 112, opposed by the user's grasp. However, it has been found that the inherent stiffness of endotracheal tube 22 is sufficient to provide a return force for bringing links 88, 102 back to their rest position when tension on control line 55 is released, and allowing tool 20 to be withdrawn quickly and easily from tube 22.

The dimensions of tool 20, the angle to which links 88, 102 can be diverted and other aspects of the invention can be varied as needed for particular circumstances, e.g., smaller or larger tracheal tubes and/or patients, use for patients having a normal-anatomy vs. an unusually anterior larynx. The invention is convenient and useful with normal anatomies, as well as being particularly useful for those anatomies in which intubation problems are otherwise encountered.

The invention having been disclosed in connection with the foregoing variations and examples, additional variations will now be apparent to persons skilled in the art. The invention is not intended to be limited to the variations specifically mentioned, and accordingly reference should be made to the appended claims rather than the foregoing discussion of preferred examples, to assess the scope of the invention in which exclusive rights are claimed.

We claim:

1. A tool for assisting in manual placement of an endotracheal tube in a patient such that such an endotracheal tube passes through a mouth, pharynx and larynx of the patient, the tool comprising:

an elongated proximal portion at least partly defining a fixed arc and passage leading toward an articulating distal end of the tool, the proximal portion being substantially rigid;

at least one articulating distal link attached to the distal end of the proximal portion of the tool by at least one pivot pin defining a pivot axis perpendicular to a plane

occupied by the proximal portion, thereby permitting the link to pivot relative to the proximal portion in said plane;

an elongated control member extending along the passage and being attached to the distal link, the control member being laterally spaced from the pivot axis in said plane;

means for applying tension to the control member such that an articulating distal link portion is diverted relative to the fixed arc of the substantially rigid proximal portion toward said inner side of the pivot axis in the plane; and,

wherein the proximal portion is substantially integrally rigid, whereby the endotracheal tube can be diverted substantially exclusively at the link toward said inner side to achieve said manual placement.

2. The tool according to claim 1, wherein the articulating distal link extends only over a distal length of about 10–20% of a length of the tool.

3. The tool according to claim 1, wherein the articulating distal link encompasses a length of about 4–5 cm of the tool.

4. The tool according to claim 1, wherein the proximal portion and the articulating distal link comprise integral stainless steel parts.

5. The tool according to claim 1, wherein the control member comprises one of a flexible cable or a rod extending along a channel in the proximal portion.

6. The tool according to claim 1, wherein the proximal portion is malleable such that the fixed arc can be changed by manual force.

7. The tool according to claim 1, wherein the means for applying tension comprises a base at a proximal end of the proximal section and a lever pivotally mounted on the base, the control member being attached to the lever for application of tension to the control member, and the passage providing lateral clearance for displacement of the control member relative to the proximal portion.

8. The tool according to claim 1, wherein the means for applying tension comprises a base at a proximal end of the proximal section and a lever pivotally mounted on the base, the control member being attached to the lever for application of tension to the control member, wherein the proximal portion is bent in a curve in the plane.

9. A tool for assisting in manual placement of an endotracheal tube in a patient such that such an endotracheal tube passes through a mouth, pharynx and larynx of the patient, the tool comprising:

an elongated proximal portion at least partly defining a fixed arc and a longitudinal passage in a plane of the proximal portion, leading from a fixed proximal end toward an articulating distal end of the tool, the proximal portion being substantially rigid;

at least one articulating distal link attached to the distal end of the fixed proximal portion of the tool by a pivot pin defining a pivot axis permitting the articulating link to pivot relative to the proximal portion in said plane;

an elongated control member extending along the proximal portion, the control member passing along an inner side of the pivot axis and being attached to the articulating link; and,

means for applying tension to the control member such that the articulating link portion is diverted toward said inner side of the pivot axis, whereby an endotracheal tube can be placed on the tool and guided through the larynx.

10. In combination, an endotracheal tube and a tool for assisting in manual placement of the endotracheal tube in a