

In the embodiment of FIG. 4, the information stored in memory 92 and evaluated by comparator 90 may take a form equivalent to a video image. For instance, analyzer 84 may process the incoming reflected ultrasonic waves to produce a structural codification not in the form of a video signal. The selector switch 94 may nevertheless be actuated in conjunction with an image on monitor 86, so that the structural information in memory 92 is correlated to the desired image and corresponding intubation configuration.

Accordingly, it is to be understood that the drawings and descriptions herein are proffered by way of example to facilitate comprehension of the invention and should not be construed to limit the scope thereof.

What is claimed is:

1. An endotracheal intubation method, comprising the steps of:
 - inserting an endotracheal tube into a trachea of a patient;
 - during said step of inserting, emitting ultrasonic pressure waves from a distal end portion of said endotracheal tube in the direction of insertion of said endotracheal tube;
 - automatically sensing ultrasonic waves reflected from internal tissues in the patient;
 - automatically analyzing the sensed ultrasonic waves to determine internal structures of said patient;
 - generating a video image of said internal structures in response to said steps of sensing and analyzing;
 - in response to said video image, manipulating said endotracheal tube to position a distal end thereof in a desired location in the trachea of the patient;
 - upon the manipulating of said endotracheal tube to said desired location, storing, as a reference image, a selected image of internal structures of the patient;
 - upon the storing of said reference image, automatically comparing said video image with said reference image; and
 - upon detecting a difference between said video image and said reference image in said step of comparing, automatically indicating to an operator that said distal end of said endotracheal tube has moved from said desired location.
2. The method defined in claim 1 wherein said steps of emitting and sensing are implemented via an elongate rod slidably inserted into an ancillary channel on said endotracheal tube, further comprising the step of inserting said elongate rod into said ancillary channel prior to the insertion of said endotracheal tube into the trachea of the patient.
3. The method defined in claim 1, further comprising the step of displaying said video image on a video monitor.
4. An endotracheal intubation assembly, comprising:
 - a tubular member having a proximal end and a distal end, said tubular member being provided with openings at said proximal end and said distal end;
 - emission means disposed at said distal end of said tubular member for emitting an ultrasonic pressure waveform from said distal end of said tubular member;
 - pickup means disposed at a distal end of said tubular member for sensing ultrasonic pressure waves reflected from internal tissues in the patient;
 - analyzing means operatively connected to said pickup means for automatically analyzing reflected

- ultrasonic pressure waves sensed by said pickup means to determine internal structures of a patient;
- memory means for storing a reference;
- comparator means operatively connected to said analyzing means and said memory means for automatically comparing a detected internal structure with the stored reference; and
- alert means operatively connected to said comparator means for automatically indicating to an operator that said distal end of said endotracheal tube has moved from a predetermined position within the patient's trachea.
5. An endotracheal intubation assembly, comprising:
 - a tubular member having a proximal end and a distal end, said tubular member defining a longitudinally extending lumen having openings at said proximal end and said distal end;
 - radiation transmission means attached to said tubular member for transmitting electromagnetic radiation from said proximal end to said distal end of said tubular member along a first path separate from said lumen;
 - image transmission means attached to said tubular member for transmitting an image from said distal end to said proximal end of said tubular member along a second path separate from said lumen;
 - analyzing means operatively connected to said image transmission means for automatically monitoring image information carried by said image transmission means; and
 - alert means operatively connected to said analyzing means for indicating to an operator that said distal end has moved from a predetermined position within a patient's trachea.
6. The assembly defined in claim 5 wherein said ancillary tube is provided at said distal end with a transparent end cap.
7. The assembly defined in claim 6 wherein said end cap is attached to said ancillary tube in a fluid tight seal.
8. The assembly defined in claim 5, further comprising selection means for programming said analyzing means to recognize a selected image upon insertion of a distal end portion of the assembly into a patient's trachea.
9. The assembly defined in claim 5 wherein said analyzing means includes comparator means for comparing, with a selected image, the image carried by said image transmission means.
10. The assembly defined in claim 5 wherein said image transmission means includes a fiberoptic cable removably attached to said tubular member.
11. The assembly defined in claim 10 wherein an ancillary tube is connected to said tubular member and extends longitudinally therealong from said proximal end to said distal end, said fiberoptic cable being removably inserted into said ancillary tube.
12. An endotracheal intubation method, comprising the steps of:
 - providing an endotracheal tube having a longitudinally extending lumen and a distal end and a proximal end;
 - inserting said endotracheal tube into a trachea of a patient;
 - upon placement of said endotracheal tube at a desired position within the patient's trachea, connecting said endotracheal tube to a respirator machine so that said lumen communicates with said respirator machine in a closed system;