

ducer valves are interchangeable on many introducers, we suggest that users of catheter introducer kits carefully examine the introducer ports and to use caution with those that are not self-sealing.

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## Use of a Stabilized, Armored Endotracheal Tube in Maxillofacial Surgery

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The use of flexometallic (armored) endotracheal tubes is well established in anesthesia. Sanders<sup>1</sup> described the advantages of the armored tube for anesthesia in patients with facial deformities, fractures, or wounds. The close relationship of the surgical field to the endotracheal tube in maxillofacial surgery presents several problems. Fixation of the tube close to the nasal or oral ostium with tape may interfere with disinfection of the surgical site. The disinfecting solutions may loosen the tape. The flexometallic tube secured by tape maintains tension which may distort the facial soft tissues. Thereby, judgment of the facial profile or contours during surgery may be impaired. A connector at the end of the tube, usually well above the oral nasal level, may impair proper access to the surgical field. Lastly, during orotracheal intubation the tube may interfere with the evaluation of a planned occlusion. The inherent flexibility of the tube causes it inevitably to curve back between upper and lower teeth when pushed laterally into the vestibulum. A stabilized armored tube was devised which may solve some of the above problems.

The extraoral or extranasal part of the tube can be molded easily to the facial contour. The lumen is non-collapsible and maintains its shape even when sharply bent to an extreme degree, such as around the nasal tip. Lastly, this tube allows positioning of extending connectors outside the maxillo-facial region.

A commonly used flexometallic tube (Silkolatex by Rüsch†) has been lengthened for another 10 cm. Thereby, the extraoral or extranasal part of the tube reaches the

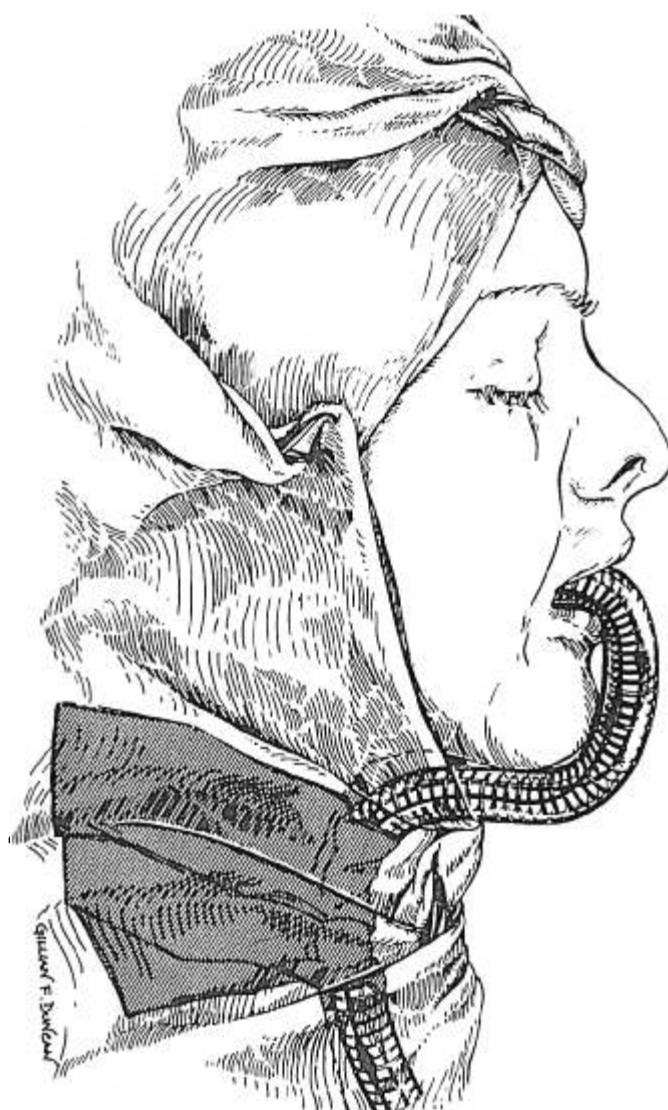


FIG. 1. In orotracheal intubation, the increased length of the tube permits normal tape fixation outside the operating field in the neck-region. Due to the contour-retaining characteristics of the tube unhindered evaluation of the soft tissue profile is possible.

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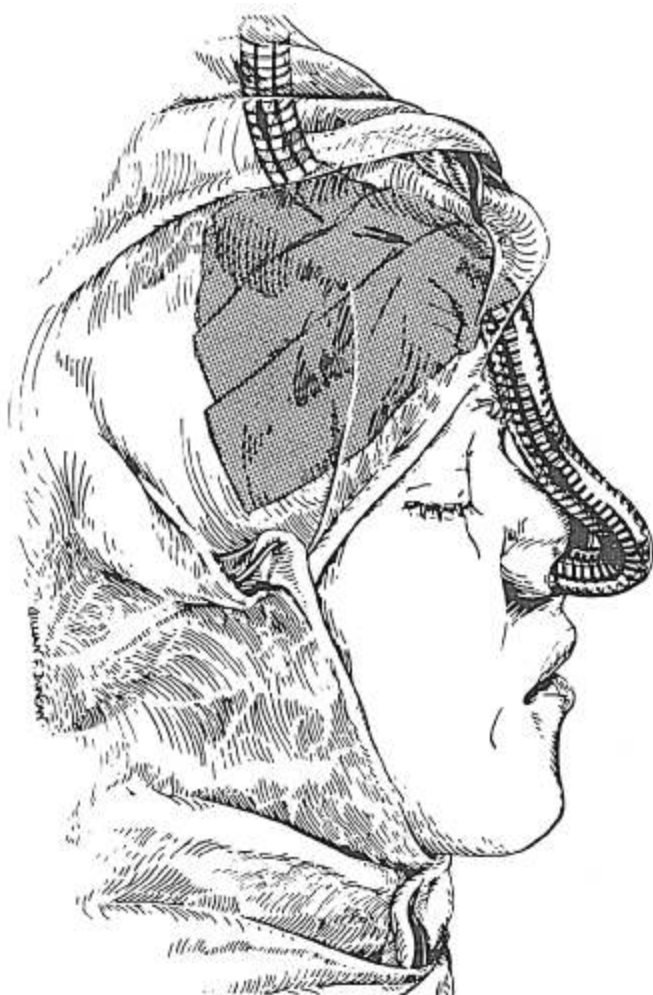


FIG. 2. In nasotracheal intubation, tape fixation of the tube is possible on the forehead beneath the drapings. Disinfection of the operative area is facilitated and distortion of facial tissues by tape is avoided.

forehead in cases of nasotracheal intubation and the thyroid region in cases of orotracheal intubation (figs. 1 and 2). The inside coil prevents obstruction of the tube even with sharp angulations in the tube. Opposite to each other, two malleable metal wires are inserted into the tube and soldered to the metal coil. These round wires embedded in the latex are strong enough to withstand the elastic forces due to the molding of the tube. This

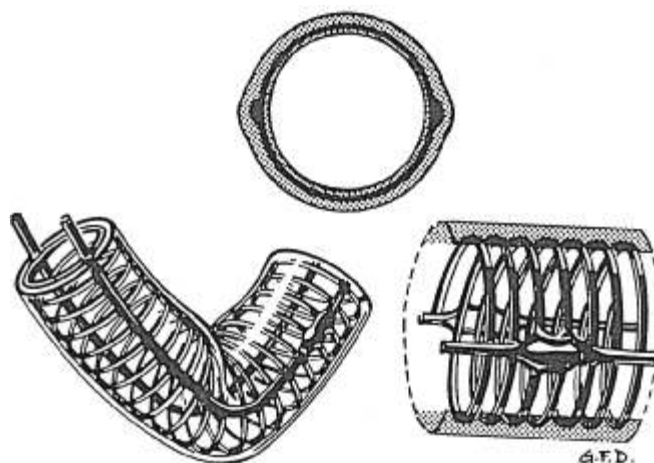


FIG. 3. The contour-retaining characteristics are achieved by means of two malleable wires, soldered to the coil. They maintain the shape given to the tube. Their innocuous size does not influence either the outer or inner diameter of the tube.

enables the tube to maintain any given shape. The wires end 10 cm from the endotracheal end of the tube (fig. 3). This is to ensure free mobility of the curved end and to avoid the transmission of uncontrolled forces to the curved end of the tube.

Tubes of this kind have been used commonly in our department. I believe they have reduced common problems between surgeon and anesthetist concerning the extraoral or extranasal course of the tube.

In summary, this tube has the following advantages: contour-retaining characteristics and increased length; therefore, tapes and connection devices can be placed further away from the field of surgery; absence of tape in the operating field guarantees safe disinfection, undistorted soft tissues and clear evaluation of the facial profile during surgery; and intraorally, the tube can be molded into the buccal soft tissues before it curves behind the molars into the pharynx. Therefore, despite orotracheal intubation evaluation of the occlusion is possible during surgery.

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