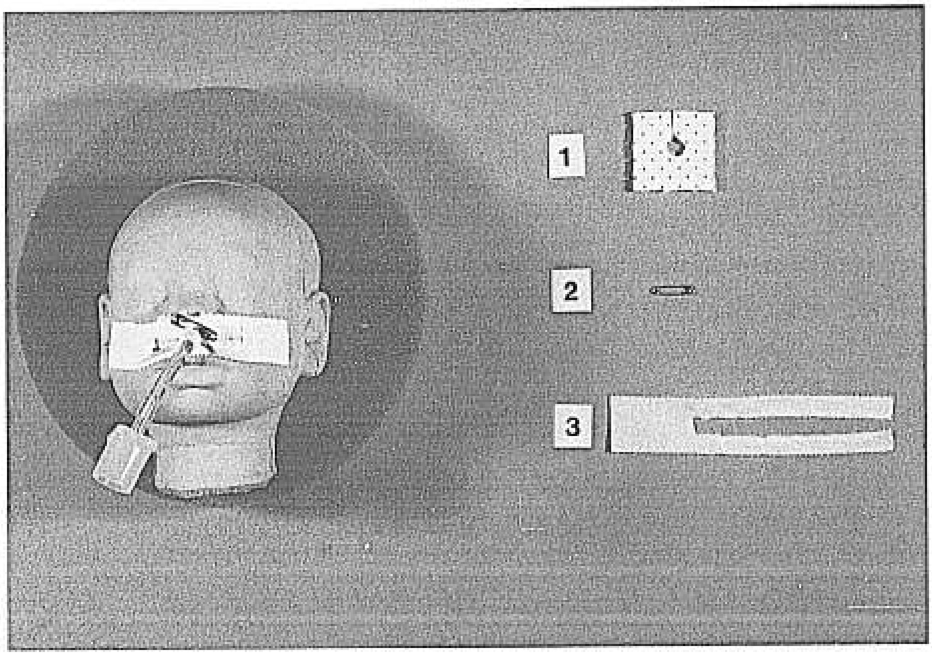

FIG. 2. The model for nasotracheal tube fixation. The components used to secure the nasotracheal tube are numbered in order of their application.

have reported cases in which death resulted or was narrowly averted following self-extubation[2] and have emphasized the need for ventilator alarms and appropriate sedation and patient restraints.[2,3] Equally important is stabilization of the oral or nasal tracheal tube.

Situated in a large metropolitan area, we routinely train and work with ten to 15 residents from four or more anesthesia programs at a time. The wide variation in level of training and clinical skills exhibited by our trainees has impressed upon us the need for some type of teaching aid to standardize and ensure proper tube fixation. For this reason, lifelike models of infants were designed at our request by Mr. Raymond Evenhouse of the University of Illinois School of Biocommunication Arts in Chicago. These models are used to display our method for securing both oral and nasal tracheal tubes (figs. 1, 2). The "cored-out" umbilical cord clamp (fig. 1, #1) snapped around the orotracheal tube and the small safety pin placed through the wall and peripheral lumen of the oro- or nasotracheal tube minimize inadvertent advancement of the endotracheal tube into a mainstem bronchus. The tape, and adhesive applied to the underlying skin, minimize accidental extubation. Padding (fig. 2, #1) is applied around the nasotracheal tube to prevent pressure necrosis of the external naris. The residents simply refer to the models prior to securing the tube to ensure proper technique.

The models have facilitated resident education in a teaching environment with many personnel from varied clinical backgrounds, and we believe they increase patient safety in the critical care setting.

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An Alternative Method for Management of Accidental Dural Puncture for Labor and Delivery

To the Editor:—After accidental dural puncture during attempted epidural analgesia for labor, it is common practice to repeat the epidural block in an adjacent interspace. Occasionally, this leads to spinal anesthesia that may progress to total spinal blockade.[1] Resultant motor block creates great inconvenience for the parturient and may increase the incidence of instrumental deliveries.

We are reporting a simple alternative technique in the event of unintended dural puncture. As recommended by Moore for continuous spinal anesthesia,[2] when dural puncture occurs, we aseptically insert a 20-gauge, 90-cm nylon epidural (Encapsulon, Tract Medical, Jaffrey, New Jersey) catheter with the wire stylet withdrawn 5 cm through the existing 17-gauge Touhy needle. The epidural catheter is directed caudally and advanced 2–3 cm. Five milliliters of preservative-free lidocaine 1% (5 ml ampule ASTRA Pharmaceutical Products, Westborough, Massachusetts) is diluted with 15 ml of preservative-free saline (10 ml vial, ABBOTT Laboratories, North Chicago, Illinois). The resultant solution of lidocaine 0.25% has a specific gravity of 1.025. In order to avoid unilateral block and aortocaval compression, the block is established in the following manner: 3 ml of lidocaine 0.25% was administered with the patient in lateral decubitus position. Five minutes following the initial injection, the patient is turned to the other side (lateral decubitus) and is kept on that side for an additional 5 min. At this time, the level is assessed. Following injection of 3 ml of 0.25% lidocaine, effective analgesia to a level of T9–T10 to S5 was obtained within 60 s in seven of ten patients. In three out of ten patients, the sensory level was lower than T10 bilaterally, necessitating an additional 1 ml of lidocaine 0.25% that resulted in analgesia from T7 to S5. Once analgesia was satisfactory, patients were kept in the lateral decubitus side of their choice. The spinal analgesia is reinforced approximately every 2 h, with the same solution and regimen as with the initial administration. All patients had received intravenous hydration with 1000 ml of Lactated Ringer's solution before epidural analgesia. There were no episodes of significant hypotension. Supplemental doses prior to delivery for perineal anesthesia were not required, because the sensory block extended to all sacral segments. No motor block or instrumental delivery occurred in any of the ten patients.

Of our ten parturients with dural punctures from 17-gauge Tuohy needles, two developed postdural puncture headache. In one parturient, the headache was severe, necessitating an epidural blood patch. In two of the ten patients, lidocaine 0.25% did not provide adequate analgesia after an infusion of pitocin was initiated. However, satisfactory analgesia was obtained when fentanyl 6.25 μg was added to 3 ml of lidocaine 0.25% diluted with saline.

We believe this method is a simple and safe alternative for the management of unintended dural puncture. When used with low concentrations of lidocaine, this method results in effective labor analgesia and eliminates the need for a repeat epidural block with its complications. Furthermore, should such patients subsequently need anesthesia for a cesarean section, this can be accomplished by titrating additional small doses of a higher concentration of local anesthetic.

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High-pressure Uterine Displacement

To the Editor:—In obstetrical patients, prevention of the supine hypotension syndrome or aortocaval compression is essential especially during conduction anesthesia. In our obstetrical suite, we have used a device similar to that described by Redick;[1] an empty 3-l plastic bag used for urologic irrigation is connected to a short piece of plastic tubing that has a standard sphygmomanometer type of inflation bulb attached to its other end. The bag is placed beneath the operating table's mattress so that it is directly under the patient's right hip and is inflated to achieve uterine displacement.

In addition, we have available in all of our obstetrical operating rooms a device for emergency transtracheal jet ventilation. This device, as described by Millar,[2] is capable of delivering 50-psi hospital-piped oxygen via a luer lock fitting through an intravenous cannula placed percutaneously into the trachea. Control of the jetted oxygen is effected by a thumb operated valve. The effectiveness of this ventilation technique has recently been shown by Thomas *et al.*[3]

Recently, we have mated these two devices giving rise to a high pressure uterine displacer (fig. 1). The inflation bulb is replaced by a three-way luer stopcock that allows the high pressure oxygen to inflate the bag.

Placed beneath the operating table's mattress, the inflatable wedge is continuously ready for use. Unlike a fixed device, such as a foam rubber wedge, it is fully adjustable at all times during an anesthetic. After delivery of the fetus, the stopcock valve is opened to air and the patient returns to a neutral position, facilitating surgical closure. Using 50-psi oxygen, the device is capable of producing effective uterine displacement in 2–3 s *versus* 20–30 s required with a standard sphygmomanometer type of squeeze bulb. The patient should be warned before inflation since displacement is quite rapid. Endler and Donath[4] have previously described an inflatable wedge using high-pressure gas, but his device requires elaborate and dedicated equipment not routinely found in an obstetrical operating suite.

The advantages of this technique are speed, convenience, low cost, and controllability. In addition, because it requires a functioning jet ventilator, the technique also obligates the anesthetist to regularly check out a seldom used but potentially life-saving device. Our only untoward experience with the device involved an inexperienced operator who inadvertently overdistended the bag causing a rather unsettling noise when the bag exploded.

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