Use of the Univent Bronchial-blocker Tube for Unanticipated Difficult Endotracheal Intubation

To the Editor:—In the face of difficult intubation, it is sometimes useful to insert a small-diameter introducer through the laryngeal aperture in the trachea and then pass the endotracheal tube over it. We report a modification of this technique using the Univent bronchial-blocker tube (Fuji System, Tokyo, Japan) in a patient with unanticipated difficult intubation. A 60-yr-old, 67-kg man with lung cancer was scheduled for right upper lobotomy. The patient had been in good health. After achieving the optimal head and neck position, anesthesia induction, and muscle relaxation, laryngoscopy was performed using a Macintosh No. 3 blade by an experienced anesthetist. Only the epiglottis was seen, despite application of external laryngeal pressure, and it was impossible to insert a 7.5-mm ID Univent tube into the trachea. The curvature of the distal end of the tube was changed using a styllet, but the second attempt at intubation also failed. After easy mask ventilation for a few minutes, the bronchial-blocker catheter was protruded maximally from the distal end of the main lumen of the Univent tube. At the third attempt at intubation also failed. After easy mask ventilation for a few minutes, the bronchial-blocker catheter was gently advanced along the laryngeal surface of the epiglottis by blind probing. When a clicking sensation was felt with the curved tip, a 50-ml syringe was attached to the proximal end of a hollow lumen of the bronchial blocker. Withdrawal of the syringe plunger aspirated gas without resistance. This indicated that the bronchial blocker was in the trachea, and, therefore, the main body of the Univent tube was passed over it. The main lumen met with resistance under the epiglottis, but rotating its bevel 90° counterclockwise enabled easy advancement into the trachea. Successful intubation was confirmed by capnography during manual ventilation. The operation and the postoperative course were uneventful, except for a moderately severe sore throat, which improved gradually.

There are some useful features of the Univent tube as an aid to difficult intubation compared with common bougies. First, special equipment is not needed because the Univent tube is a combination of an endotracheal tube with a bronchioblocker catheter that can act as an intubating introducer. Second, it is relatively easy to control the direction of the tip of the bronchial blocker by rotating the main lumen. Its direction is also changed by twirling the proximal end of the bronchial blocker in the fingers. Finally, the hollow bronchial blocker (2-mm ID) enables use of the esophageal detector device or of the self-inflating bulb for confirmation of the placement of the catheter tip in the trachea. Successful tracheal placement is also confirmed by feeling a clicking sensation as the catheter tip slides over the tracheal cartilages. In addition, the hollow catheter can be used as a channel for oxygen delivery or as a suction catheter.

We have experienced five cases of successful intubation using the Univent tube in which the laryngeal aperture was invisible during laryngoscopy. A possible problem with our technique is traumatic airway complication. Although the bronchial blocker is designed to pass safely into the trachea and bronchus, the bronchial-blocker catheter should be gently advanced. The fiberoptic bronchoscope-aided endotracheal intubation is the most reliable method in patients at risk for difficult intubation. However, the fiberoptic bronchoscope is not always readily available, and an intubation attempt may fail because of an inability to advance the endotracheal tube over the fiberoptic bronchoscope into the trachea. We believe that the Univent bronchial-blocker tube is a useful and simple aid to unanticipated difficult intubation.

Ichiro Takenaka, M.D.
Staff Anesthetist
Department of Anesthesia
Nippon Steel Yawata Memorial Hospital
Kitakyushu, Japan
itaken@d4.dion.ne.jp

Kazuyoshi Aoyama, M.D.
Anesthetist-in-Chief
Department of Anesthesia
Moji Rosai Hospital
Kitakyushu, Japan

Tatsuo Kadoya, M.D.
Anesthetist-in-Chief
Department of Anesthesia
Nippon Steel Yawata Memorial Hospital
Kitakyushu, Japan

References

Acute Hypoglycemia following Combined Spinal-Epidural Anesthesia (CSE) in a Parturient with Diabetes Mellitus

To the Editor—Intrathecal opioids, with or without local anesthetics, are commonly administered to parturients for analgesia in early labor. Women in labor have increased cortisol and epinephrine concentrations, which are known to stimulate hyperglycemia. With the onset of pain relief from neuraxial analgesia, a significant decrease in the concentration of catecholamines has been shown to occur, possibly preventing an increase in blood sugar. We report a case of acute hypoglycemia after onset analgesia in a diabetic parturient after combined spinal–epidural anesthesia (CSE).

The patient was a 26-yr-old woman, gravida 6 para 4, at 38 weeks’ gestation with class 2 gestational diabetes mellitus controlled by diet only. She had no other medical problems. She was admitted in active labor and requested regional anesthesia for labor and delivery. Her blood sugar concentration ranged from 94 to 121 mg/dl, and her blood pressure (BP) ranged from 118/70 to 126/76 mmHg throughout pregnancy. One hour before combined spinal-epidural anesthesia, her blood sugar concentration was 121 mg/dl. Her BP at this admission ranged from 138/68 to 146/72 mmHg, her heart rate ranged from 88 to 110 beats/min, and an electrocardiogram showed a normal sinus rhythm.

After hydration with 1,000 ml lactated Ringer’s solution, the block was performed with the patient in the sitting position. A 17-gauge epidural needle was advanced into the epidural space at the L3–L4 interspace, and a 25-gauge pencil-point needle was passed through the epidural needle into the subarachnoid space. A mixture of 25 μg fentanyl and 1.25 mg plain bupivacaine was injected intrathecally, and the spinal needle was withdrawn. An epidural catheter was threaded into the epidural space to a depth of 3 cm. At this time, the patient told us that her contractions were no longer painful. Her BP and heart rate were unchanged. A test dose of 3 ml lidocaine, 1.5%, with 1:200,000 epinephrine was injected into the epidural catheter. Approximately 2 min after the test dose, there was a sudden increase in her heart rate from 110 to 138 beats/min; her BP remained unchanged. Although the delayed tachycardia did not fit the classic definition of a positive response to the test dose, we decided to replace the epidural catheter, which was accomplished easily with the patient still in the sitting position. While the second epidural catheter was being secured to her back, the patient suddenly felt dizzy and became pale and diaphoretic and her BP decreased to 62/48 mmHg. No drug had been administered through the catheter at this time. The heart rate remained at 140–146 beats/min with sinus tachycardia. The patient was placed in the supine position and turned to her left side, and oxygen was administered via facemask. Fluids were infused rapidly, and a total of 50 mg ephedrine was administered intravenously in divided doses in 2 to 3 min. BP increased to 112/53 mmHg, but the patient continued to experience dizziness and “feeling faint.” There was no evidence of motor block, and sensory level to pin prick was at the T10 dermatome. At this time, her blood sugar was 57 mg/dl. With rapid administration of 5% dextrose, blood sugar increased to 128 mg/dl, and all symptoms were alleviated. The epidural catheter was subsequently used to provide pain relief for labor for several hours, and she delivered a healthy infant with an Apgar score of 9 and 9 at 1 and 5 min.

Rapid onset of intense analgesia after CSE can decrease the BP to levels before the onset of painful contractions in parturients, but it seldom causes profound hypotension as in this patient. Decreased venous return resulting from aortocaval compression and sympathetomy can also cause hypotension. In our patient, aortocaval compression was unlikely because the procedure was performed with the patient in the sitting position. With a sensory level of T10, the sympathetic block can extend a few segments higher, causing a decrease in the BP. However, even after the restoration of BP with fluids and ephedrine, the patient remained dizzy and diaphoretic. The symptoms disappeared with the rapid administration of intravenous dextrose. In this patient, blood sugar levels had been stable before CSE placement, necessitating no insulin therapy. The cause of acute hypoglycemia and its relation, if any, to profound hypotension after CSE is unclear. We speculate that the abrupt decrease in the levels of catecholamines and cortisol associated with the rapid onset of analgesia from intrathecal opioids may have triggered these rare events in this patient.

Jennifer Crites, M.D.
Chief Resident
Jaya Ramanathan, M.D.
Professor
Department of Anesthesiology
University of Tennessee
Memphis, Tennessee
JKR50@aol.com

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