

rinic side effects following antagonism of neuromuscular blockade with edrophonium may depend on the anesthetic administered, the dose of edrophonium given, and the medical condition of the patient.

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Unexpected Migration of an Esophageal Foreign Body

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One of the contraindications to the use of Sellick's maneuver is the presence of a foreign body in the esophagus.¹ The precise localization of an esophageal foreign body is critical in planning the anaesthetic.

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REPORT OF A CASE

A 33 yr-old woman with a long psychiatric history of a chronic personality disorder with depressive reaction was admitted to hospital 5 h after swallowing two open safety pins, complaining of chest pain and abdominal discomfort. The patient had a previous history of multiple hospitalizations for removal of foreign bodies from her gastrointestinal tract. On admission, the pain was retrosternal in nature without any radiation. The patient denied symptoms of nausea, vomiting, retching, dyspnea, cough, fever, or chills. The rest of the history was unremarkable. Her last oral intake was 7 h prior to admission.

Physical examination revealed an arterial blood pressure of 116/70 mmHg with a heart rate of 92 bpm and respiratory rate of 18 breaths/min. The remainder of the physical examination at admission was normal. Laboratory investigation was unremarkable. Soft tissue roentgenograms of the neck demonstrated an open safety pin adjacent



FIG. 1. Admission lateral soft tissue radiograph of the neck demonstrating the safety pin in the esophagus at the level of the body of the first thoracic vertebra.

to the body of the first thoracic vertebrae (fig. 1). Chest radiography was entirely normal, while a radiograph of the abdomen demonstrated a second open safety pin in the stomach. Repeated examination prior to induction of anesthesia revealed exquisite tenderness to palpation of the thyroid cartilage and diffuse abdominal pain without rigidity, guarding, or rebound tenderness. In the operating room, fluoroscopy of her neck in the supine position showed that the pin in the esophagus had migrated cephalad and the head of the pin now rested adjacent to the body of the fifth cervical vertebra, and the pin point moved with each right carotid pulsation. The surgeons felt rigid esophagoscopy was the method of choice for the extraction of the pin, and requested general anesthesia.

Because of the thyroid cartilage pain, abdominal findings and the location of the pins at fluoroscopy, it was elected to intubate the trachea while the patient was awake, thus allowing for maintenance of the airway and avoiding cricoid pressure. The patient was positioned in a 30° head-up tilt, and was asked to gargle 40 cc of 4% viscous lidocaine. She was also given diazepam 10 mg and fentanyl 100 µg iv in incremental doses. The base of the tongue, epiglottis, and vocal cords were sprayed liberally with lidocaine endotracheal aerosol, and the trachea was quickly intubated orally with an 8-mm internal diameter endotracheal tube under direct visualization of her vocal cords. The patient did not cough during intubation. After inflation of the cuff and confirmation of the position of the endotracheal tube, anesthesia was induced with thiopental (250 mg) and atracurium (30 mg) iv. Anesthesia was maintained with nitrous oxide (67%) with oxygen and isoflurane (1%). Ventilation was controlled. Esophagogastroscope and

pin extraction was uneventful. Paralysis was antagonized with neostigmine (2.5 mg) combined with atropine (1.2 mg) iv. The trachea was extubated with the patient awake. The remainder of the hospitalization was unremarkable.

DISCUSSION

The simplest and most effective method for minimizing the risk of pulmonary aspiration of gastric contents during induction of anaesthesia is the use of Sellick's maneuver (cricoid pressure) in conjunction with a rapid sequence induction.² The cricoid is the only cartilaginous structure that completely encircles the trachea and, therefore, can be used to occlude the esophagus located directly posterior to it. Sellick's maneuver, applied by an assistant, should be maintained until the tracheal intubation is complete. When properly performed, the maneuver will withstand an esophageal pressure level of at least 100 cm/H₂O.¹ Sellick also recommended the use of the Trendelenburg position for induction of anesthesia and intubation of the trachea, so that, if regurgitation does occur, the regurgitated material will tend to flow out of the mouth rather than into the trachea.

There are several contraindications to the use of Sellick's maneuver. These include: lack of a properly trained assistant, an anticipated difficult intubation, fracture of the larynx or cricoid cartilage, fracture of the cervical spine, active vomiting, and the presence of a foreign body in the airway or esophagus at the level of the body of the sixth cervical vertebra. In our case, the foreign body was originally documented to be adjacent to the body of the first thoracic vertebra, and would logically have been expected to migrate into the stomach with normal esophageal peristalsis, particularly since the point of the safety pin was pointed in a cephalad direction. The use of Sellick's maneuver would, at first glance, seem safe and effective in preventing aspiration of the safety pin or gastric content. Because of new symptoms referable to the thyroid cartilage, fluoroscopy was performed just prior to anesthetic induction. This demonstrated that the safety pin appeared to have migrated in a cephalad direction, and now was adjacent to the lower portion of the body of the fifth cervical vertebra. Whether or not the cephalad movement of the safety pin in changing from the upright position for the soft tissue radiograph to the supine position for fluoroscopy was artifactual or the patient had unreported retching remains debatable. The pin was in a position where Sellick's maneuver was contraindicated. Cricoid pressure applied at this point could have caused esophageal perforation or further migration of the pin into the hypopharynx. As a result, tracheal intubation under topical anesthesia was elected.

We recommend that all radiopaque foreign bodies in the cervical esophagus have their location confirmed by repeated physical examination and fluoroscopy just prior to induction of anesthesia. Secondly, fluoroscopy should be done with the patient in the same position that will be required for anesthetic induction and endotracheal intubation. Finally, the anesthetist must be willing to alter the anesthetic technique if it can be demonstrated that the foreign body has migrated to an unsafe position.

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A Severe Reaction to Dextran Despite Hapten Inhibition

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Prevention of deep vein thrombosis, thromboembolism, and fatal pulmonary embolism is a major consideration in the perioperative period. Dextran, a polysaccharide with an average molecular weight of 40,000 (dextran 40) or 70,000 (dextran 70), is used to decrease the incidence of perioperative thromboembolic morbidity and mortality.¹ However, severe anaphylactic reactions to dextran can occur.² Hapten inhibition with dextran 1 (MW 1000—Promit® Pharmacia) prior to the administration of dextran 40 or dextran 70 has decreased the incidence of adverse reactions.³⁻⁵ However, we describe a severe reaction to dextran 40 after hapten inhibition by dextran 1 in a patient who had previously received this combination 9 months earlier without complication.

REPORT OF A CASE

A 69-yr-old hypertensive male was scheduled for a right total hip replacement (THR) 9 months after a left THR. The patient had received dextran 1 and dextran 40 in the operating room without complication, and had received dextran 40 daily until discharge without adverse reaction. During his current admission, review of systems was negative except for hypertension treated with furosemide 40 mg po daily and oral potassium supplementation. Preoperative laboratory studies were normal. EKG demonstrated bifascicular block, left ventricular hypertrophy, and an anteroapical infarct of undetermined age. Preoperative vital signs included an arterial blood pressure of 170/100 mmHg, a heart rate of 80 bpm, and a respiratory rate of 18 breaths per minute. Premedication consisted of meperidine 75 mg, hydroxyzine 25 mg, and glycopyrrolate 0.2 mg im. Electrocardiographic monitoring and an indwelling arterial line were placed. Anesthesia was induced with fentanyl 100 µg, thiamylal 500 mg, and succinylcholine 100 mg iv, and maintained with nitrous oxide and enflurane. Skeletal muscle paralysis was maintained with iv atracurium. A deliberate hypotensive technique was employed to decrease bleeding and produce a more secure cement-bone interface. Because of the history of hypertension, the mean arterial blood pressure was only decreased to 70-90 mmHg by a nitroglycerin infusion. (In normotensive patients, the mean arterial pressure is usually decreased to 60 mmHg.) Acetabular and femoral components were cemented without hypotensive, cardiac, or pulmonary complications. During placement of the trochanteric wires, at which time the arterial blood pressure was 110/70 mmHg, 20 cc of dextran 1 were administered iv. Five minutes later, dextran 40 was started, and after 2-3 drops, the systolic arterial blood pressure fell precipitously to 35 mmHg, accompanied by a junctional rhythm at 50 bpm. Facial flushing and wheezing were absent. A diagnosis of an anaphylactic reaction to dextran was made. Dextran, as well as the anesthetics, were discontinued; ephedrine 10 mg and neosynephrine 100 µg were administered iv. The systolic blood pressure increased to 65 mmHg. Diphenhydramine 50 mg, administered iv, resulted in a dramatic rise in arterial blood pressure to 110/70 mmHg and a return to sinus rhythm. The remainder of the case proceeded uneventfully.

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