

CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a section in ANESTHESIOLOGY in which will appear invited and unsolicited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

PROLONGED ENDOTRACHEAL INTUBATION

Various accounts of prolonged tracheal intubation have been reported. The following report of a patient with an endotracheal tube in place for forty-two days will be of interest to those who encounter problems in maintaining the patency of the upper air passages. This tube was passed by mouth.

A 24 year old, married, white woman was admitted to the Massachusetts General Hospital January 11, 1949, complaining of weakness of hands and legs of ten hours duration. For the previous two days she had been ill with a head cold, sore throat, constipation and vague malaise. The day before admission she had a few pin and needle-like pains in her legs and arms. When she awoke on the day of admission, she observed weakness of her upper and lower extremities. The pin and needle-like sensations continued. Headache, vomiting, and stiff neck were not reported.

Physical examination showed weakness of all extremities and of her neck. The tendon reflexes were absent or diminished. There were no cells in the cerebral spinal fluid. She was considered to have an acute infectious polyneuritis. The resident on the ear, nose, and throat service found weakness of the vocal cords, but an adequate airway was maintained without assistance.

During the morning of January 12 the patient's breathing was diaphragmatic in type, and she was placed in a respirator. By 4:30 p.m. she was unable to speak. Aspiration of secretions from the nasopharynx was necessary every one to two

minutes. Respiratory stridor was present, but she was adequately oxygenated. Her vocal cords were relaxed with 0.5 cm. opening between the cords. At 6:30 p.m. a number 32 red rubber Magill tube was passed with improvement in her airway, and the secretions were now readily removed. Communication was effected by signalling with her upper eyelids. Twelve hours later, on the morning of January 13, the rubber endotracheal tube was replaced by a number 7 portax tube. This was changed that evening and again on the morning of January 14. The ear, nose, and throat consultant considered the endotracheal tube to be safer than a tracheotomy, and it was decided to continue with it. He also expressed the view that there was no advantage in repeated changing of the endotracheal tube unless evidence of obstruction appeared.

An attempt was made to humidify the air by placing the orifice of a steam humidifier in the vicinity of the endotracheal tube.

On January 17 oxygen humidified to 95 to 100 per cent relative humidity at 10 liters per minute by a BLB mask arrangement was started. Her color which had previously been dusky was improved. On January 19 the oxygen set-up was changed to prevent any rebreathing by using an OEM mask assembly, and she continued to get 95 to 100 per cent oxygen with a relative humidity of 95 to 100 per cent at room temperature until January 23. During this time she was permitted to inspire room air for half hour periods every four hours.

Postural drainage by tilting the respirator to 30 degrees Trendelenburg was used to aid the removal of secretions from her respiratory tree. All fluids and feedings were given by the intravenous route.

By January 23 the secretions had considerably diminished, and the oxygen was discontinued. After this there was a tendency to crusting of the secretions in the endotracheal tube and trachea. Papain (5 per cent) in 1 cc. amounts was used four to six times daily to liquefy the crusted secretions.

On January 26 a Miller-Abbott tube was passed by direct vision through the mouth into the stomach. There were two small ulcerated areas on the posterior wall of her pharynx just to the right of the midline at the level of the upper margin of the epiglottis. The larger measured 0.5 cm. and the smaller, 0.25 cm. in diameter. The endotracheal tube lay directly over these areas. The tube was clear and it was not removed but was placed on the left side of her mouth and pharynx. The mucous membrane of the pharynx was otherwise normal, and no edema was present.

During the next five days there was difficulty at times in maintaining an adequate airway because of the drying and crusting of secretions. Papain was employed, but it was feared that its continued use would lead to tracheal irritation.

On February 1 a laryngoscopy and bronchoscopy was done. The portex endotracheal tube was molded to the contour of the patient's larynx and trachea. The pharyngeal ulcerations found previously were healed. The epiglottis was normal in size and shape. The vocal cords were paralyzed in three-quarters abduction. Ulceration was minimal at the anterior third of both cords. The tracheal mucosa was slightly reddened, but no ulceration was noted. The right main bronchus was partially obstructed by a dry cast of mucus. This was removed with forceps. Moderate amounts of secretions were removed from the lower bronchial orifices on both sides and their orifices found to be patent. Following the procedure, a Guedel black rubber airway was satisfactory as long as the lower jaw was constantly drawn forward. This being impractical, the portex tube which had been molded to

shape was replaced. An oxygen air mixture of 30 to 35 per cent oxygen was administered. The relative humidity at room temperature was maintained between 90 and 95 per cent. No rebreathing occurred. There was no further drying and crusting of the secretions.

On February 18 another laryngoscopy and bronchoscopy was done. The epiglottis was of normal size and shape, and not edematous. The mucous membrane was slightly inflamed. The vocal cords were paralyzed in abduction. The airway through the rima glottis was slightly smaller than when previously seen on February 1. The apparent ulceration of the vocal cords had increased, and at this time the middle third as well as the anterior third appeared to be ulcerated. There was slight edema of the arytenoids.

An area, 3 by 5 mm., in the trachea was denuded of epithelium about 4 cm. from the larynx on the patient's left side. The carina was thickened but freely movable. Moderate amounts of secretions were removed from each bronchus. The orifices of the secondary bronchi were patent. The portex tube was replaced following the bronchoscopy.

The patient's temperature ranged between 101° and 104° during most of her illness and rose to 106° on one occasion. On February 22 she was cyanotic immediately following a difficult urethral catheterization which was performed with the door of the respirator open. The pulse was weak and rapid. There was an accumulation of secretions in the endotracheal tube and air passages. She failed to recover from this period of anoxia and died a few minutes later.

At autopsy the larynx was normal except for ulceration 5 mm. in diameter over each arytenoid penetrating to the cartilage. The cords were shrunken but smooth throughout. In the trachea two ulcerated areas of mucous membrane were present. One, located 8 cm. below the cords on the anterior wall, was 5 mm. in diameter. The second was 7.5 cm. below the cords on the anterior wall just to the left of the midline and was 3 by 6 mm. in size. A moderate amount of mucus was found in the trachea and bronchi. The posterior portion of the lungs was atelectatic. There

was an acute cystitis of the urinary bladder and generalized muscular atrophy.

It is the opinion of the members of the otolaryngology service that the ulcerations were of minor consequence and would have healed promptly had recovery occurred. The advantages of an endotracheal tube in comparison with a tracheotomy for a respirator patient are considerable. Both devices require a conditioned atmosphere, and its provision is easier with an endotracheal tube. Tracheal secretions do not appear to be as copious with an endotracheal tube as with a tracheotomy and are perhaps more easily removed. The difficulty of the respirator collar over-riding the tracheotomy opening is avoided by the endotracheal tube.

SUMMARY

A case report of a 24 year old woman who had an endotracheal tube in place for forty-two days is presented. This patient had almost total muscular paralysis from

infectious polyneuritis. Respiratory exchange was maintained with a respirator.

A conditioned atmosphere was provided first by partially humidifying room air, later by giving oxygen with high humidity, and finally by giving a highly humidified air-oxygen mixture.

During this period aspiration bronchoscopy was done twice. For a few days papain solution was used to liquefy the crusted secretions. Feedings were given through a stomach tube. The patient's temperature ranged between 101° and 106°. She died on the forty-third day of hospitalization following a period of anoxia.

At autopsy ulcerations were found over each arytenoid cartilage and two small ulcerations in the trachea.

The advantages of an endotracheal tube in comparison with a tracheotomy in a respirator patient are discussed.

BERNARD D. BRIGGS, M.D.,
*The Massachusetts General Hospital,
Boston, Massachusetts*

THE EATON HEADREST

During the past twenty years, despite a search of the surgical supply catalogues and at surgical exhibits, I have failed to find a headrest which was simple enough to be instantly available, which would facilitate the application of the facepiece of the anesthesia apparatus, give the anesthetist complete control of the patient's head, and afford freedom from neck and shoulder discomfort after operation.

A friend of mine, Mr. Charles Eaton, designed the headrest to be described after we had discussed the requisites of a headrest from the standpoint of the anesthetist, the surgeon and the patient.

The headrest consists of a base with an eccentric platform, which ensures nontipping. The upright portion of the base is made high in order to provide adequate room for the application of the facepiece

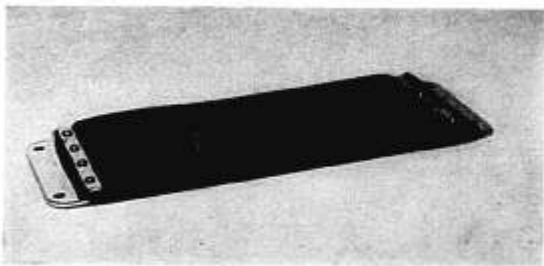


FIG. 1.