BILATERAL VOCAL CORD PARALYSIS FOLLOWING ENDOTRACHEAL INTUBATION

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SUMMARY
A patient with bilateral laryngeal abductor paresis following general anaesthesia and endotracheal intubation is presented. The possible mechanism is discussed.

Recurrent laryngeal nerve palsy is an occasional accompaniment of surgery in the neck, particularly thyroidectomy, since the recurrent laryngeal nerve is directly at risk. Vocal cord palsy after operations other than those on the neck or in the thorax is rare. However, the literature supports the possibility that the insertion of an endotracheal tube may cause such damage, although the majority of reports refer to unilateral vocal cord palsy. We report bilateral vocal cord palsy following endotracheal intubation for general anaesthesia.

CASE REPORT
A healthy 33-year-old woman underwent induction of labour at 09.05 h. Extradural analgesia was induced at 14.14 h and Caesarean section undertaken at 06.00 h (next day) because of prolonged labour. Anaesthesia was induced with thiopentone 250 mg i.v., suxamethonium 100 mg was administered and the trachea intubated without difficulty using a 8.5-mm cuffed tracheal tube. Anaesthesia was maintained with nitrous oxide in oxygen; tubocurarine was given to maintain neuromuscular block and fentanyl 0.1 mg was administered after the delivery of the baby. Neostigmine with atropine were given to antagonize the neuromuscular blockade at the end of the operation. The patient's condition was satisfactory for 30 min after which stridor, diagnosed as laryngospasm, developed. Thiopentone 100 mg and suxamethonium 100 mg were given i.v. and the trachea was re-intubated easily (8.5-mm tube). Ventilation of the lungs was continued until adequate spontaneous breathing was established and extubation performed when the endotracheal tube was no longer tolerated. Full consciousness was regained rather slowly and it was not until 48 h after surgery that the patient complained of respiratory difficulty and sore throat. At 72 h she exhibited inspiratory stridor and shortness of breath, supraventricular and intercostal recession and aphonia, producing at best only a whispered voice. On indirect laryngoscopy neither vocal cord was abducting. Under general anaesthesia an emergency tracheotomy was performed via a skin crease incision incising the trachea through the second and third rings. A size 30 soft-seal Portex tube was inserted. Direct laryngoscopy revealed a normal appearance of the larynx. There was a narrowed sub-glottic region which could accept only the tip of an adolescent bronchoscope (7 mm o.d. approx). During recovery from the anaesthetic direct examination showed that neither vocal cord was abducting.

Thereafter the patient's condition was stable and she was able to nurse her child with minimal assistance from the nursing staff. Six days after tracheotomy indirect laryngoscopy showed returning function of the vocal cords. The tracheostomy tube was corked and was removed 24 h later without difficulty. The patient's voice had returned to normal.

DISCUSSION
This patient presented with many symptoms of anxiety, including what was judged to be hysterical aphonia, but the inspiratory stridor with associated tachycardia was thought to be genuine and bilateral recurrent laryngeal palsy was shown at indirect laryngoscopy and during recovery from general anaesthesia.

There are several reports of recurrent laryngeal palsy associated with tracheal intubation for
general anaesthesia (Haas, 1958; Gorman and Woodward, 1965; Yamashita et al., 1965; Hahn, Martin and Lillie, 1970; Holley and Gildea, 1971; Ellis and Pallister, 1975; Minuck, 1976), the majority reporting unilateral vocal cord palsy. Holley and Gildea (1971) reported four instances of bilateral cord palsy following endotracheal anaesthesia. In one of their patients thyroidectomy had been performed, and in a second thyroidectomy had been performed some years previously. One of their patients died 27 days following surgery and at postmortem it was found that parts of the vagus nerve showed demyelination, the cause of which could not be determined. In the three patients who survived following surgery vocal cord function recovered by the end of the 5th week following operation.

In a series of 25 patients with bilateral vocal cord palsy following surgery the cause was considered to be thyroid surgery in 19 and in only one patient was the cause undetermined (Gorman and Woodward, 1965). Minuck (1976) reported a further patient with bilateral cord paralysis and speculated on the possible mechanism, reviewing the work of Ellis and Pallister (1975). The latter reported four patients of whom one had bilateral paralysis. No surgery was carried out in the neck in any of these patients.

Ellis and Pallister (1975) dissected the intralaryngeal course of the recurrent laryngeal nerve and showed how the anterior branch could be compressed within the larynx, between the cuff and the lamina of the thyroid cartilage when the cuff was inflated. They postulated that the cause of the laryngeal palsy was a pressure neuropraxia by the endotracheal tube, thus supporting the work of Hahn, Martin and Lillie (1970). However, a recent prospective survey by Watts, Calcaterra and Cohen (1980) of 100 patients undergoing general endotracheal anaesthesia has failed to show any evidence of vocal palsy in the period immediately after operation.

We believe that this was the mechanism of vocal cord palsy in our patient and the result of a too large tracheal tube in relation to the subglottic region, thereby preventing satisfactory placing of the endotracheal tube and its cuff below the larynx.

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REFERENCES


PARALYSIE BILATERALE DES CORDES VOCALES APRES UNE INTUBATION ENDOTRACHEALE

RESUME

Nous presentons dans cet article le cas d'un patient souffrant d'une parésie bilatérale laryngée des muscles abducteurs après une anesthésie générale et une intubation endotracheale. Les mécanismes probables y sont décrits.

BILATERALE LAHMUNG DER STIMMBÄNDER NACH ENDOTRACHEALINTUBATION

ZUSAMMENFASSUNG

Es wird ein Patient mit bilateraler Kehlkopflähmung infolge einer Allgemeinnarkose und Endotrachealintubation vorgestellt. Der wahrscheinliche Mechanismus wird diskutiert.

PARALISIS BILATERAL DE LAS CUERDAS VOCALES A RAIZ DE UNA ENTUBACION ENDOTRAQUEAL

SUMARIO

Se presenta el caso de un paciente con paresia abducente bilateral de la laringe a raíz de la anestesia general y de la entubación endotraqueal. Se argumentan los posibles mecanismos.