TRACHEAL INTUBATION WITH A ROBERTSHAW TUBE VIA A TRACHEOSTOMY

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SUMMARY

A patient who had a permanent tracheostomy needed to be anaesthetized for thoracotomy. Anticipated difficulty with airway and lung control did not occur following successful intubation via the tracheostomy with a Robertshaw double-lumen tube.

In many centres it has now become routine to use double-lumen endobronchial tubes during anaesthesia for thoracotomy, the advantages of independent control and protection of each lung outweighing any disadvantage from increased shunting and hypoxia whilst only one lung is being ventilated.

A patient who presented for resection of a carcinoma of the lung already had a permanent tracheostomy. The choice of tube that could be passed via the tracheostomy appeared to present a problem, which in fact was easily overcome.

CASE REPORT

The patient, aged 66 yr, had a total laryngectomy and permanent tracheostomy performed for carcinoma of the larynx, and made a good recovery. Eight months later he complained of pain in the right side of his chest and axilla. This was found to be a result of carcinoma of the posterior segment of the right upper lobe of the lung, 5 cm in diameter, invading the overlying third, fourth and fifth ribs. Full examination and routine laboratory screening tests on admission did not reveal any other abnormality of note.

The patient was premedicated with diazepam 10 mg orally 2 h before operation, and on arrival in the anaesthetic room was given hyoscine 0.4 mg, droperidol 5 mg, and fentanyl 0.1 mg slowly, i.v. After pre-oxygenation, anaesthesia was induced with thiopentone 225 mg, followed by suxamethonium 50 mg.

Large and medium 'Robertshaw tubes, Magill endotracheal and Portex cuffed tracheostomy tubes were prepared, but the first choice, a lubricated, large left Robertshaw double-lumen tube was passed easily through the tracheostomy. When the tip was felt to enter the left main bronchus, the tracheal cuff had just wedged at the stoma, and did not need to be inflated. Inspection and auscultation confirmed positioning of the tube, and the bronchial cuff was inflated. The pharyngeal curve of the tube lay comfortably on the anterior surface of the neck and under the chin (fig. 1).

Anaesthesia was maintained with 66% nitrous oxide in oxygen delivered by a Blease ventilator. Muscle relaxation was facilitated by pancuronium. During periods of one-lung anaesthesia, the oxygen concentration was increased to 50% and halothane 0.5% was added.

At operation the right upper lobe was freed and removed along with the tumour and a 12-cm long segment of the three invaded ribs. The lower lobe was partly adherent to the parietal pleura, and was freed to allow full expansion, but in doing so multiple small tears in the lung surface were caused. There was a measured leak of 4–5 litre of gases per minute at a positive airway pressure of 10 cm H₂O, using a measurement technique described by A. V. Jenkins (personal communication). Therefore it was necessary to revert to one-lung anaesthesia while the leaks were repaired.

The chest was closed in layers with a drain, and the muscle relaxant was antagonized with neostigmine and atropine, following which the patient breathed satisfactorily, and the tube was removed. He was transferred to the recovery ward breathing oxygen-enriched air from an M.C. mask. The course following operation was complicated by retention of lung secretions, and later by a haemo-pneumothorax, but the patient was fit for discharge after 21 days.

DISCUSSION

An open pneumothorax or thoracotomy may cause lung collapse, internal paradoxical breathing and mediastinal flap. The operation may cause lung or bronchus leaks or both. The surgeon may ask for control of the operative field by collapsing or
expanding the lung, and control of the secretions in the presence of a “wet lung” or abscess. All these factors can be managed by tracheal intubation with double-lumen tubes (Jenkins and Clarke, 1958), and the Robertshaw tube is perhaps the most suitable (Robertshaw, 1962; Zeitlin, Short and Ryder, 1965), although the Bryce Smith tube has very similar properties (Bryce Smith, 1959; Bryce Smith and Salt, 1960; Edwards and Hatch, 1965).

The main disadvantage of one-lung anaesthesia is hypoxia even with high inspired oxygen concentration (Edwards and Hatch, 1965). The ability to revert to two-lung anaesthesia when convenient for the surgeon is therefore advantageous, and possible with double-lumen tubes.

Lung surgery may lead to large leaks of gas from torn lung, so that in this hospital it is now routine to pass double-lumen tubes for thoracotomy, allowing collapse of one lung while unhurried, thorough repair of leaks can take place.

Thoracotomy in a patient who has undergone laryngectomy is uncommon. The following potential problems were considered in this case:

(1) Difficulty of lung inflation if endotracheal intubation was delayed.

(2) A Robertshaw tube might not pass the tracheostomy.

(3) The tracheal cuff might not be correctly sited to ensure an airtight seal.

(4) The tube might kink or be displaced.

In this case all these problems were easily resolved, the tube lying in a good position, and good control of ventilation and lung expansion were obtained.

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REFERENCES

TRACHEAL INTUBATION VIA A TRACHEOSTOMY

ENTUBACION TRAQUEAL CON UN TUBO ROBERTSHAW POR MEDIO DE UNA TRACHEOSTOMIA

RESUME
Un patient qui avait une trachéostomie permanente devait être anesthésié pour une thoracectomie. Les difficultés avec les passages d’air et le contrôle des poumons que l’on anticipait ne se sont pas produites à la suite d’un tubage effectué avec succès au travers de la trachéostomie à l’aide d’un tube Robertshaw à double passage.

SUMARIO
Un paciente que tenía una traqueostomia permanente solicitó que se le anestesiara por toracotomía. La dificultad que se predecía con el canal de aire y el control pulmonar no se produjo después de una entubación realizada con éxito por la vía de la traqueostomía con un tubo Robertshaw de doble lumen.

TRACHEALE INTUBATION MIT EINEM ROBERTSHAW-ROHRECHEN VIA TRACHEOSTOMIE

ZUSAMMENFASSUNG
Bei einem Patienten mit permanenter Tracheostomie war Narkose zwecks Thorakotomie erforderlich. Obwohl man Schwierigkeiten bezüglich des Intubationsrohrs und der Lungenfunktionskontrolle erwartet hatte, erfolgten diese nicht, da eine Intubation via der Tracheostomie mit einer Robertshaw’schen Röhre mit Doppelhohlraum verwendet wurde.