DIFFICULT ENDOTRACHEAL EXTUBATION

A Case Report

BY

J. T. DAVIDSON AND E. EDELESTEIN

Department of Anaesthesia, Rothschild Hadassah University Hospital, Jerusalem, Israel

SUMMARY

A case of difficult endotracheal extubation in a neonate is described. The tube, Magill flexometallic No. 00, could only be removed after cutting the tube across and removing the inner wire coil.

Endotracheal intubation in neonates is widely practised, not only during general anaesthesia, but also for resuscitation of the newborn. Even in skilled hands the introduction of the tube may occasionally be associated with technical difficulties; its removal, on the other hand, is a simple and straightforward procedure. We describe here a most unusual problem and its solution.

CASE REPORT

A 2-day-old male neonate, weighing 2.25 kg was transferred to the paediatric surgical department with a diagnosis of duodenal obstruction. Laparotomy was decided upon and atropine 0.125 mg was injected as premedication 45 minutes before operation.

Anaesthesia was induced with a 50 per cent nitrous oxide and oxygen mixture with halothane in a semi-open system using a Fluotec vaporizer and a total gas flow of 6 l./min. The halothane concentration was rapidly increased to 3 per cent and 7 minutes after commencement of the induction, endotracheal intubation was performed, using a Magill flexometallic endotracheal tube No. 00. Tubocurarine 0.5 mg was given intravenously and respiration was controlled with the nitrous oxide, oxygen mixture supplemented intermittently with halothane 0.5–1 per cent.

The abdomen was opened through a right paramedian incision and the second part of the duodenum was found to be obstructed by a ring of pancreatic tissue (annular pancreas). A side-to-side duodeno-duodenostomy was carried out to bypass the obstruction. The duration of the procedure was 75 minutes and during closure atropine 0.125 mg was given intravenously, followed by neostigmine 0.1 mg, to overcome any residual curarization. At the end of the operation, the infant was awake and after secretions had been removed by suction from the mouth and pharynx, an attempt was made to remove the endotracheal tube. However, this was found to be firmly held up in the larynx. To overcome any element of spasm, anaesthesia was re-introduced with halothane but extubation was still not possible, using gentle traction. After some hesitation, and bearing in mind the danger of producing a mixed neuromuscular block, suxamethonium 3 mg was injected intravenously to obtain maximum relaxation, but to no avail. The tube could be rotated around its long axis and pushed farther in, but could not be removed.

(A) and after (B) removal of the wire coil.

SHOWS THE MAGILL FLEXOMETALIC ENDOTRACHEAL TUBE SECTIONED LONGITUDINALLY TO DEMONSTRATE THE JUNCTURAL PORTION BEFORE (A) AND AFTER (B) REMOVAL OF THE WIRE COIL.
It was evident that the proximal shoulder of the vulcanized junction between the longer armoured portion of the tube and its soft rubber tip was being help up in the larynx. After about 30 minutes of vain efforts at extubation, it was decided to cut the tube across and to try to remove the steel wire coils. Fortunately, the coil separated easily from the outer rubber portion and following this, extubation was easily accomplished. Figure 1 shows the tube sectioned longitudinally to demonstrate the junctional portion before (A) and after (B) removal of the wire coil. As a prophylaxis against laryngeal oedema hydrocortisone 3 mg was added to the intravenous infusion during the first 12 hours after operation. The infant made an uninterrupted recovery.

COMMENT
The thickened junction between the two portions of the tube usually remains above the vocal cords. However, slight movement of the tube, as may occur during insertion of an oropharyngeal pack may cause this junction to enter the larynx, as happened in the case described. It is difficult to explain why the tube which entered the larynx easily was held up on extubation. Possibly the distal shoulder of the junction was slightly more rounded than the proximal so that entry of the tube was facilitated.

ACKNOWLEDGMENT
We are grateful to our surgical colleague Dr. M. Feuchtwanger for his help in preparing this report.

DETUBAGE ENDOTRACHEAL DIFFICILE
SOMMAIRE
Description d'un cas de détubage endotrachéal difficile chez un nouveau-né. Le tube, un Magill flexo-metallique n° 00 n'a pu être retiré qu'après section transversale du tube et enlèvement de la spirale métallique intérieure.

SCHWIERIGE ENDOTRACHEALE EXTUBATION
ZUSAMMENFASSUNG
Es wird ein Fall einer schwierigen endotrachealen Extubation bei einem Neugeborenen beschrieben. Der Magill flexo-metallic—Tubus No. 00 konnte erst nach Aufschneiden des Tubus und Entfernung der inneren Drahtspirale entfernt werden.