

Title: The History of Paediatric Anaesthesia. Two Firsts at the Brompton Hospital

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ABSTRACT BODY:

The Royal Brompton Hospital is a cardiothoracic unit in London serving a community of adults and children with a variety of chest disorders. Paediatric cardiothoracic anaesthesia was developed and became more sophisticated alongside the increasingly complex surgical techniques in the mid – 20th century.

We describe two anaesthetic techniques used in children for the first time at the Royal Brompton Hospital which later became standard anaesthetic practice.

Percutaneous Cannulation of the Internal Jugular Vein.

English ICW, Frew RM, Pigott JFG, Zaki M. From the Brompton Hospital, London.

(Published: Anaesthesia. (1969) Vol 24 (4))

The full value of central venous pressure monitoring in patients undergoing open heart surgery became appreciated from about 1955 onwards. At that time sensitive pressure transducers were not available. Once transducers became available, readings were taken from pressure lines inserted in the arm, femoral vein, external jugular vein and subclavian vein. Complications included pneumothorax (subclavian route) and a high incidence of septicaemia (femoral route). This changed when a patient suffering from right heart failure arrived in the operating theatre attended by the Consultant Anaesthetist Dr Ian English. His internal jugular vein stood out like a rod in his neck. The vessel was easily cannulated and the technique used became the method of choice for inserting central venous pressure catheters and is still practised today. Only recently has the use of ultrasound guided catheter placement become the preferred technique.

The group, lead by Dr English, published twice in 1969 – their initial 200 catheters and later their first 500 catheter placements. 85 of these were in children under 15 years and of these, twelve were in infants.

The team describe the normal anatomy of the Internal Jugular vein, they comment that normal anatomy dictates that the right internal jugular vein is the most simply cannulated as it has a relatively straight course. They describe optimal positioning of children with the head well extended and comment that it is difficult to feel the small internal jugular vein in infants.

Two techniques are described; the first uses a balloting approach to feel the IJV at its medial border of clavicular head of sternocleidomastoid. The second (more commonly used in small children) is an anatomical technique, palpating the apex of the triangle made between the sternal and clavicular heads of sternocleidomastoid. *“The needle is inserted at the apex of this triangle at thirty to forty degrees to the skin, advanced caudally and laterally towards the inner border of the anterior end of the first rib”*. Five Hundred cannulations were performed on unselected patients; the success rate was 93.5% and increased with increasing familiarity with the procedure.

This paper describes the first attempts at percutaneous cannulation of the internal jugular vein, a technique which has now been practised with little alteration in almost 40 years of paediatric anaesthesia, only recently challenged by the use of ultrasound guided techniques.

Endobronchial intubation in Infancy.

Cullum AR, English ICW, Branthwaite MA. From the Brompton Hospital, London

(Published: Anaesthesia, 1973. Vol 28 pp 68-70)

In 1973 Dr Ian English and Dr Margaret Branthwaite, along with Brompton Hospital registrar Dr A Cullum, published the details of a novel technique of isolating the lung to provide single lung anaesthesia in infants.

At the time, anaesthesia for infants presenting with lung cysts and lobar emphysema was known to be hazardous¹. The risk of complications such as cyst rupture and tension pneumothorax associated with the use of positive pressure ventilation were significant without the ability to isolate the affected lung in this age group². It had been recommended that spontaneous ventilation be maintained until the cyst or affected lobe was isolated, but this often resulted in inadequate gas exchange.

The Brompton team published as a case report in *Anaesthesia* their technique for endobronchial intubation in infancy. This described in detail, with illustrations, how to estimate the correct length of the tube, the type and size of tube to use, how to modify the tube for use in intubating the right main bronchus to avoid obstructing the right upper lobe and how to mark the tube to identify the direction of the bevel. They went on to describe their technique for insertion and accurate placement of the tube in the correct bronchus and discuss the anaesthetic management during endobronchial intubation and one lung ventilation in these infants.

Their methods were illustrated by the case histories of two infants under three months requiring endobronchial intubation. The first infant, with left upper lobe emphysema, required right endobronchial intubation for a left upper lobectomy and the second required left endobronchial intubation for excision of a giant cyst of the right middle lobe.

This paper describes the first successful attempts to perform endobronchial intubation in infants.

1. Magill IW. Anaesthetics in thoracic surgery with special reference to lobectomy. *Br J Anaesth* 1936; **13**: 92–109
2. McCaughey TJ. (1962) Anaesthesia for surgical removal of pulmonary cysts in Children. *Canadian Anaesthetist's Society Journal*, 9, 15.