

Title: The History of Pediatric Intubation and Endotracheal Anesthesia

Author(s): KA Randolph, MD, A Patel, MD, MCJ Tran, MD

Affiliation(s): New Jersey Medical School, UMDNJ, Newark, NJ

ABSTRACT BODY:

Introduction. It is said that man cannot know where he is going before he knows where he has been. This query examines the timeline from the first pediatric intubation and its use in endotracheal anesthesia to our current state of endotracheal anesthesia. What benefits and what risks has the field of pediatric anesthesiology gained or lost and what is yet to come with current research. In recent years, some interesting concepts have emerged to improve airway management of infants and children. The traditional teaching that cuffed tubes should not be used in children is being questioned by studies that have spurred discussion over whether cuffed versus uncuffed endotracheal tubes (ET) are superior in the management of the pediatric airway.

Methods. A literature search was employed using Ovid Medline and Pub Med utilizing the key words: history of intubation, pediatric intubation, and post-intubation croup.

Summary. Children have been the earliest patrons of anesthesiology from its earliest clinical applications of surgical anesthesia. Crawford W. Long, MD performed his third experiment in "etherization" on July 3, 1942 on an eight year old for surgical amputation of a toe "without the boy evincing the least sign of pain". However, endotracheal anesthesia in infants and children was rarely performed before 1940 secondary to the fear that the procedure was too dangerous and traumatic. The tubes available were potentially damaging to the airway. The observation of post- extubation tracheitis, subglottic stenosis, trauma to the mucosa and laryngeal spasm was prevalent. If a child required long -term airway control the preferred method was tracheostomy. The development of polyvinyl chloride tubes in the 1960's was a major advance over the previously available stiff rubber ET and prolonged nasotracheal intubation in the Intensive Care Unit with uncuffed ET became prevalent. A formula to predict the correct size of the ET to be used in the pediatric patient was first proposed by Cole in 1957 and this is the most commonly used formula even today! Other age based formulas, like Penlington's have been proposed. Due to the wide variations in the size of children and the frequent inaccuracy of the calculated ET size other complex formulas using multiple variables such as age, height and weight have also been proposed, but have not gained wide use in clinical practice. It was not until after 1980, when Deming in Philadelphia and Rees in Liverpool, successfully pioneered the routine use of endotracheal intubation in their own pediatric patients, was wide acceptance of pediatric endotracheal anesthesia gained. Today, post-extubation complications still exist, but have decreased dramatically. Presently, the debate rages over whether the use of a cuffed, in lieu of, an uncuffed ET serves any real advantage. Now what was once the rule, is up for debate both in use of cuffed ET and with the advent of the laryngeal mask airway, even the indications for intubation are disappearing.. New cuffed ET specially designed for children have been developed and are available in Europe. These developments have spurred more discussion and with a new understanding of the pediatric airway practice patterns are undergoing a change.

References.

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