

An improved method of endotracheal intubation for the anesthetized pediatric dental patient

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Abstract

A double curved nasal endotracheal tube has been incorporated into a standard head drape for improved access and visibility when providing dental treatment for the young patient under general anesthesia. The technique for stabilization of the airway to provide safety and protection of the patient is described in detail. This method has been used successfully for over 100 dental patients. All patients were considered candidates for either in-patient or out-patient general anesthesia. No complications have been attributed to this method of head drape, tube selection and stabilization since the inception of its use approximately three years ago.

Introduction

The technique that will be described is a composite of ideas and procedures which represents contributions from several sources including our Anesthesiology and Hospital Dentistry staffs. We have found this technique to be simple and efficient. It provides maximum stabilization of the airway and satisfies all of the criteria needed for gaining access to the oral cavity. This technique is based on over 100 pediatric patient intubations.

The first consideration of the anesthesia team is the proper selection of a nasal endotracheal tube. Nasal intubation is the technique of choice for the routine dental case involving restorations, extractions and other intraoral procedures. Compared to oral intubation, the nasal airway provides the dentist with better access, visibility, and the freedom to evaluate the patient's occlusion at any time during the procedure.

Among the various types of tubes in use today, the

dentist will find the RAE tube* preferential for several reasons.¹ First, it is a double curved tube and conforms better to the anatomical structures through which it must pass (Figure 1). This allows for less pressure on the soft tissues of the nasopharynx and the nose. Second, the reverse curve of the RAE tube (as it comes out of the nostril) allows the tube to lie almost flat across the forehead. This characteristic of the RAE tube allows the use of a straight connector, providing a low profile supporting pack over the forehead, improved visibility, and maximum access to the oral cavity. Compared to other techniques in use for pediatric patients, this method provides maximum access around the patient's head with minimal interference from the pack supporting the tube, connector and anesthesia hoses (Figures 2-3).^{2,3} Note that this tube is uncuffed and would not be used for older children or adults because a cuffed RAE tube is available for use on these latter patients.

There are several key considerations regarding the intubation and the preparation in the area of the head and neck which are unique for the dental patient. The first of these is to provide adequate stabilization of the nasal tube to prevent its dislodgment from the trachea. Once successful nasal intubation has been completed, it is the responsibility of both the anesthesia team and the dental team to maintain a stable, adequate airway. Using one-half inch adhesive tape, the tube is fixed at the point where it exits from the nostril as an added precaution against dislodgment of the distal end of the tube from the trachea as seen in Figure 3.

The second important factor is to provide protection

* National Catheter Corporation. Hook Road, Argyle. New York, New York 12809.

from injury to all oral facial structures including the airway. Due to the close proximity to these anatomical structures which the dentist must work, the risk of injury to a patient with no reflexive responses is increased. We have found that careful taping of the eyelids shut to prevent injury is superior to using the head drape. A bland ophthalmic ointment may be placed under the eyelids before taping if the procedure is going to take more than an hour. A cloth turban or drape is created using a sterile towel to completely cover the hair and ears of the patient in a very compact manner. This drape covers the forehead anteriorly and is placed below the occipital prominences posteriorly. The towel is taped snugly into position using one-half inch adhesive tape over the forehead. This position prevents accidental dislodgment of the drape if the patient's head should be moved during operative procedures.

In order to relieve tension on the nose produced by the tube, and to protect uncovered skin of the forehead, one or more 4 x 4 gauzes are placed beneath the tube near the connector. Again, compare Figures 2 and 3 and note the advantage of the more superior location of the connector using the RAE tube. At this point the entire head drape, anesthesia hoses, connector and supporting pack are stabilized with two strips of one-inch adhesive tape long enough to completely encircle the airway and the patient's head. It is most stable if the tape goes below the occipital prominences to further prevent the possibility of the head drape slipping off.

The anesthesia hoses may be carefully adapted to the contour at the top of the patient's head and stabilized with long pieces of one-inch adhesive tape. This tape passes down each side of the patient's head to contact the skin of the cheek and neck, and must be done carefully to prevent any kinking of the hoses. Once successfully accomplished, however, it relieves the anesthesiologist of handholding this piece of apparatus throughout the operation. At the same time, this taping procedure further stabilizes the head drape.

Following stabilization of the head and airway, necessary dental radiographs are obtained without interference from bulky metal connectors. The throat is packed with a single strip of one inch sterile gauze for protection of the oral pharynx. Upon completion of these procedures, an oral prophylaxis, examination and treatment plan are accomplished. The use of rubber dam isolation for restorative procedures, whenever possible, is an excellent adjunct to the safety of the patient providing retraction and protection of adjacent soft tissues. Even the extraction of teeth anterior to clamps may be accomplished under rubber dam

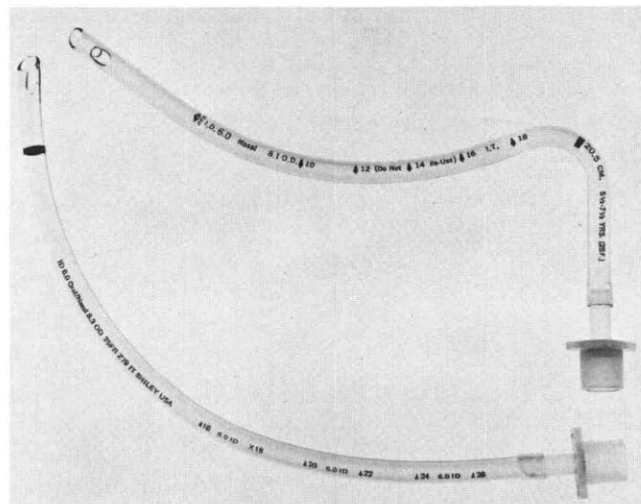


Figure 1. The RAE and Portex nasal endotracheal tubes compared.

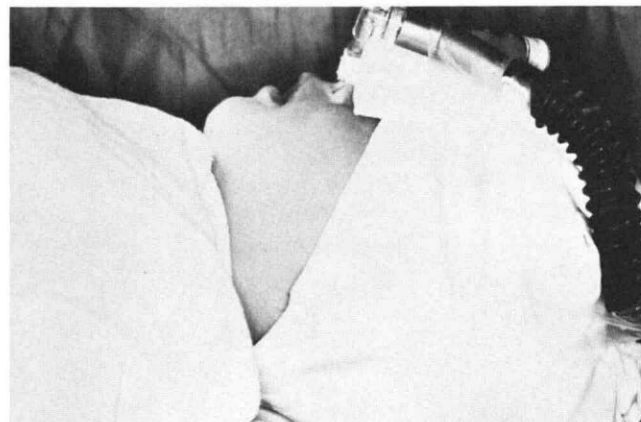


Figure 2. Portex nasal endotracheal tube with universal right angle plastic connector.

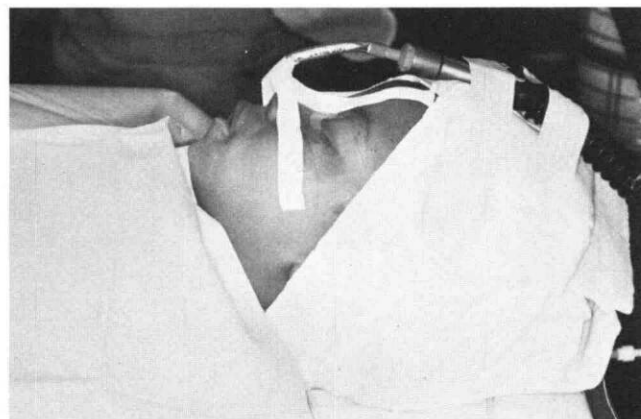


Figure 3. RAE nasal endotracheal tube with head drape stabilization.

isolation. This additional protection of the airway also provides the most accessible operative field.

In summary, an improved technique for stabilization and isolation of the head, airway and oral structures has been described for the young dental patient managed with general anesthesia. Use of this airway, a throat pack and a stable head drape ensures safety, excellent airway maintenance and significantly improved access to the oral cavity when compared to previously published techniques.

References

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