MANAGEMENT OF THE DIFFICULT PEDIATRIC AIRWAY

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The ASA Task Force on the Difficult Airway developed an algorithm for the management of the difficult airway (Figure 1). A difficult airway is characterized by difficulty in both ventilation and intubation of the patient. The algorithm is divided into two major pathways. One of these strongly suggests the use of awake intubation. However, the pediatric patient is not a candidate, for the most part, for an awake intubation. Therefore, the path of the algorithm for general anesthesia includes the uncooperative patient and the pediatric patient, since almost all of them require general anesthesia for intubation.

The basic principles of the algorithm for the difficult airway apply to the pediatric patient, as well. The repeated warnings of “get help” and “consider awakening the patient” are true for all age groups. The rest of this discussion will focus on identification of the child with the difficult airway and the subsequent management thereof (1).

The approach to the difficult airway will be discussed under three main headings: 1) the anatomy of the airway, and of intubation; 2) the physiology and pharmacology of the protective airway reflexes; and 3) the clinical management. In talking with parents, any history of a difficult intubation, etc., is a red flag. The history of a difficult anesthetic experience can never be ignored, regardless of what the anesthesiologist considers his/her level of skill, since there are skilled anesthesiologists everywhere. There are various methods used for predicting the difficult airway but, in general, they depend upon three things: 1) the ability to extend the neck; 2) the ability to open the mouth; and 3) laryngoscopy.

Laryngoscopy involves displacement of the soft tissue of the oropharynx, which allows a line of vision to be developed from the teeth or mandibular alveolar ridge to the epiglottis and then the larynx. The soft tissue is displaced into potential space that is encompassed and, therefore, potentially restricted by an incomplete bony ring that is bound posteriorly by the hyoid bone, laterally by the rami of the mandible, and anteriorly by the mentum of the mandible. Any alteration in the shape or
DIFFICULT AIRWAY ALGORITHM

1. Assess the likelihood and clinical impact of basic management problems:
   A. Difficult Intubation
   B. Difficult Ventilation
   C. Difficulty with Patient Cooperation or Consent

2. Consider the relative merits and feasibility of basic management choices:
   A. Non-Surgical Technique for Initial Approach to Intubation vs. Surgical Technique for Initial Approach to Intubation
   B. Awake Intubation vs. Intubation Attempts After Induction of General Anesthesia
   C. Preservation of Spontaneous Ventilation vs. Ablation of Spontaneous Ventilation

3. Develop primary and alternative strategies:

   A. AWAKE INTUBATION
      Airway Approached by Non-Surgical Intubation
      Airway Secured by Surgical Access
      Succeed
      FAIL
      Cancel Case
      Consider Feasibility of Other Options
      Surgical Airways

   B. INTUBATION ATTEMPTS AFTER INDUCTION OF GENERAL ANESTHESIA
      Initial Intubation Attempts Successful
      Initial Intubation Attempts UNSUCCESSFUL
      FROM THIS POINT ONWARDS REPEATEDLY CONSIDER THE ADVISABILITY OF:
      1. Returning to spontaneous ventilation.
      2. Awakening the patient.
      3. Calling for help.

   NON-EMERGENCY PATHWAY
   Patient Anesthetized, Intubation Unsuccessful, MASK VENTILATION INADEQUATE
   Alternative Approaches to Intubation
   Succeed
   Surgical Airways
   Surgery Under Mask Anesthesia
   Awaken Patient
   FAIL After Multiple Attempts
   One More Intubation Attempt
   IF MASK VENTILATION BECOMES INADEQUATE
   CALL FOR HELP
   FAIL
   Succeed
   Emergency Non-Surgical Airway Ventilation
   Emergency Surgical Airway
   Definitive Airway

   EMERGENCY PATHWAY
   Patient Anesthetized, Intubation Unsuccessful, MASK VENTILATION INADEQUATE
   Call For Help
   FAIL
   Succeed

Figure 1. Difficult airway algorithm.