One step toward the development of preoperative risk index for postoperative reintubation after planned extubation in the operation room

To determine tracheal extubation during the emergence of anesthesia, anesthesia providers routinely assess the patient based on the balance between the residual effects of anesthetics inclusive of neuromuscular blocking agents and recovery of airway reflexes. Many studies have reported a significant number of complications such as hypoventilation, pulmonary aspiration, laryngospasm and bronchospasm at the time of extubation. In normal patients such as those of ASA status class 1, successful tracheal extubation can be easily accomplished at the end of surgery. In critical patients such as of ASA status class 4, ventilator support after surgery can be pre-arranged and carried out in the ICU on a planned strategy. In patients whose physical status are in between ASA class 2 and 3, delayed extubation should be considered at the end of surgery. However, few studies are available regarding the criteria or guidelines for delayed extubation beyond the operation room. Anesthesiologists usually extubate patients at the end of surgery if they have demonstrated return of adequate muscle power and airway reflex with clear conscious level and normal vital signs. However, failure of tracheal extubation at the end of surgery is still encountered in some patients. In Taiwan, the only one indicator to reflect the outcome of patient safety in anesthesia is the rate of reintubation in postanesthesia care unit (IPU017) stated in Taiwan Healthcare Indicator Series (THIS). Therefore, to minimize the risk of reintubation in PACU is an imperative issue for anesthesia providers.

In this issue of Acta Anaesthesiologica Taiwanica Ting and colleagues of Chang Gung Memorial Hospital, Taiwan report on a retrospective, case-controlled study examining risk factors of perioperative reintubation after planned extubation (RAP) in 137,886 patients who underwent general anesthesia. The results of this study demonstrated that the incidence of RAP was 0.06%, which was 2–4 times lower than the present numerical value. In addition, they also found that patients with preoperative COPD, pneumonia/pleural effusion, ascites, or systemic inflammatory response syndrome are more susceptible to reintubation after planned extubation than those without these accompaniments. Patients receiving airway surgery warrant a strategy of delayed extubation. Interestingly, administration of a latest dose of opioid and/or neuromuscular blocking agent is not associated with a risk of RAP. Though Ting’s study comprehends useful information to the process of delayed tracheal extubation at the end of surgery, it still has room for improvement if a scoring system or RAP risk index with point value could be included. According to the result of multivariate logistic regression, they demonstrated several risk factors based on odds ratio (OR). Those with higher OR can be classified as high risk group as shown in Table 4 (Ting’s paper, page 167–171). A scoring system would likely be developed if point values could be assigned to each factor by rounding off the OR value. For example, an OR of 1.89 can be assigned as 2 points to the risk index. Using this principle, a new table with point values or scoring index associated with each risk factors can be generated (Table 1). Patients can also be divided into risk index score associated with low, medium and high RAP. However, important to any establishment of a scoring system is the process of validation. Further effort should also be made in the assessment of predictive value (sensitivity and specificity) for RAP risk index.

References
