Identifying Factors that Influence Surgical-End-to-Transport Time in ASA Physical Status Classification 3 & 4 Pediatric Patients Undergoing Direct Laryngoscopy and/or Bronchoscopy

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Abstract:

Background: Variation in the anesthetic approach for managing direct laryngoscopy and/or bronchoscopy (DLB) may cause an increase in surgical-end-to-transport (SET) time.

Objectives: To identify factors that influence SET time, and assess if SET time is related to pain level and PACU duration.

Methods: All ORL DLB cases from June 2012 through 2014 (n=2,419) were queried. After exclusions, a logistic regression was performed to determine any significant impacts of extubation status and airway device on SET time for the remaining 568 cases. Spearman correlation was performed to evaluate the relationship between SET time and PACU duration. Wilcoxon Rank-Sum Tests were used to compare the median surgery, SET and PACU time of cases that had high pain in the PACU with cases that had low or medium pain in the PACU.

Results: The median SET time was 16 minutes. Cases with high pain levels in the PACU had a significantly longer median PACU stay than cases that reported low or medium pain. Surgery duration did not differ significantly according to pain level. SET time was not related to PACU time or pain score in the PACU. Airway device and extubation status were found to be significant predictors of SET time.

Conclusion: This study identified airway management and extubation status (when an ETT is used) as significant predictors of SET time, independent of age group, gender, ASA Status, and surgery duration. Results suggest that shortening SET time will not lead to an increase in PACU time or postoperative pain.

Background:

• Previous studies have examined the impact of surgical duration and operating room utilization on perioperative performance and resource utilization.

• However, it is undetermined how variances in anesthetic management can influence these outcomes. Differences in anesthetic practice may lead to significant variation in total OR time.

• One component of this time is described as surgical end-to-transport (SET) time.

Objectives:

• To identify the factors that influence SET time

• To assess whether SET time is related to duration of stay or pain level in the PACU

Methods:

• After obtaining IRB approval, all ORL DLB cases from June 2012 through 2014 (n=2,419) were queried

• Exclusion criteria: ASA 1, 2 & 5, > 21 years old, discharged to the ICU or that left the OR intubated, along with cases where no airway device was used or a trach was used (n=568)

• Wilcoxon Rank-Sum Tests were run to compare the median surgery, SET and PACU time of cases that experienced high pain in the PACU with cases that experienced low or medium pain in the PACU

• A Spearman Correlation was used to assess if there was a correlation between SET time and PACU duration

• Logistic regression was utilized to analyze the influence of airway device on SET time, independent of age group, gender, ASA status and surgery-duration

• Airway device and extubation status were modeled separately because airway device was moderately predictive of extubation status

• Separate logistic regressions were used, either confined to cases where an endotracheal tube (ETT) or laryngeal mask airway (LMA) was used, evaluating the influence of extubation status on SET time, independent of the same variables

Results:

• The median SET time was 16 minutes

• After adjusting for other variables, cases where an ETT was used were 1.88 times as likely (p=0.043, 95% CI: 1.124, 3.115) of having a SET time over 16 minutes, as compared to cases where a mask was used

• When an ETT was used, awake extubations were 9.259 times more likely (p=0.0380, 95% CI: 1.130, 76.923) to have a SET time over 16 minutes, after adjusting for other variables

• When a LMA was used, extubation status was not found to be a predictor of SET time

• SET time was not correlated with duration of stay in the PACU (p=0.8757) or pain level in the PACU (p=0.118)

Conclusion:

• Airway management and extubation status (when an ETT is used) are significant predictors of SET time

• Shortening SET time does not lead to an increase in PACU duration or pain level in the PACU

• The large width of the confidence interval for extubation status was due to the relatively small number of deep extubations

• Further investigation will be conducted on the correlation between the perioperative dosage and timing of commonly used anesthetic medications, SET time, and PACU outcomes

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