

A0012 Pleth Variability Index versus Stroke Volume Variation as Predictors of Fluid Responsiveness in Prone Position

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Background: Prone position is commonly used for spine surgery. This study was designed to investigate the effects of prone position on the accuracy of pleth variability index (PVI) to predict fluid responsiveness and to correlate the changes in stroke volume variation (SVV) with PVI in prone position.

Materials and Methods: After Institutional Ethics Committee approval, 51 adults of either gender, aged 18–65 years, ASA status I–II, undergoing elective spine surgery in prone position were included. Heart rate, blood pressure, cardiac output, stroke volume index (SVI), SVV, CI, perfusion index (PI), and PVI were recorded before and after volume expansion with 500 mL of hetastarch 6% given twice; in supine and after prone position. A Masimo pulse oximeter probe with a Radical-7 monitor and a Vigileo monitor with an interface FloTrac transducer were used where appropriate. The above parameters were recorded at different time intervals.

Results: Mean age was 41 years; most were male patients (M33:F18). After second volume expansion, SVI was increased by 9.2%, SVV was reduced by 2.3% ($p = 0.00$), and PVI was decreased by 38.1% ($p = 0.00$), compared with the previous values. In supine position, there was no significant difference between the area under ROC curve for SVV (0.745) and PVI (0.611) with respect to identifying a change in SVI greater than 15%. The best threshold values to predict fluid responsiveness in supine position were more than 12% for SVV and PVI. Similarly, in prone position, there was no significant difference between the area under the ROC curve for SVV (0.638) and PVI (0.532). The best threshold values to predict fluid responsiveness were more than 9% for SVV and 11% for PVI.

Conclusions: Both SVV and PVI are useful indicators of fluid responsiveness in mechanically ventilated patients undergoing spine surgery. SVV and PVI correlated well, in prone position, with regard to fluid responsiveness.

A0013 Patient Satisfaction Survey on Quality of Anesthesia in Neurosurgical Patients: A Tertiary Care Neuro Center Experience

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Background: An important aspect of the quality of anesthesia is the satisfaction of patients with their care. Although the patient satisfaction is an important measure of the care they received, it is not an accurate measure of overall quality, safety, effectiveness, or value of anesthetic care. It is also a challenge in itself to measure the patient satisfaction in neurosurgical patients.

Materials and Methods: After obtaining permission from our hospital's clinical governance committee, we conducted a patient satisfaction survey on quality of anesthesia. The survey was conducted for 3 months duration and included 100 randomly selected patients. The questionnaire was given on postoperative day 1 by an anesthetist not involved in their anesthetic care. We used a validated questionnaire developed by Hocking et al, it consisted of 14 questions, and we used the Likert scale to measure the quality of anesthesia. The questions were on preoperative, intra operative and postoperative quality indicators and patients' overall satisfaction.

Results: All patients were seen by an anesthetist and majority of the patients said they had enough time to ask all questions; however, only 83% of the patients remembered the discussion of anesthetic risks. We were excellent in our technical ability, friendliness, and addressing the concerns of the patients. 85% of our patients said they had mild to moderate pain; 97% of the patients said they would recommend their anesthetist to friends and family. And the overall patient satisfaction score was 99%.

Conclusions: Patient satisfaction survey is an important quality improvement process. Patient's perception of quality of anesthesia depends on the amount of information given during preoperative visit and setting expectations. More importantly, it identifies the strengths and weaknesses of the anesthesia department, and we can learn and improve from our shortcomings.

A0014 Survival and Functional Outcome in Children with Traumatic Brain Injury Requiring Mechanical Ventilation

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Background: Traumatic brain injury (TBI) is one of the leading causes of morbidity and mortality in children. Despite the high frequency of TBI in young children and their precarious developmental status, the recovery and outcomes following TBI in early childhood is not well understood. We aimed to determine survival and functional outcome in pediatric TBI patients requiring mechanical ventilation. Our primary objective was to determine patient outcome at 3 months following discharge from hospital, with secondary objective being characterization of factors which may affect outcome, to determine patient outcome at discharge from hospital, length of ICU, and hospital stay.

Materials and Methods: We prospectively evaluated 50 children (1–10 years of age), admitted to our ICU with TBI. Probable predictors of outcome were abstracted, including Pediatric Trauma Score, clinical variables, Glasgow coma scale (GCS) score, computed tomography evidence of brain injury, and hospital course. Patient outcome was determined using modified Rankin scale at the time of discharge from

hospital, modified Glasgow scale at 1 month and 3 months following discharge from hospital.

Results: Children had a mean age of 4.7 years, and 40% were females. The fatality rate was 34%. Age and gender were similar between groups ($p > 0.2$). Survival was independently predicted by GCS score at admission to ICU ($p < 0.05$).

Conclusions: Multiple factors may influence outcome in pediatric TBI, and heterogeneity of the population is one of the difficulties in evaluating them. Evaluating outcome and identifying predictors of poor outcome help clinicians in making decisions during the acute phase of treatment.

A0015 Assessment of Dynamic Predictors of Fluid Responsiveness in Patients Undergoing Supratentorial Neurosurgery Using Transesophageal Echocardiography

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Background: Patients presenting for neurosurgery are at risk of hypovolemia due to ongoing osmotherapy, neuroendocrine responses, nausea, and vomiting. Fluid therapy is frequently used in neurosurgical patients to improve hemodynamics. Only 40 to 70% of patients respond to volume expansion. The aim of this study was to assess the utility of newer dynamic predictors of fluid responsiveness such as delta down (DD), superior vena cava collapsibility index (SVCCI), and aortic velocity time integral variability (VTIAoV) in patients undergoing neurosurgery.

Materials and Methods: Thirty patients undergoing neurosurgery for supratentorial craniotomy and excision were enrolled in this prospective study. Post-induction, vitals, anesthetic parameters, and study variables were recorded as the baseline. Following this, patients received a fluid bolus of 10 mL/kg of colloid over 20 minutes, and measurements were repeated post loading. Data were expressed as mean \pm SD. Comparison of normally distributed continuous variables was evaluated with Student's t-test, and $p < 0.05$ was considered as statistically significant. The predictive ability of variables for fluid responsiveness was determined using Pearson's coefficient analysis (r).

Results: There were 22 volume responders and 8 non-responders. DD > 5 mm Hg was efficient in differentiating the responders from nonresponders ($p < 0.05$) with a sensitivity and specificity of 90% and 85%, respectively, with a predictive ability, $r = 0.716$. SVCCI of $> 38\%$ was 100% sensitive and 95% specific in detecting the volume status and in differentiating the responders from nonresponders ($p < 0.05$) with an excellent predictability, $r = 0.906$. VTIAoV $> 20\%$ too proved to be a good predictor, with a sensitivity and specificity of 100% and 90%, respectively, with a predictive power, $r = 0.732$.

Conclusions: Our study showed that 73.33% of patients presenting for intracranial surgeries were fluid responders despite static indices of hemodynamics like heart rate, blood pressure, and CVP being within the normal range. Among the variables, SVCCI $> 38\%$ is an excellent predictor followed by VTIAoV $> 20\%$ and DD > 5 mm Hg in assessing the fluid status in this population.

A0016 Infection in Neurosurgical Intensive Care Unit: A 3-Year Study

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Background: In the neurosurgical and neurocritical patient community, infection rate depends on the severity of illness at the time of presentation such as Glasgow coma score, associated comorbidities, and the exposure to invasive devices such as endotracheal tube, central venous catheters, and urinary catheters. In addition, neuroscience-specific devices, such as ventricular/lumbar catheters, also increase chances of infection. There is paucity of quality data about infection rate in neurosurgical ICU (NSICU) in India. We share our experience from a dedicated NSICU in north India.

Materials and Methods: This was a retrospective and observational study in NSICU. All patients who were admitted to NSICU, whose infection fulfilled the CDC (Centers for Disease Control and Prevention)/National Healthcare Safety Network (NHSN) criteria, were included in the study.

Results: A total of 229 patients were included in our study. Maximum percentage of patients admitted directly from home was 41.2%. Length of stay (LOS) in the ICU ranged from 2 to 60 days. Average LOS in ICU was 6 days. A comprehensive of 57 laboratory-confirmed infections were identified in 53 patients, representing a prevalence rate of 23% and an incidence rate of 20.3/1,000 patient-days. The site-specific frequency of infections was: 35 urinary tract infections, 15 bloodstream infections, 2 SSI, single case of pneumonia. Various risk factors associated with development of HAIs were antibiotics use before ICU admission ($p < 0.001$, OR = 6.775), presence of devices such as endotracheal tube ($p < 0.001$, OR = 7.450), urinary catheter ($p = 0.002$, OR = 2.386), central line ($p < 0.001$, OR = 8.022), location before admission ($p = 0.038$, OR = 2.063), ICU stay > 7 days ($p = 0.003$, OR = 2.724), and malignancy ($p = 0.001$, OR = 8.775).

Conclusions: Neurosurgical patients are particularly vulnerable to infection because of the formidable nature of their illness, the frequency of associated trauma, and the presence of invasive devices. This could be the reason for high prevalence rate of infection in these patients, which can be avoided by treating the patients in a dedicated NSICU with strict infection control protocol. Nonetheless, in our study we observed low infection rate in neurosurgical patients.