

## The Predictive Value of Baseline Pulse Oximeter Perfusion Index on the Incidence of Hypotension During Balanced General Anesthesia Induction

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**Background:** Hypotension is a common occurrence during general anesthesia induction. Perfusion Index (PI) has been used as a measure of systemic vascular resistance and was shown to predict hypotension after regional anesthesia and propofol induction.

**Objective:** This study aims to determine whether baseline PI can predict hypotension during balanced general anesthesia induction and determine a cut-off value where hypotension is expected to occur.

**Methods:** Thirty-five ASA I/II adults who will undergo elective surgery under general anesthesia were enrolled. Heart rate, blood pressure and PI were measured every minute from baseline to 5 minutes following induction and 10 minutes after endotracheal intubation.

Hypotension was defined as fall in systolic BP (SBP) by >30% from baseline and/or mean arterial pressure (MAP) to <60 mm Hg. Severe hypotension (MAP of <55 mm Hg) was treated.

**Results:** Hypotension was not observed in the first 5 minutes but was present in 11.4% of subjects by the 10<sup>th</sup> minute and 5.7% of subjects by the 15<sup>th</sup> minute. PI showed very low ( $r < 0.2$ ) to low ( $r = 0.2$  to  $0.39$ ), negative to positive and insignificant correlation ( $p > 0.05$ ) with hypotension whether using SBP or MAP criterion and whether observed at 10 or 15 minutes of anesthesia induction. The Area under the ROC curve is 0.397, 95% CI [0.126, 0.667],  $p = 0.431$ .

**Conclusion:** This study lends inconclusive evidence on the utility of perfusion index to predict hypotension during balanced general anesthesia induction for this sample of patients. Interestingly, there was a positive,

moderate ( $r=0.538, 0.501$  and  $0.469$ ) and significant ( $p<0.05$ ) correlation between perfusion index and SBP, Diastolic BP and MAP, respectively.

**Keywords:** Perfusion Index, Blood pressure, Mean arterial blood pressure, balanced general anesthesia induction, hypotension, plethysmography, intravenous anesthetics, inhalational anesthetics

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Perfusion index (PI) is a relatively new parameter estimating the pulsatility of blood in the extremities, calculated using infrared spectrum as part of plethysmography waveform processing. It is a simple, cost-effective and non-invasive method of assessing peripheral perfusion determined by the percentage of pulsatile to non-pulsatile blood flow in the extremities. PI indicates the status of the microcirculation which is densely innervated by sympathetic nerves, and therefore, is affected by multiple factors responsible for vasoconstriction or vasodilatation of the microvasculature.[1] It is also purported to be an indicator of systemic vascular resistance (SVR).