

## **Which Finger Do You Attach Pulse Oximetry To? Index Finger or Not?**

Mizukoshi K., Shibasaki M., Amaya F., Mizobe T., Tanaka Y. *Eur J Anesthesiol* 2009; (suppl 45): 3AP1-5.

### **Background**

Pulse oximetry is a standard monitor during anesthesia but sometimes shows unreliably results, especially when the patients become hypoperfusion. Index finger is commonly selected for pulse oximetry measurement, but we do not know which finger is the best for probe location. The aim of this study is to investigate which finger is most resistant to hypoperfusion and the best for the pulse oximetry measurement.

### **Methods**

A questionnaire of attachment to pulse oximetry sensor and its reason was filled out by circulating nurses, anesthesia fellows and anaesthesiologists. Twenty healthy volunteers were enrolled to this study. The measurements were performed in the supine position, and each pulse oximetry sensor was attached to all 5 fingers simultaneously. Oxygen saturation (SpO<sub>2</sub>) and perfusion index (PI) were measured by radical, Masimo Corporation. To see the effects of hypoperfusion on pulse oximetry performance, arterial supply to the forearm was partially occluded with blood pressure cuff.

### **Results**

Questionnaires showed about 80% of medical staff in all groups selected index finger for attachment pulse oximetry sensor as a first selection. Perfusion index value showed significant difference between each finger (ANOVA,  $p < 0.01$ ). PI of the middle finger showed the highest value in both control and hypoperfusion groups. SpO<sub>2</sub> did not show any remarkable difference between each finger in both groups. Previous report showed that ulnar artery is dominant for index finger, while ulnar and radial arteries are equally innervated to the middle finger. Highest PI value observed in the middle finger may reflect relatively abundant blood perfusion due to dual vascular supply.

### **Conclusions**

Perfusion index showed remarkably different value between each finger. Among those PI of the middle finger was the highest in normal condition and during hypoperfusion. Monitoring pulse oximetry at the middle finger may reduce the risk that oximetry indicates inaccurate result during hypoperfusion.

References: Buhre W, Rossaint R. *Lancet* 2003; 362(9398): 1839-1846.