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PULSE OXYMETRY has been recommended as a standard of care for every general anaesthetic. This technique, virtually unknown in anaesthesia 5 years ago, has been so readily adopted for several reasons. The device provides valuable data regarding blood oxygenation and this information is obtained easily, continuously and non-invasively. Continuous assessment of arterial oxygenation is important in clinical management of critically ill or anaesthetized patients.

Anaemia has been a matter of concern not only in the operating room but also in the immediate post-operative period. However, clinical assessment of anaemia is rather difficult and cyanosis is only detectable when the arterial oxygen saturation (SaO₂) is below 80%. The recent introduction of "Pulse Oximetry" has provided a continuous, non-invasive, real-time method to detect SaO₂ intra-operatively and post-operatively. Indian women are frequently suffers from anaemia. The risk factors of intra-operative and post-operative anaemia in "Hysterectomy" operations with pre-existing anaemia under different techniques of anaesthesia may be injurious to the patients.
Pulse oximetry functions by positioning any pulsating arterial vascular bed between a two wavelength (660 nm & 940 nm Red & infra-red) light source and a detector. The pulsating vascular bed by expanding and relaxing, creates a change in the light path length that modifies the amount of light detected. The familiar plethysmograph wave-form results. Because the detected pulsatile wave-form is produced solely from arterial blood, using the amplitude at each wavelength and Beer's Law allows exact beat-to-beat continuous calculation of arterial hemoglobin saturation with no interference from surrounding venous blood, skin, connective tissue or bone.

"On many occasions this instrument has detected anaemia when observations of pulse, blood pressure and colour of the patient and peripheral vascular tone have shown no abnormalities".

The clinical utility of the non-invasive oximeter in the operating room was discovered in 1960s by William New, an anaesthesiologist at Stanford University, realising that a continuous, non-invasive monitor of oxygenation would be useful to anaesthesiologists.

As with any new technique, many people contributed to the development of usable in vivo oximeters. Mathieu is often considered the father of oximetry. Between 1935 and
1944 he published a series of articles investigating oxygen transport to tissue by light transmission techniques.

The detection of cyanosis, the traditional sign of hypoxemia, is very unreliable. The human eye is a poor judge of changes in skin colour, particularly in dark skinned patients and under fluorescent light. Severe arterial hypoxemia may occur even during the most meticulously administered anaesthetic. Prolonged moderately severe hypoxemia may be associated with pre-existing anaemia and respiratory disease. Anaemia is very frequently associated with Indian women and anaesthetic practice more so when major surgery like hysterectomy operations. It was therefore thought worthwhile to evaluate changes in oxygen saturation by Pulse Oximetry intra-operatively and in immediate post-operative period in hysterectomy operations planned under different anaesthetic techniques.

The present study was conducted in the series of 30 patients undergoing hysterectomy with three different anaesthetic techniques. Continuous \( \text{SaO}_2 \) monitoring was done with pulse oximeter (Nihonka PULSE-OX-7).

In this study the conclusion was derived that -

- The anaemic patients of less than 10 gm % Hb were more prone to develop post-operative hypoxemia particularly during the post-operative period more common when done under spinal analgesia.
The desaturation was more in the patients with bradycardia, hypotension and fall in respiratory rate.

The desaturation was more in the spinal analgesia rather than the general anaesthesia.

The $\text{SaO}_2$ % was greatly reduced in the Lithotomy, Trendelenburg's position.

The supplemental $O_2$ inhalation during the intra and post-operative periods greatly reduced the incidence of post-operative hypoxemia.

In conclusion, we recommend that the hysterectomy operation should be performed under general anaesthesia with muscle relaxant (Pavulon) preferred over inhalational agent (Ether) and spinal analgesia and patients should have haemoglobin level more than 10 gm% and supplemental $O_2$ inhalation should be done post-operatively in supine position.
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