SUMMARY

The pulse oximeter represents probably the most important advance in monitoring during anaesthesia since the introduction of the sphygmomanometer. It allows continuous registration of the arterial oxygen saturation by using the light absorption in a wave range between about 600 and 1000 nm. In addition, the peripheral pulse is determined by a plethysmographic method. It is a reliable monitor for oxygen saturation and provides trend information about circulation, both of which are particularly appropriate for patients breathing spontaneously.

The electrocardiogram is used as a heart-rate meter, to detect and characterize arrhythmias, and to provide indication of myocardial ischaemia. Major disadvantages are that the ECG provides no indication of the adequacy of the circulation, and may provide a false sense of security if used as the only continuous monitor of the circulation.

Patients subjected to surgery and anaesthesia must rely on autonomic mechanisms to maintain homeostasis and adequate organ perfusion. In the elderly, many of these mechanisms are limited in the strength, the rapidity
and the range in which they can compensate for physiological
sposes and trespass. Anesthesiologists rely on predictable
results from manipulation of the ANS and its effector organs,
but aging in itself seems to alter the responses to these
pharmacological manipulations. The diseases and medications
that often accompany old age are further confounding factors.
Some of the changes found with age seem to arise from the
ANS itself, while some more likely originate in structural
alterations of the cardiovascular system. Although both
basic and clinical research reports are rife with
contradictions, a knowledge of ANS aging should help us to
anticipate the particular responses and requirements of our
older patients.

Concurrent disease processes compound age-related
cardiovascular deterioration. Atherosclerosis generates
obstructive lesions in both coronary arteries and peripheral
vessels. Myocardial infarction, hypertension and cardiac
valvular disease may precipitate congestive heart failure.
An increased incidence of arrhythmia, especially heart block,
atrial fibrillation and premature ventricular contractions,
may be due to the deposition of amyloid or calcium in the
conduction system or to the atherosclerotic loss of elements
of the conduction system with age. With cardiovascular
deterioration, there is also age-related decline in
pulmonary reserve.
The goal of monitoring during anaesthesia is to detect untoward events and prevent them. The monitored event should enable the anaesthesiologist to alter therapy. Finally, the use of the monitor to manage therapy should objectively improve outcome. Keeping this in mind, it was therefore thought worthwhile to evaluate changes in oxygen saturation and electrocardiogram simultaneously in geriatric patients undergoing surgery under general anaesthesia and subarachnoid block.

The study was conducted in patients of ASA grade I and II, between the age group of 50 to 90 years of age to be operated upon under general anaesthesia as well as subarachnoid block. Continuous \( \text{SaO}_2 \) monitoring was done with pulse-oximeter (Minolta Pulse-OX-7) and electrocardiography recording was done simultaneously.

After the study completed and data analysed, the following conclusion was derived that:

1. The fall in pulse rate reduced the \( \text{SaO}_2 \%) during the intra-operative period.

2. The hypotension reduced the \( \text{SaO}_2 \%) during the intra-operative period.

3. The desaturation was more in subarachnoidal analgesia rather than general anaesthesia.
4. The finding of bradycardia (lowered heart rate) was similar in pulse oximeter and electrocardiogram.

5. The changes in rhythm were more common in patients under subarachnoidal analgesia.

6. The supplementation of oxygen inhalation during the intra-operative period increased the \( \text{SaO}_2 \) and greatly reduced the incidence of hypoxaemia in subarachnoidal analgesia.

With this study we conclude that pulse oximetry and electrocardiography must be essential for monitoring during the subarachnoidal as well as general anaesthesia for elderly patients. Because decrease in \( \text{SaO}_2 \) detected by pulse oximeter precedes changes in skin colour and haemodynamic changes, so it is of immense help in reducing the incidence of hypoxaemia in elderly patients. And ECG changes are late signs for detection of arterial hypoxaemia so morbidity and mortality in elderly patients which have reduced adaptability to hypoxaemia and hypercarbia.