

Permanent City Research Online URL: http://openaccess.city.ac.uk/14768/

Copyright & reuse
City University London has developed City Research Online so that its users may access the research outputs of City University London's staff. Copyright © and Moral Rights for this paper are retained by the individual author(s) and/ or other copyright holders. All material in City Research Online is checked for eligibility for copyright before being made available in the live archive. URLs from City Research Online may be freely distributed and linked to from other web pages.

Versions of research
The version in City Research Online may differ from the final published version. Users are advised to check the Permanent City Research Online URL above for the status of the paper.

Enquiries
If you have any enquiries about any aspect of City Research Online, or if you wish to make contact with the author(s) of this paper, please email the team at publications@city.ac.uk.
Investigation into the use of a new oesophageal pulse oximeter in cardiothoracic surgery patients


*Anaesthetic Department, Bart's and The London NHS Trust, London, UK and **Department of Medical Electronics and Physics, St Bartholomew's and the Royal London School of Medicine and Dentistry, London, UK

Conventional pulse oximetry may fail when peripheral circulation is compromised. We have investigated the use of a new oesophageal reflectance pulse oximeter in a group of patients with poor peripheral perfusion based on the hypothesis that blood flow to this central site may be preferentially preserved.

After induction of anaesthesia in 50 elective cardiothoracic surgery patients a purpose-built oesophageal reflectance pulse oximetry probe was positioned in the oesophagus. Signals were recorded at various depths of the oesophagus, as the probe was withdrawn, until the site of best signal was determined. Monitoring in theatre was intermittent and during these periods the saturation readings were compared with the arterial saturation of blood gases and co-oximetry results.

Signals were recordable in all 50 patients and oxygen saturation readings were in good agreement with arterial blood gas and co-oximetry results. The results were compared using Bland Altman analysis (Fig. 1). Five of the patients showed a period of peripheral pulse oximetry failure while oesophageal signals remained. These failures occurred on the intensive care unit, when patients were peripherally cool.

![Graph](image)

Fig 1 Difference against mean for oxygen saturation data from oesophagus and co-oximetry.

Peripheral pulse oximetry signals are often difficult to obtain in patients with poor peripheral perfusion. Oesophageal pulse oximetry may be a useful alternative way of monitoring arterial oxygen saturation in such patients.

Keywords: gastrointestinal tract, oesophagus; measurement techniques, pulse oximetry

References