

The way in which these two systems calculate the initial cardiac output differs in that the PiCCO™ uses haemodilution of cold saline and the LiDCO™ uses haemodilution of lithium. The LiDCO™ cannot be used in patients on lithium therapy or for up to two hours following the administration of non-depolarizing muscle relaxants. Both systems need regular recalibration by re-measuring the cardiac output using haemodilution. All the factors previously mentioned that alter the accuracy of the arterial waveform (air bubbles, kinking etc) will affect the cardiac output value that the system gives. The two systems also alter in terms of the mathematical modelling they use to perform the pulse contour analysis. Further description of these techniques can be found in *Update 21*.

Summary

Invasive arterial monitoring is a highly useful tool, which allows close blood pressure monitoring for patients undergoing major surgery and the critically ill. It is also useful for repeated arterial blood gas analysis and as an access point for obtaining other blood samples. It is important to understand the principles of biological measurement systems in order to optimise their performance and allow troubleshooting when performance is poor.

Further reading

- J S Gravenstein and David A Paulus. *Clinical Monitoring in Practice* (2nd edition). Published by J B Lippincott, Philadelphia, 1987
- M K Sykes, M D Vickers, C J Hull. *Principles of measurement and monitoring in Anaesthesia* (3rd edition). Published by Blackwell Science Publications, 1991.

CORRESPONDENCE

Dr Alex Polishchuk, Oshakati, Namibia

Lateral intubation for difficult intubation

I have received correspondence for Dr Alex Polishchuk, originally from the Ukraine, and now working in Oshakati, Namibia, regarding a potentially useful intubation technique that is widely reported in Russian-language texts, but does not appear in UK textbooks or on the internet. An edited version of Dr Polishchuk's email, with photos, is shown below. Further correspondence of reader's experience with this technique would be welcomed.

Dear Editor, I recently read an Update article about difficult endotracheal intubation (http://www.nda.ox.ac.uk/wfsa/html/u09/u09_025.htm). In this overview article there was no mention of **lateral intubation**. Perhaps Western doctors have never heard of this technique? The technique was shown to me by an old doctor and has helped me many times. I have read about this technique, but only in Russian books. The method is as follows:

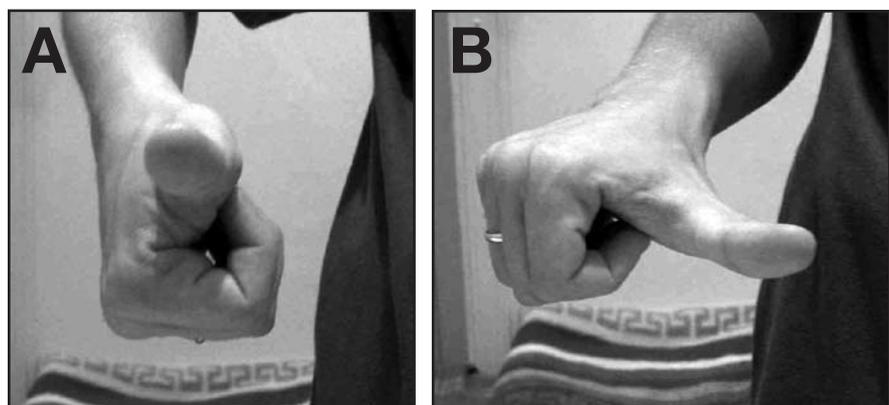
- After 3 unsuccessful attempts at conventional intubation turn the patient's head to face to the right side. Insert the laryngoscope in the left corner of the mouth, passing it forward in between the tongue and the upper teeth.
- Keep the laryngoscope handle parallel to the table surface, as during a conventional intubation. Pass the tip of the laryngoscope blade posteriorly, aiming to direct it between the

left palatine arch (on the left of the blade) and the base of the tongue (on the right of the blade). Your laryngoscope blade will pass towards the patient's left piriform fossa, with the epiglottis coming into view on the right side of the blade, and the larynx straight ahead. Some anticlockwise rotation of the blade may be necessary to achieve this view.

- Move the larynx with your right hand to improve the view of the vocal cords.

Dr Polishchuk's photographs below demonstrate the lateral approach to the epiglottis and vocal cords.

During this technique, the larynx-mouth distance becomes shorter due to the rightward position of the head and the epiglottis disturbs your view less, because it is to the right of the blade.



The thumb represents the epiglottis and the orifice between the curled fingers, the laryngeal opening, (A) during conventional laryngoscopy and (B) during lateral laryngoscopy.